Anastrepha spp. Cooperative Eradication Program

Rio Grande Valley, Texas

Final Programmatic Environmental Assessment, May 2021

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APHIS	Animal and Plant Health Inspection Service
BA	Biological assessment
CABI	Centre for Agriculture and Biosciences International
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	The Endangered Species Act
FEMA	Federal Emergency Management Agency
GOMA	Gulf of Mexico Alliance, Coastal Community Resilience Team
IPM	Integrated pest management
LC	Lambda-cyhalothrin
MB	Methyl bromide
LRGVDC	Lower Rio Grande Valley Development Council
MB	Methyl bromide
MC&F	Miller Chemical and Fertilizer LLC
MOU	Memorandum of Understanding
NAPIS	National Agricultural Pest Information System
NEPA	The National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPIC	National Pesticide Information Center
RGV	Rio Grande Valley
SIT	Sterile insect technique
SLN	Special Local Need
TAMU	Texas A & M University System
TBWEF	Texas Boll Weevil Eradication Foundation
TCEQ	Texas Commission on Environmental Quality
TDA	Texas Department of Agriculture
TDHCA	Texas Department of Housing and Community Affairs
THC	Texas Historical Commission
TOSS	Texas Office of the Secretary of State
TPWD	Texas Parks and Wildlife Department
TSHA	Texas State Historical Association
TSG	Texas School Guide
TWDB	Texas Water Development Board
UFL	University of Florida
ULV	Ultra low volume
U.S.C.	United States Code
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture, Animal and Plant Health Inspection Service
USDOJ	U.S. Department of Justice

USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VPEC	Valley Proud Environmental Council

I. Purpose and Need for the Proposed Action

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service ("USDA") is considering actions that will assist in the eradication of *Anastrepha* spp. in the Rio Grande Valley region of Texas. Fruit flies of the *Anastrepha* genus are not native to the United States; their ongoing presence in Mexico, Central and South America, and the Caribbean presents a risk to cultivated and naturally-occurring plant hosts in the forty-eight contiguous United States.

There is evidence that adults of *Anastrepha* spp. can fly as far as 83 miles and therefore natural movement is an important means of spread. In international trade, the major means of dispersal to previously uninfested areas is the transport of fruits containing live larvae. There is also a risk from the transport of puparia in soil or packaging with plants that have already fruited (CABI, 2020). Successful cooperative eradication programs prevent these invasive fruit fly populations from establishing in the forty-eight contiguous United States. Federal action helped Texas eradicate West Indian fruit fly infestations in 2000 and 2014, a sapote fruit fly infestation in 2003, and repeatedly since 1927, Mexican fruit fly ("Mexfly") infestations (NAPIS, 2020). *Anastrepha* spp. incursion into southern Texas is a constant threat due to breeding fly populations across the Mexican border.

Anastrepha ludens (Loew), i.e. Mexfly, 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 (TDA, 2020). Regions along the Rio Grande Valley (RGV) bordering Mexico periodically experience Mexfly introductions. This pest periodically enters the lower RGV's 27,000 acres of commercial citrus crops from south of the border. Mexfly is also a threat to the other commercial U.S. citrus-producing states (California, Arizona, Louisiana and Florida). Damage occurs when the female fly lays eggs in the fruit, which then hatch into larvae, making the fruit unmarketable. Economic losses due to Mexfly infestation include not only the value of damaged crops, but also the costs associated with eradication and host movement restrictions designed to protect consumers (TDA, 2020). Adult Mexflies live up to 11 months, are highly fertile, and strong fliers (UFL, 2012).

Anastrepha obliqua, also known as West Indian fruit fly, attacks more than 30 different kinds of fruits. It is widespread in Mexico, Central and South America, and the West Indies. It is invasive in the Lesser Antilles and became temporarily established in southern Florida in the 1930s. Although caught in traps in California and Texas, this species is not established in these states. West Indian fruit fly lays eggs singly, below the skin of the host fruit. The larvae hatch within 3-12 days and feed for another 15-32 days; adults occur throughout the year. As with other *Anastrepha* spp. pupariation is in the soil under the host plant; adult West Indian fruit flies emerge after 15-19 days (longer in cool conditions) (CABI, 2020).

Anastrepha serpentina (Wiedemann), sometimes called the sapote or serpentine fruit fly, is frequently intercepted in U.S. ports of entry in a variety of hosts from several countries. This species is one of the most widely distributed in the genus *Anastrepha*, ranging from northern Mexico south to Peru and east into the Caribbean. The sapote fruit fly feeds and reproduces on more than 20 hosts and could become a serious pest of tropical fruits grown in the United States. One female may oviposit up to 600 eggs in about 1.5 months. Females oviposition from 21 to 29 weeks under laboratory conditions. Frequently, infestations in Mexican orchards and groves are

so high that growers pick green fruits for artificial ripening to avoid crop loss (Weems, Jr., 2015).

The trigger for a U.S. federal *Anastrepha* spp. quarantine occurs either at confirmation of a breeding population, or when there is capture of 2-5 wild flies within a 3-mile radius during one life cycle (see species particulars in Table 1). USDA initiates eradication efforts prior to establishing a federal quarantine (USDA, 2020e).

Table 1. Cooperative Fruit Fly Emergency Response Triggers.

Pest species	**Trigger for Delimitation**	**Duration of Delimitation** (i.e. number of generations per single fly find)	**Trigger for Eradication**	**Trigger for Quarantine**
Anastrepha ludens (Mexfly)	1 fly	2 generations	2 flies within a 3 mile (4.8 km) radius during 1 life cycle	**5 flies** within a 3 mile (4.8 km) radius during 1 life cycle
Other *Anastrepha* spp. (Sapote FF, South American FF, West Indian FF, etc.)	1 fly	3 generations	2 flies within a 3 mile (4.8 km) radius during 1 life cycle	**2-5 flies** (based on risk assessment) within a 3 mile (4.8 km) radius during 1 life cycle
Mated female of any genus and species of fruit fly presumed or known to be mated to a wild male; a larva or pupa	1 mated female or immature stage	3 generations	1 mated female or immature stage	**1 mated female or immature stage**

(Source: USDA, 2020e)

USDA recognizes there may be additional opportunities to curtail *Anastrepha* spp. populations in the RGV. During the 2020 coronavirus COVID-19 pandemic, USDA received reports of untended groves where field workers ceased working (Blasizzo, 2020). Untended groves take on the characteristics of abandoned groves over time, where heavy weed growth prevents entry of ground equipment for fruit fly eradication treatments. Currently, there are no program treatments or fruit removal approved for use in abandoned groves, nor do managed groves receive treatments as soon as fruit is harvested. Also, dooryards in the RGV may produce non-citrus host fruit that

could sustain *Anastrepha* populations into the next citrus harvest season. These situations trigger the need for additional measures to reduce or eliminate fruit fly infestations in residual fruit. Increasing public awareness could help reduce *Anastrepha* infestations in these locations if people acted to remove the residual fruit and properly dispose of it.

However, USDA cannot rely solely on public assistance. In areas that receive repetitive treatments with only the insecticide spinosad, there may be development of chemical resistance in surviving fruit fly populations (El-Gendy, 2018; Kakani et al., 2010, Hsu and Feng, 2006). Treatment with malathion using ultra-low volume (ULV) technologies is expected to be effective in areas of high risk requiring fast acting treatments that can be aerially and/or ground released at a lower cost. Also, use of malathion would allow for rotation of treatments to prevent resistance (G. Gracia, personal communication, 2021-02-05; Blasizzo, 2020; Conway and Forrester, 2011). USDA will collect specimens from treatment locations in order to evaluate if pesticide resistance has developed (R. Johnson, personal communication, 2021-02-03). As of February 26, 2021, USDA has no findings of Mexfly resistance to RGV Mexfly Program spinosad treatments (H. Conway, personal communication, 2021-02-26).

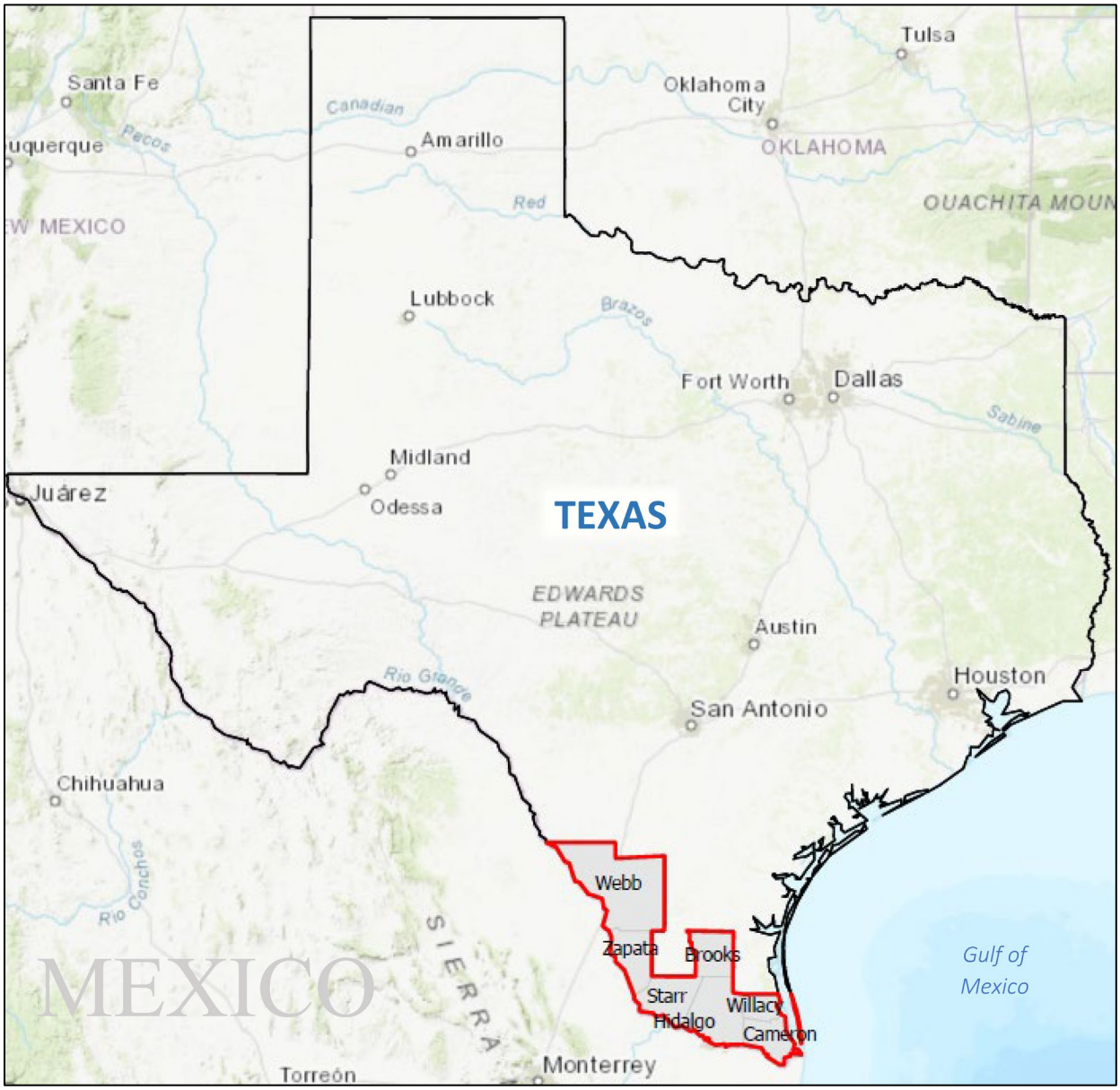
A. Requestor's Goal

The Texas Department of Agriculture ("TDA") seeks to eradicate *Anastrepha* spp. from the State of Texas. The USDA cooperates with the State of Texas in implementing fruit fly eradication programs. Last year's Mexfly eradication program began in January 2020 with the laboratory identification of wild Mexflies found in Cameron County, Texas. To assess potential environmental effects of the proposed federal response, USDA prepared an environmental assessment ("January 2020 EA") and signed a finding of no significant impact (FONSI) on February 5, 2020 (USDA, 2020a).

Subsequent indications of multiple Mexfly populations in the RGV necessitated unusually rapid expansion of program activities, prompting TDA to request USDA add a soil drench option for suitable locations inside Mexfly quarantine boundaries. USDA prepared a supplemental EA ("March 2020 EA") and signed a FONSI for the use of lambda-cyhalothrin ("LC") on March 30, 2020 (USDA, 2020b). The provisions of the January 2020 EA and the March 2020 supplement are incorporated into this EA by reference in their entirety. Ongoing detection of Mexfly in treated program areas, along with new and expanding Mexfly infestations, led TDA to further request program use of aerial and ground-based malathion bait spray applications within the state's Mexfly quarantine boundaries. (See Appendix A for a chronology of RGV Mexfly quarantines during 2020.)

USDA agrees with TDA that the frequency of Mexfly incursion and the rapid spread of Mexfly in south Texas calls for an adjustment in program approach. To facilitate the program's response to future *Anastrepha* incursions USDA and TDA propose to modify the existing cooperative eradication program to target all species of *Anastrepha* ("RGV *Anastrepha* Program"). The modifications described in this document would also increase the number of effective treatment options available for use. The potential program area consists of seven counties: Brooks, Cameron, Hidalgo, Starr, Webb, Willacy and Zapata Counties. Figure 1 shows the locations of these counties within the State of Texas. Three counties in the potential program area—Cameron, Hidalgo, and Willacy—are home to Texas' major citrus-producing region. The proposed modification of the program would continue existing eradication and control measures

in areas with *Anastrepha* outbreaks, and also enable a programmatic focus to target residual *Anastrepha* populations in the seven counties.



(Source: USDA-APHIS-PPD)

Figure 1. Map of Texas with fruit fly program counties outlined.

B. Agency Authority

The USDA's 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)).

After a comprehensive review of existing and potential action alternatives, USDA published an environmental impact statement ("EIS1") in November 2018 for its fruit fly cooperative control programs (USDA, 2018a). That programmatic document addresses technological and scientific advances made in the 17 years since publication of a prior environmental impact statement, and incorporates feedback received during the public comment period. This programmatic environmental assessment ("EA") incorporates by reference the contents of EIS1 in its entirety.

This EA analyzes the environmental consequences of alternatives considered for *Anastrepha* spp. eradication, and analyzes modifications proposed for the existing program.[1] USDA is making this draft available to the public for review and comment. USDA will finalize this EA based on the substantive public comments we receive. USDA will periodically review the program to update the NEPA analysis and supporting documentation as necessary. USDA intends the final EA to replace the January 2020 EA and March 2020 supplemental EA (USDA, 2020a, 2020b).

USDA prepared this document to comply with the provisions of the National Environmental Policy Act of 1969 ("NEPA") (42 U.S.C. §§ 4321 *et seq*.) as prescribed in implementing regulations adopted by the Council on Environmental Quality ("CEQ") (40 CFR parts 1500-1508), USDA's NEPA regulations at 7 CFR part 1b, and USDA's NEPA implementing procedures (7 CFR part 372) for the purpose of evaluating the potential effects of the proposed action on the human environment (40 CFR § 1508.1(m)). According to 40 CFR § 1508.14, the human environment "shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."

USDA's fruit fly chemical risk assessments (USDA, 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 incorporates those documents by reference in their entirety. (Environmental documentation for USDA's fruit fly control programs is available online via the following links: USDA fruit fly control program environmental documentation and USDA GE control applications for plant health.)

USDA and cooperating agencies communicate to interested parties the potential for implementation of a pest emergency program to affect the quality of the human environment (40 CFR §§ 1505.5(e)). The public involvement process for fruit fly emergency programs typically includes notices to industry, public meetings, and door-to-door interviews with growers and residents. Further, USDA coordinates with federal, state, county and Tribal governments and its

[1] Federal agencies may prepare "programmatic" EAs when the actions under a specific program are routine actions done repeatedly and therefore are likely to have similar effects that can be evaluated on a broad scale. Program-wide NEPA compliance allows for greater efficiency in preparing NEPA compliance documentation for individual projects by reducing repetitive analysis (USDOJ, 2019).

international trade partners to provide advance notice to people who may be affected by program activities. Environmental documentation is available upon request. Where a choice of actions is possible, USDA adjusts the local provisions of the cooperative pest control program to mitigate potentially adverse effects to affected entities, and avoid conflict with local law or requirements (40 CFR §§ 1501.3(b)(2)(iii-iv), 1502.15, and 1502.16(a)(2-10)).

The repeated *Anastrepha* spp. incursions and detections of breeding populations demonstrate the need for a programmatic approach to avoid new infestations and reduce multiple expansions of RGV quarantined areas. An official control program would augment USDA's emergency responses and allow ongoing pest control of *Anastrepha* spp. in the RGV. The purpose of this EA is to consider the potential environmental effects that may be associated with implementation of this programmatic approach.

II. Alternatives

Alternatives considered in this EA include:

- no action,
- quarantine and commodity certification,
- continuing the 2020 program without further modification, and
- eradication using an integrated pest management ("IPM") approach that includes additional eradication treatment options ("preferred alternative").

All these alternatives and their component methods were considered in EIS1 (USDA, 2018a) as related to emergency eradication efforts. This EA focuses on the use of these methods in a programmatic way in the seven county region. Under all of these alternatives, trapping and host surveys for *Anastrepha* spp. would continue as a way to measure baseline pest populations. All of the alternatives would involve the use of regulatory and biological controls (sterile insect technique ("SIT")) to facilitate the timely elimination of *Anastrepha* infestations. The alternatives differ in their reliance on the various chemicals used for treatment; however, the standard operating procedures and mitigation measures would remain as described in the prior analyses. The preferred alternative would use malathion bait sprays as an eradication treatment in certain locations; applications would be aerial or ground-based. The alternatives for quarantine and commodity certification and for continuing the 2020 program without further modification would not use malathion bait sprays.

All pesticide use in USDA programs complies with the Federal Insecticide, Fungicide, and Rodenticide Act of 1910 as amended (7 U.S.C. chapter 6). To fulfill obligations under this statute, USDA 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 ("USEPA") 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 *Anastrepha* spp. or restrict expansion of an *Anastrepha* population from an infested area. Federal involvement may

end, for example, if there is a change in federal regulation, loss of program funding, or lack of sufficient resources to eradicate an invasive quarantine pest. 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.

TDA monitors for *Anastrepha* spp. in counties of Texas where there are susceptible host plants and an environment conducive for fruit fly establishment. The state program intensifies surveys in the neighborhood of each confirmed *Anastrepha* detection. TDA initiates delimitation and eradication programs in locations where the types and number of *Anastrepha* detections are not yet sufficient to trigger quarantine regulatory actions. Following Texas 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, 2009).

Under the no action alternative, USDA 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 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.

Intensive quarantine enforcement activities would be necessary for areas with a large infestation. Activities could include safeguarding of local fruit stands, mandatory baggage inspection at airports and seaports, and judicious use of road patrols and regulatory checks. The quarantine actions of this alternative are expected to (a) reduce *Anastrepha* spp. movement beyond treated areas, and (b) reduce human-mediated transport of *Anastrepha* spp. in host-plant materials to areas outside the quarantine. Any *Anastrepha* spp. eradication efforts would be managed by, and wholly under the control of, TDA. Consequently, infestations within the quarantine boundaries would not be directly addressed by federal action. Successful eradication of fruit fly populations by TDA action under this alternative could lead to short-term reductions in the overall area under quarantine, but this would not dimish the trapping and survey activities.

Under this alternative, the interstate movement of regulated commodities would require the issuance of a limited permit contingent on commodity treatment. The grower or shipper would need to comply with specific conditions to minimize the pest risk and prevent the spread of *Anastrepha*. Eradication methods that may be used in this alternative include treatment with (1) regulated chemicals, (2) cold, (3) vapor heat, and (4) irradiation.
Under this alternative, the chemical treatment of regulated commodities may include fumigation with methyl bromide ("MB"), and/or ground-based foliar application of bait spray. The bait spray would be a combination of protein hydrolysate (a food bait) and spinosad (an organic insecticide) or protein hydrolysate bait and malathion (an organophosphate pesticide). Detailed information about these chemicals and their uses is in EIS1 (USDA, 2018a). Cold, vapor heat, and irradiation treatments of certain produce, as a requirement for certification and shipping, would occur in USDA inspected and approved facilities.

C. Continuation of the RGV Mexfly Program

Under this alternative, the current RGV Mexfly Program (in place since the March 2020 EA) would continue unchanged. The IPM strategy for the current RGV Mexfly Program combines quarantine and commodity certification with eradication treatment options that include a ground-based spinosad bait spray, LC soil drenches, host fruit removal, and MB fumigation. These program actions and chemical treatments also would occur under the preferred alternative; they are discussed in section D of this chapter. Malathion bait treatments would not be an option under this alternative.

Until recently, implementation of this IPM strategy successfully eradicated breeding Mexfly populations in the RGV. Recent evidence shows the RGV Mexfly Program is now only partially effective in controlling Mexfly populations. USDA and TDA anticipate that continuing the current program is not likely to succeed in eradicating Mexfly populations from the RGV in the future. Also, incursions of other *Anastrepha* spp. in the RGV, or elsewhere in host production areas of the contiguous United States, could require the use of additional federal resources, possibly diverted from the RGV Mexfly Program.

D. Modification of the RGV Mexfly Program (Preferred Alternative)

The last alternative considered in this EA is a modification of the 2020 RGV Mexfly Program. Under this alternative, USDA would add malathion bait sprays as an eradication treatment option. These treatments would be either aerial or ground-based depending on site-specific conditions. Other components of the program would remain unchanged. USDA considers this alternative as the preferred alternative based on the following criteria: biological effectiveness, acceptable levels of intrusion on the public, cost, and mitigatable effects to the environment (USDA, 2001).

USDA's cooperative Mexfly eradication programs in Texas rely primarily on surveillance, bait sprays, and SIT. Program areas for *Anastrepha* infestations center on *Anastrepha* detection sites. Program surveillance, quarantine, and treatment boundaries are expanded as necessary to include other properties when there are findings of additional adult flies or life stages. Most of the components used in this alternative target all species of *Anastrepha*; however, the SIT component specifically targets Mexfly because it presents the greater threat to U.S. agriculture (USDA, 2019a). USDA's cooperative programs to eradicate exotic fruit fly populations use established procedures and treatments (USDA, 2018a, 2004). The following subsections briefly review information about each of the program components; please see EIS1 and the associated risk assessments for additional information (USDA, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003).

1. Delimitation

To delimit an infestation and monitor posttreatment fly populations, placement of multilure traps occurs in varying densities throughout an *Anastrepha* program area. Servicing of these traps occurs on a regular schedule for a period equal to three *Anastrepha* 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. Killing occurs either by fruit flies 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 area, USDA samples fruit of

potential host plants within a 200-meter radius around each *Anastrepha* detection site for the presence of eggs and larvae.

2. Eradication Treatments

For many species of exotic fruit flies, there are no effective nonchemical control or eradication techniques (USDA, 2001). Consequently, eradication strategies rely on combinations of the following mitigation measures:

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

"No action" might be the only reasonable alternative for sensitive sites in a proposed program area. Eradication efforts would occur only at the perimeter of sensitive sites to prevent expansion of an *Anastrepha* population. USDA considers sites as sensitive when there are biological or regulatory reasons to avoid treating an area. Examples include the unavoidable presence of children, historically vulnerable properties, or threatened or endangered species in the area.

Indication of a breeding population (i.e. detection of an immature *Anastrepha* life stage (pupa or larva), or detection of an adult mated *Anastrepha* female) triggers fruit removal from host plant species growing at or near the detection site. Upon confirmation of a mated female *Anastrepha* detection, program personnel remove all potential host fruit from the property where the mated female was collected. Fruit is also stripped within a 200-meter radius of sites where an immature *Anastrepha* life stage is detected.

Confirmation of a breeding *Anastrepha* population also leads to application of a foliar bait treatment to host trees and plants, either as a targeted, ground-based treatment within a 500-meter radius of each find site, or as an aerial treatment to orchard cultivation of *Anastrepha*-host spp. Under the preferred alternative, the program would have the option to spray spinosad bait or malathion bait for *Anastrepha* eradication. Malathion bait spray could occur in some locations where the RGV Mexfly Program previously applied spinosad or LC treatments. Under the preferred alternative, there may be times when prescribed bait spray treatments rotate between malathion and spinosad. Also, locations where malathion bait cannot be used may receive spinosad bait treatments instead (R. Johnson, personal communication, 2020-November-19).

Aerial malathion and ground-based malathion treatments would be applied to commercial and unmanaged groves. Sites might receive both types of malathion treatments, but not at the same time. Malathion bait spray would be used mainly on citrus species, as a preventive treatment and within 200-500 meters from any *Anastrepha* spp. detection site. USDA would use only organic,

ground-based spinosad bait spray in residential areas, parks, and colonias[2] (R. Johnson, personal communication, 2020-November-19). Using ground or aerial equipment, program personnel would apply an ultra low volume ("ULV") of malathion per acre (prescribed dosages are listed in Table 2). Because this formulation should not be diluted with water, aerial and ground-based malathion treatment would be avoided if rain is expected within 24 hours (Clean Crop, 2004; FMC Corporation, 2020).

- Ground-based treatments targeting the foliage of fruit-bearing host plants and host nursery stock would consist of a prescribed spinosad bait spray or a prescribed malathion bait spray (see Table 2). Ground-based spinosad bait applications would occur at 7- to 10-day intervals for three *Anastrepha* life cycles; ground-based malathion bait applications would occur at 7-14 day intervals for three *Anastrepha* life cycles (H. Conway, personal communication, 2021-02-26; USDA, 2009; USEPA, 2009; MC&F, 2015)
- Aerial application would consist of the prescribed malathion bait spray. Aerial applications in the RGV would depend on prevailing weather conditions and be limited to commerical cultivation within an active *Anastrepha* quarantine (USEPA, 2009; MC&F, 2015). Retreatment could occur at intervals of 7 days, to a maximum of ten applications per season for citrus. Under the Special Local Need ("SLN") label for Texas, malathion may not be applied within 1 day of citrus harvest or within 3 days of guava harvest; reapplication of malathion could occur at 10-14 day intervals (H.Conway, personal communication, 2021-02-26; Clean Crop, 2004; FMC Corporation, 2020).

The RGV *Anastrepha* Program may employ a soil drench to eradicate immature stages of *Anastrepha* spp. that develop in the soil under fruiting host plants. Warrior II with Zeon Technology® contains the active ingredient LC, a synthetic pyrethroid lethal to tephritid species. Targeted soil treatments with Warrior II prevent *Anastrepha* larvae from maturing into adults and breeding. Warrior II is registered by USEPA as a Restricted Use Pesticide due to its toxicity to fish and aquatic organisms. It must be used only by certified applicators, or persons under their direct supervision, and only for those uses covered by the applicator's certification (USDA, 2018d).

[2] The term "colonia," in Spanish means a community or neighborhood. Texas colonias are severely distressed, unincorporated residential communities located within 150 miles of the U.S.-Mexico border (TDA, 2021a).

In 2019, USEPA issued a five-year SLN for in-State use of Warrior II with Zeon Technology® in Texas eradication programs for non-indigenous exotic fruit fly pests of the Tephritidae family (Syngenta, 2019). This SLN label authorizes use of Warrior II as a soil drench anywhere in the state of Texas on the following sites: (a) within the drip line of fruit-bearing host plants that are located within a 400-meter radius from a fruit fly larval or mated female find, and (b) as a regulatory treatment on host nursery stock and to soil around nursery stock to allow nursery stock to move out of the quarantine area (Syngenta, 2019). Warrior II applications would be at a rate of 0.56 fl. oz. of product in 15.5 gallons of water/1000 sq ft (or 0.4 lbs active ingredient per acre). Treatments would occur by or under the supervision of a state or federal employee with a certified pesticide applicator's license. The RGV *Anastrepha* Program would apply Warrior II to the soil within the dripline of Mexfly host plants on residential property and in commercial citrus groves. USDA would not conduct aerial or ground chemical application of nursery stock; we would only operate in commercial citrus (fruit) production areas (R. Johnson, personal communication, 2021-02-03). The Program would not use soil drenches in wilderness or conservation areas (R. Johnson, personal communication, 03/27/2020).

Recommended protection measures are incorporated in the program as needed. Residents whose property will be treated with soil drenches should be notified in writing a minimum of 24 hours prior to treatment. (Treatment may begin immediately in situations where residents grant permission to do so.) Treatment without prior notification may be necessary on a small number of properties, but efforts must be made to contact residents when treatment is warranted. Workers must remove and destroy all fruit from fruit-bearing host plants where soil drench applications occur (Syngenta, 2019). Soil is watered prior to Warrior II applications to ensure adequate penetration of the treatment. Applicators will remain on-site until the treatment is absorbed into the soil (Syngenta, 2019).

Table 2. Suggested bait spray options for the RGV *Anastrepha* Program.

Spinosad + bait ingredient	Malathion + bait ingredient
A. CHEMICAL PRODUCT DESCRIPTIONS	
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; approved uses are 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, it can increase the efficacy of chemical applications and reduce the area of pesticide treatments needed for pest control (Prokopy et al., 1992). Protein hydrolysate (which can be derived from plants or yeast) attracts adult fruit flies, where they receive a lethal dose of the pesticide that is mixed with this food bait.	Malathion is a broad-spectrum pesticide used to control a variety of outdoor insects in both agricultural and residential settings. It is registered in the United States for use on food, feed, and ornamental crops and in mosquito, boll weevil and fruit fly eradication programs. Malathion is also an ingredient in shampoos regulated by the U.S. Food and Drug Administration to control head lice (NPIC, 2009). Specially designed aircraft or ground equipment capable of applying ultra low volumes for insect control use the undiluted formulation of Malathion ULV (USEPA, 1997). Miller Nu-Lure® is a liquid protein bait derived from corn gluten and combined sugars. Like other protein hydrolysates, this bait encourages adult fruit flies to feed on insecticide spray residues (MC&F, 2015).
B. FORMULATION AND MODE OF APPLICATION	
Application of GF-120 NF Naturalyte® is as a targeted, ground-based spray to the foliage of *Anastrepha*-host species. By ground equipment: Dilute 1 part GF-120 NF Naturalyte® to 1.5 parts water. Spray 1-3 oz of solution per tree or plant to a total of 10-20 oz solution per acre (USEPA, 2009). The program will not make aerial applications of spinosad.	Application of a registered malathion insecticide combined with protein hydrolysate bait as (1) a targeted, ground-based spray to the foliage of *Anastrepha*-host species in commercial citrus production areas, and (2) in aerial treatment of commercial cultivation of host plant species within the RGV *Anastrepha* Quarantine boundary. The cooperative program's prescribed malathion applications will contain the addition of Miller Nu-Lure® or an equivalent protein hydrolysate bait. The malathion/bait combination must be applied in one of these two ways: • Using ground or aerial equipment: 2.4 oz Fyfanon® ULV-AG per acre in 9.6 oz protein hydrolysate bait for a total of 12 oz per acre (FMC Corporation, 2020). • Using ground or aerial equipment: 1.2 to 2.3 oz Clean Crop® ULV per acre in 9.7 to 10.8 oz protein hydrolysate bait in undiluted spray to a total of 12 oz per acre (Clean Crop, 2004).

The RGV *Anastrepha* Program would use SIT to prevent and eradicate Mexfly infestations. SIT is not yet available to USDA for managing other *Anastrepha* spp. Periodic releases of sterilized male Mexflies in a defined eradication area disrupt the fly's reproduction cycle and help suppress a wild population. Planned releases over program areas 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 maintains preventive release programs in California, Florida, and Texas, and co-sponsors foreign programs to lower the risk of pest fruit flies entering the United States. These domestic and international programs successfully reduce pest fruit fly populations, stabilizing agricultural trade and protecting U.S. resources (USDA, 2020c).

Establishment of a quarantine boundary will ensure any host material that leaves the program area is free of *Anastrepha* spp. Host material may be treated in enclosed areas or containers with cold, vapor heat, irradiation, or MB fumigation (USDA, 2018a, 2004). Harvested fruit may be moved out of the quarantined area under a temporary certificate to enclosed facilities for packing only after the fruit receives a USDA-approved treatment on the premise. If an *Anastrepha* quarantine spreads to federally protected historic sites, wilderness, or Tribal lands, then program treatments will be modified to meet the needs of those sites.

Before eradication actions begin, program officials will inform the public and potentially effected industry via press releases, meetings, and other forms of communication appropriate for the recipients. USDA notifies its foreign trading partners as fruit fly outbreaks are identified. Notification of residents whose property will be treated, or whose fruit will be removed, must occur at least 48 hours in advance of treatment or fruit removal. Given the potential for effects to commercial production, owners or operators of groves, packing sheds, nurseries, vendors, and industry operations handling host material will be notified of the *Anastrepha* quarantine location and treatment schedule in their area.

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

III. The Affected Environment and Potential Effects to the Environment

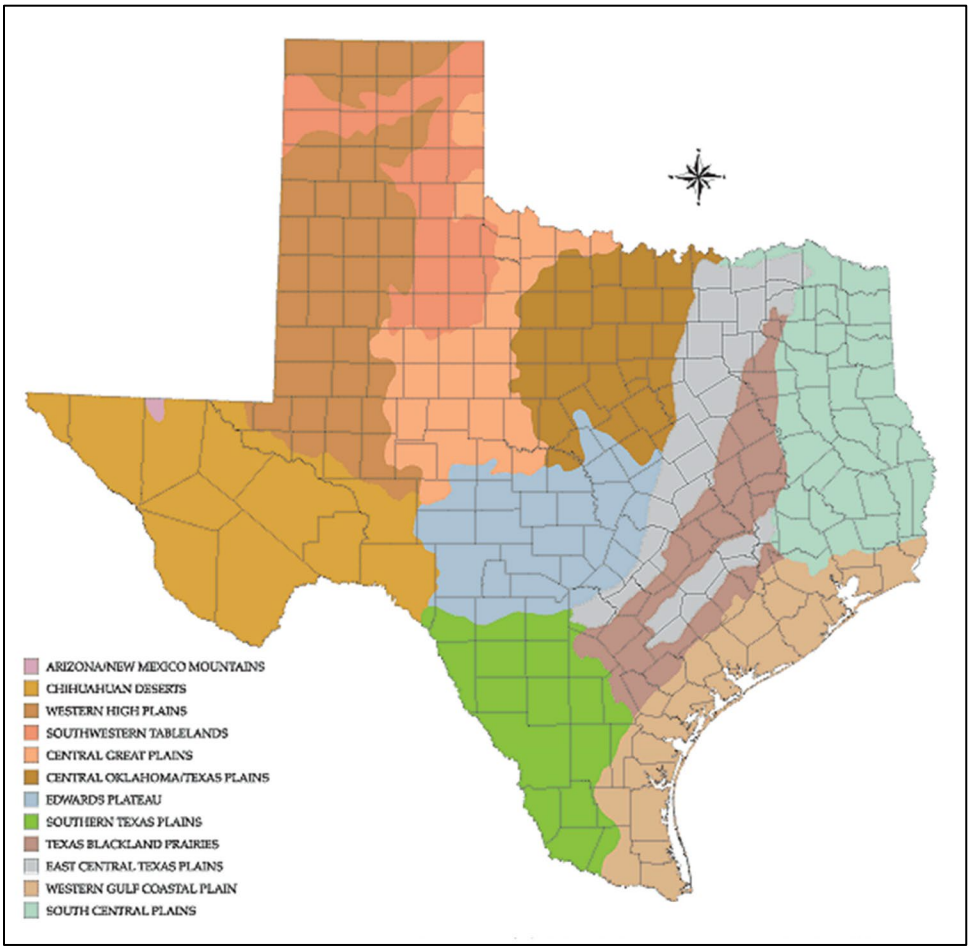
NEPA requires federal agencies to assess the potential effects of their proposed actions on the human environment prior to making decisions. This programmatic EA analyzes the potential environmental consequences of alternatives considered for *Anastrepha* spp. control and eradication in Texas. For the purpose of this analysis, all of Brooks, Cameron, Hidalgo, Starr, Webb, Willacy and Zapata Counties are part of the affected environment. USDA considered the site-specific characteristics of this seven-county potential program area with respect to of the way implementation of the preferred alternative might affect environmental quality, human health, and nontarget species (including threatened and endangered species). Potentially sensitive sites are accommodated through the selection of eradication methods and mitigation measures.

A. Affected Environment

This section briefly discusses pertinent physical and demographic features of the potential program area in the RGV. The background information provides context for specific program areas as they arise.

1. Land and Demographics

RGV *Anastrepha* Program areas could occur in any or all of the seven counties. Brooks, Hidalgo, Starr, Webb, and Zapata Counties are classified as part of the Southern 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, undated). Figure 2 is a map of Texas ecoregions.



(Source: TPWD, 2004)

Figure 2. Major ecoregions in Texas.

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, rainstorms, subsidence, coastal erosion, and relative sea level rise (GOMA, 2018). 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). Periods of drought contribute to wildfire outbreaks in the potential program area (von Preysing, 2019).

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 and grapefruit are the major commercial citrus crops cultivated in the RGV. Other *Anastrepha* hosts produced in the RGV include: apples, arabica coffee, avocado, beans, cacti, chapato, figs, guava, lemon, lime, mandarin, papaya, peanut, peach, pears, pecan, peppers, persimmon, plums, pomegranate, sapotes, squash, tangelo, tangerine, tomato, etc. Potential *Anastrepha*-host species grow throughout the RGV and include varieties of deciduous, tropical, and subtropical fruit-bearing plants (AgriLifeToday, 2016; UFL, 2012; USDA, 2019b, 2018h, 2016a, 2016b). Table 3 lists varieties of South Texas wildlife.

Table 3. Common Wildlife in the RGV.

Fauna (Animals)	
Catfish	*Ictaluridae* spp.
Crested Caracara	*Caracara plancus, Caracara cheriway*
Elf Owl	*Micrathene whitneyi*
Ferruginous Pygmy-Owl	*Glaucidium brasilianum*
Green Jay	*Cyanocorax yncas*
Grooved-Billed Ani	*Crotophaga sulcirostris*
Mexican Burrowing Toad	*Rhinophrynus dorsalis*
Plain Chachalaca	*Ortalis vetula*
Redwing Blackbird	*Agelaius phoeniceus*
Rio Grande Leopard Frog	*Lithobates berlandieri* or *Rana berlandieri*
Road Runner	*Geococcyx* spp.
Sunfish	*Lepomis* spp. and *Enneacanthus* spp.
Swallowtail Butterfly	*Battus* spp., *Eurytides* spp., *Parides photinus, Papilio* spp.
Texas Indigo Snake	*Drymarchon melanurus erebennus*
Texas Longnose Snake	*Rhinocheilus lecontei tessellatus*
Texas Tortoise	*Gopherus berlandieri*
Flora (Vegetation)	
Anaqua	*Ehretia anacua*
Brasil	*Philodendron hederaceum*

Flora (Vegetation)	
Common Cattail	*Typha latifolia*
Common Duckweed	*Lemna minor*
Desert Yaupon	*Schaefferia cuneifolia*
Fiddlewood	*Citharexylum spinosum*
Fresno [Rio Grande ash tree]	*Fraxinus berlandieriana*
Great Lead-tree	*Leucaena pulverulenta*
Honey Mesquite	*Prosopis glandulosa*
Live Oak	*Quercus* spp.
Panic Grass	*Panicum spp.*
Plantain	*Plantago* spp.
Retama	*Parkinsonia aculeata*
Saffron Plum	*Sideroxylon celastrinum*
Spikerush spp.	*Eleocharis* spp.
Silverleaf Sunflower	*Helianthus argophyllus*
Smartweed	*Polygonum* spp.
Southern Live Oak	*Quercus virginiana*
Sugarberry	*Celtis laevigata*
Texas Ebony	*Ebenopsis ebano*
Texas Kidneywood	*Eysenhardtia texana*
Texas Wild Olive	*Cordia boissieri*
Wax Myrtle	*Morella cerifera*

(Sources: TPWD, 2017; VPEC, 2012)

Table 4 summarizes information on human activities in the seven Texas counties, including areas of economic activity, recreation, and the major agricultural products. Many people in the RGV reside in towns and cities, but some reside in colonias. Colonias may lack some basic living necessities, such as potable water and sewer systems, electricity, paved roads, and safe and sanitary housing (TOSS, 2017). Texas records more than 2,294 colonias (Office of the Texas Attorney General, 2020; TOSS, 2017). Multiple colonias occupy land in the potential *Anastrepha* program area.[3]

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

Table 4. Demographic Information for the Seven Counties in the Potential *Anastrepha* Program Area.

County	Reported Population in 2010	2010 Land Area (sq mi)	Economy	Recreation	Agricultural Products
Brooks	7,223	943.4	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

County	Reported Population in 2010	2010 Land Area (sq mi)	Economy	Recreation	Agricultural Products
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)

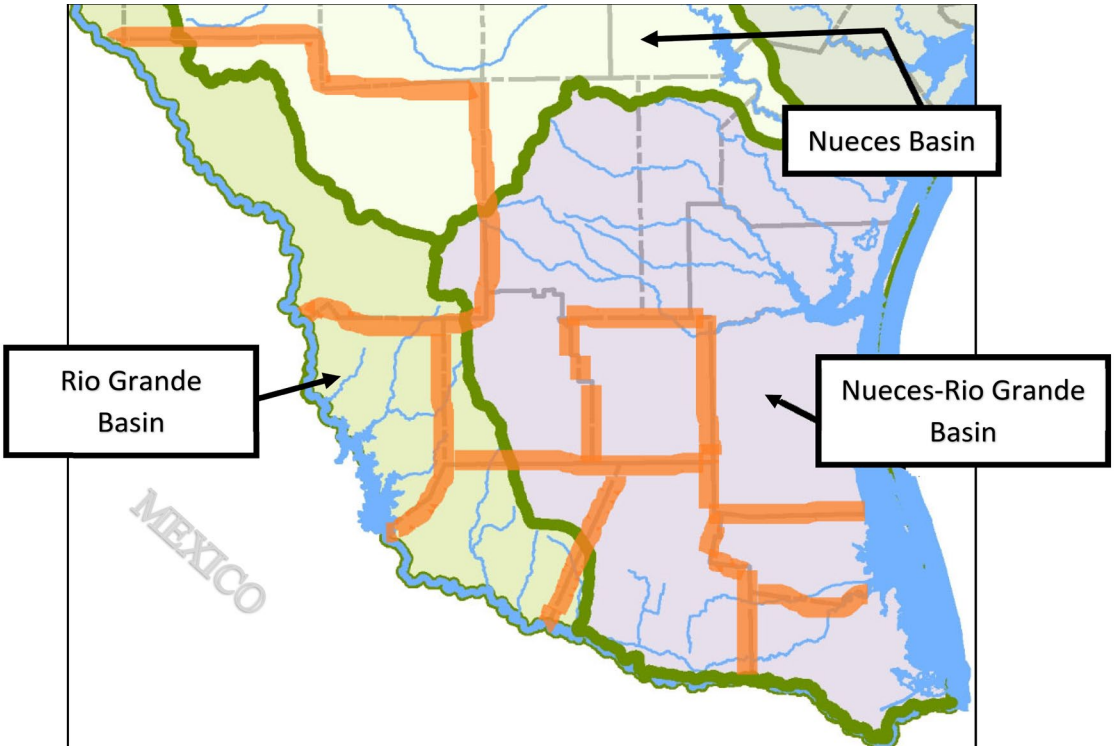
2. Water Resources

Ground water and surface water resources in the seven counties are affected by weather events, such as drought and hurricanes. The climate of Texas is highly variable, and droughts of notable duration and/or intensity may occur in the future. There is a projected decline in natural water resources in the state, and Texas plans to continue water conservation efforts even during non-drought conditions. (TWDB, 2017). Nearly all major Texas cities are vulnerable to flash-flooding or Gulf Coast hurricanes (FEMA, 2019). People in the potential program area rely on ground and surface water for most drinking and irrigation needs. The human population influences ground and surface water availability through water impairment and the ongoing expansion of the residential population (Combs, 2014).

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 the Arroyo Colorado are recognized as impaired (33 U.S.C. § 1313(d); 40 CFR § 130.7). USEPA 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." (USEPA, 2019). 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).

There are three Texas-designated water basins associated with the seven counties. All or part of Brooks, Cameron, Hidalgo, Starr, and Willacy Counties occupy part of the Nueces-Rio Grande Coastal Basin. Figure 3 shows the spatial relationships among the basins and the counties. The Nueces-Rio Grande Coastal Basin northern boundary is the Nueces River Basin; its eastern boundary consists of bays and other outlets to the Gulf of Mexico. To the south and west, the Nueces-Rio Grande Coastal Basin lies adjacent to the Rio Grande Basin (which includes all or parts of Hidalgo, Starr, Webb and Zapata Counties) (TCEQ, 2017).



(Source: TCEQ, 2017)

Figure 3. Major water basins in the RGV. Orange outlines identify the seven Texas counties in the potential program area.

Water stress is growing along both sides of the U.S.-Mexican border, where agriculture accounts for 75 percent of water consumption. The region has been experiencing water shortages for decades and will increasingly experience them as water availability becomes more unpredictable (Felbab-Brown, 2020). By mid-December 2020, water available for irrigation in Mexico was approximately 271% below the level registered in 2019 (Demaree-Saddler, 2021). Across south Texas, the spread of invasive aquatic weeds, reduced or polluted ground and surface water resources, increased consumer demand, and international treaty issues threaten long-term water

availability (LRGVDC, 2020). As for the seven counties of the potential *Anastrepha* program area,

- Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties draw most of their water from the Rio Grande, via the Amistad-Falcon Reservoir system shared by the United States and Mexico. The waters of the Middle and Lower Rio Grande are managed by Texas' Rio Grande Watermaster and the International Boundary Waters Commission (IBWC). Long-standing water overuse and depletion in the Rio Grande Basin remain despite the resolution of an IBWC treaty dispute in October 2020 (Felbab-Brown, 2020).
- In contrast, Brooks County receives ground water supplies from the Gulf Coast Aquifer; consequently, water shortages are not reasonably forseeable in this county (TWDB, 2016a, 2016b).

B. Potential Effects Associated with the No Action Alternative

Lack of federal action would place the burden of fruit fly eradication on the State of Texas and/or the agricultural industry. Unregulated applications of pesticide to protect host plants would risk faster development of pesticide resistance in *Anastrepha* populations. Uncoordinated or insufficient eradication efforts could lead to the establishment of *Anastrepha* spp. within the contiguous United States. *Anastrepha* populations would continue to grow until they ran out of hosts or got into equilibrium.

If eradication attempts are unsuccessful, USDA expects substantial economic effects to U.S. growers, processors, shippers, and consumers. *Anastrepha* feeding damages fruit and reduces harvestable yield, which can result in commodity scarcity, higher costs for production and purchase, agricultural land abandonment, and the temporary or permanent loss of domestic and foreign markets for U.S. grown commodities.

C. Potential Effects Associated with the Quarantine and Commodity Certification Alternative

This alternative would reduce the human-mediated movement of *Anastrepha* spp. by preventing the transportation of host plant materials beyond the quarantine boundary. Under this alternative, the USDA expects resident *Anastrepha* populations would persist within the quarantine boundary. An *Anastrepha* infestation that persists could threaten host species survival in the RGV and increase *Anastrepha* resistance to program pesticides. Any failure in quarantine actions could lead to Mexfly establishment outside the program area, via natural spread or human-assisted transport, and cause quarantine boundaries to expand.

USDA expects there would be adverse effects to U.S. agriculture and the economy from an ongoing fruit fly infestation within the seven counties in Texas. Crop loss due to uncontrolled fruit fly populations is likely to lead to commodity scarcity and higher costs for U.S. consumers. A persistent *Anastrepha* population that is not under an official control program could jeopardize U.S. trade relations. Commodity certification requirements would create a necessary additional layer of 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. Implementation of this alternative is likely to increase marketing and transportation costs that would be passed to consumers.

D. Potential Effects Associated with Continuing the Current RGV Fruit Fly Program

Based on the prescribed operations of the current RGV fruit fly program, its continuation is highly unlikely to effect soil and water features in the affected environment. Unfortunately, lasting fruit fly eradication did not occur in the RGV during 2020 due to climactic, SIT competitiveness, and possible pesticide resistance factors that facilitated fruit fly entry into the country and population establishment (R. Johnson, personal comment, 2021-02-03).

Continuing the current RGV Mexfly program without the option for malathion bait treatment may:

- Lengthen the time needed to control concurrent *Anastrepha* spp. outbreaks in the RGV.
- Require higher volumes of spinosad and MB treatment than needed to control more isolated *Anastrepha* outbreaks.
- Increase the time necessary for commodities to reach their intended markets which increases transportation costs.

An established fruit fly population may lead to substantial economic losses in the future for U.S. growers. 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.

E. Potential Effects Associated with the Preferred Alternative

This section considers potential effects to the human environment that are associated with implementation of the preferred alternative. Based on USDA's review of the context and intensity of the existing, ongoing, and potential future program treatments, there will be no significant effects to the human environment resulting from implementation of the preferred alternative. Section E summarizes our findings on the potential effects associated with the eradication measures in the preferred alternative.

The preferred alternative, eradication using an IPM approach, may employ any or a combination of the following measures:

- no action
- regulatory treatment and movement control of host materials and regulated articles
- host survey for evidence of breeding *Anastrepha* spp.
- host removal
- eradication chemical applications
- mass trapping using food bait as an attractant
- SIT targeting Mexfly

At sensitive sites where no federal action is taken, a lack of treatment could lead to expansion of an *Anastrepha* incursion and/or pest establishment. Eradication of *Anastrepha* spp. from sensitive sites would be difficult, requiring ongoing commitments of personnel and resources to contain the infestation within site boundaries. Failure to contain these pests would likely lead to

the *Anastrepha* population's expansion into previously uninfested areas of Texas and the surrounding region.

Fruit fly program risk assessments included a thorough analysis of trap application technology and use (USDA, 2018c, 2018f, 2018g). USEPA approval of new materials and chemical formulations precedes USDA revisions of trap application information. USDA review of the treatment protocols found 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, 2018c, 2018e, 2018f, 2018g, 2014, 2003; Reilly, 2003).

USDA expects the types of pheromone lures, food bait, and sticky panels approved for trapping *Anastrepha* spp. to pose little threat to nontarget plants and animals when used as directed. USDA anticipates the small number of nontarget arthropods that may be caught in program traps would have minimal, transitory effects on the overall populations of their species. Program traps are placed out of the reach of the public so individuals living in the treatment areas are not likely to be exposed to chemical compounds used in the traps. USDA labels the traps with the appropriate warning for the level of chemical risk, to inform anyone who reads the label. Trap preparation and placement are associated with minimal exposure risk to applicators, based on the required use of personal protective equipment and adherence to proper application procedures. There are negligible effects of trap chemical compounds to air quality, water quality, and soil quality based on the small quantities used in this program. Depending on the frequency of trap placement and monitoring, there could be slight effects to the soil from vehicular and foot traffic.

The SIT, traps, and chemical treatments used in USDA fruit fly programs pose minimal risk to the human environment, as determined in EIS1 (USDA, 2018a) and associated risk assessments (USDA, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003). The use of malathion as proposed in the preferred alternative would likely result in a shorter period of quarantine and commodity certification requirements, reducing potentially adverse effects to agriculture and trade-related industries.

1. Effects Associated with Chemical Treatments

The primary effects associated with chemical treatments are to the air and water quality, so program activities seek to minimize the potential for environmental contamination. Program use of pesticides is a major concern for the public based on the controlled release of chemicals into the environment even though program pesticide use is limited. The environmental fate of chemicals depends on the combination of the chemical's properties with the prevailing environmental characteristics (such as temperature, pH, dilution, etc.). The environmental fates of LC, malathion, MB, and spinosad are outlined below in subsection (a), Environmental fate of active ingredients. (Refer to EIS1 (USDA, 2018a) and the supporting risk assessments (USDA, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) for a more detailed consideration of the the program pesticides' environmental fates.)

a) Environmental Fate

We compared the active ingredients in the alternatives with respect to their potential to affect the human environment, and found the combined risk for all the pesticides in the preferred alternative is minimal. A well-coordinated eradication program using IPM technologies would result in the

overall least use of pesticides. Taking no action, or limiting program actions to quarantine and commodity certification, or continuing the RGV Mexfly Program as-is, would likely result in an expanding infestations. This would lead to more widespread use of pesticides by homeowners and commercial growers, with correspondingly greater potential for adverse effects to human health and ecosystems. Implementation of the preferred alternative is likely to eliminate *Anastrepha* spp. more effectively than the other alternatives, and consequently, the program would make fewer pesticide applications over time.

Urban and agricultural runoff may flow directly into local waters, while 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 methods of spray application to host plants are 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 regulatory compliance staff associated with the program. Personnel must use personal protective equipment and best practices as they work. Waterbody contact is not anticipated due to the targeted application methods, the use of distance buffers, and the environmental fate of the pesticides USDA approves for use by the RGV *Anastrepha* Program.

The environmental fate of active ingredients reflects each pesticide's chemical properties combined with the characteristics of each proposed program area. For this reason, potentially sensitive areas are accommodated, as necessary, through the selection of control methods and use of specific mitigation measures. USDA fruit fly program operations allow unique sites to depart from standard operating procedures while providing effective pest control. For example, the approaches used to mitigate for adverse effects to waterbodies are described in EIS1 (USDA, 2018a).

The remainder of this section considers the active ingredients in the prescribed pesticides. It is intended to summarize and update information USDA provided in various NEPA analyses and chemical risk assessments (i.e. USDA, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2008, 2007, 2003, 2002, 2001), but should not be considered encyclopedic. Please consult USEPA pesticide registration documentation for additional information, as needed.

- **LC** is not mobile and tends to strongly adsorb to organic matter in soil. LC in soil is not easily taken up by the roots of vascular plants. Aquatic macrophytes can take up LC in water via their roots. Through translocation, LC uptake partitions into upper plant biomass. The uptake rates of various macrophytes are species- and pesticide-specific. LC has a low potential to leach as dissolved residues in percolating water; in the water column, LC tends to adsorb to suspended particulate materials such as clay particles and organic matter, transport with the suspended particulates through aquatic systems, and settle in the sediments. Volatilization of LC from soil and water surfaces occurs slowly; volatilization from foliage occurs more rapidly. LC is moderately persistent in the environment. When exposed to sunlight, LC in water and soil photodegrades and has half-lives of 24.5 days and 53.7 days, respectively. In water, LC is stable and no hydrolysis occurs at a pH below 8; it has been reported to hydrolyze in water at a pH of 9 with a half-life of approximately 9 days or 13 days. LC biodegrades at moderate rates

(half-lives ranging from 12 to 72 days) under both aerobic and anaerobic soil metabolism conditions. LC aquatic biodegradation is slow with metabolism half-lives ranging from 113-142 days. LC partitions to lipids suggesting a high potential to bioconcentrate due to its high octanol/water partition coefficient and low water solubility. The reported bioconcentration factor in fish is 2,240 (USDA, 2018d).

- **Malathion** from ground or aerial applications can be transported into the atmosphere through drift and volatilization as well as by fog and wind. Malathion has limited photolysis potential in the environment because the absorbed electro-magnetic spectrum of malathion is not within the range of natural sunlight. Aerobic metabolism appears to be the primary route of degradation in surface soils. The aerobic half-lives of malathion in soil range from several hours to approximately 11 days. Malathion does not adsorb strongly to soils and is soluble in water. As a result, malathion can be highly mobile and migrate to surface water via runoff and groundwater via leaching. However, the short persistence of malathion in soil reduces the likelihood of groundwater leaching. Malathion is hydrolytically stable under acidic aqueous conditions (a half-life of 107 days at pH 5); it becomes unstable under alkaline conditions and hydrolyzes rapidly (half-lives of 6.21 days and 12 hours in the pH of 7 and 9 solutions, respectively). Malathion can break down to degradation products such as malaoxon, malathion alpha and beta monoacid, diethyl fumarate, diethyl thiomalate, and O,O-dimethylphosphorodithioic acid through hydrolysis. Among these degradates, only malaoxon is sufficiently toxic in the environment. Malathion in soil generally degrades rapidly to compounds of lower toxicity. However, some studies indicate that malathion degrades to malaoxon under dry and microbially inactive environmental conditions such as on dry soil. The half-life values for malaoxon in soil range from 3–7 days. USEPA reports an aerobic soil half-life of 21 days for malaoxon that was used to model environmental concentrations in water. Malathion in plants metabolizes through oxidation to form malaoxon and de-esterification to form mono- and dicarboxylic acids and succinate derivatives. Malathion on plant surfaces has a half-life ranging from <0.3 to 8.7 days (USDA, 2018e).

- **MB** fumigation will not be used as an eradication treatment, but may be employed as a commodity 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.
- **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, 2014; Kollman, 2003).

b) Additional chemical considerations

Attractants in USDA fruit fly program treatments (i.e., fruit fly pheromone lures and food baits) minimally effect air, water, and land resources, based on USEPA-approved use patterns and the rapid degradation of the ingredients. In general, the environmental fate associated with the active ingredient as described in subsection (a) forms the basis for any effects from the attractant. Nevertheless, care should be taken to keep animals away from spray solutions containing food bait and toxic pesticides since animals may be attracted to the spray solution to drink it (MC&F, 2015). Nu-Lure® bait is water soluble; applications containing it should not be made if rain is expected within 24 hours. Miller NU FILM®17 (sticker-extender) can reduce rain loss of the bait and insecticide and slow degradation of insecticides in spray residues (MC&F, 2015). The pesticide labels and registered uses address all of these concerns to minimize the effects to the environment.

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 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). Apart from a boll weevil eradication program which uses malathion as an eradication treatment, Texas pest programs in the seven counties use insecticides with different mechanisms of action that target different species and are applied at different times. Overall, USDA expects limited potential for pesticide interaction or for multiple exposures.

- The active boll weevil quarantine in ten counties of southern Texas includes all seven counties of the potential *Anastrepha* program area (TBWEF, 2020). Most insecticide applications are performed by aerial applicators, but in areas where this is not possible or near sensitive areas, such as schools, hospitals, nursing homes, housing developments or ecologically sensitive areas, ground rigs are used to apply the insecticide. USDA and TDA will coordinate malathion treatments by the RGV *Anastrepha* Program to prevent overlap with Texas Boll Weevil Eradication Program treatments.

Current and future in-State *Anastrepha* programs could merge into one larger program area, depending on fruit fly dissemination and weather influences. The combination of *Anastrepha* eradication programs with trapping and eradication actions across Texas counties, leads the USDA to expect beneficial effects from the reduction in Mexfly populations causing damage to fruit, and from overall reductions in chemical treatments.

Whether or not there is an active federal quarantine for fruit flies in Texas, trapping and surveys for *Anastrepha* spp. will continue under the Texas State fruit fly detection and monitoring program. The state-sponsored releases of sterile Mexflies would continue in high-risk regions as

a preventive measure against Mexfly incursion. USDA expects that these actions must be done in conjunction with the RGV *Anastrepha* Program in order to effectively eliminate, control, and suppress fruit flies in the area.

USDA coordinates its cooperative *Anastrepha* spp. programs so that eradication treatment cores do not overlap. USDA monitors use of pesticides by cooperating programs, and where necessary, adjusts pesticide applications to minimize effects to the environment. For example, control of infestations of West Indian fruit fly and Mexfly relied on the same chemical treatments in 2014. Due to the passage of time and the prevailing weather conditions in southern Texas so far in 2021, chemical residues from previous Mexfly programs are degraded, so it is highly unlikely that there would be additive or synergistic chemical effects with the proposed program's chemical applications. Pesticide use by State programs is not expected to result in significant additive or synergistic effects due to differences in pesticide mechanisms of toxic action, targets for pesticide application, affected species and resources, and application timing.

- Other pest quarantines in the potential *Anastrepha* program area that may apply chemicals (including, but not limited to, malathion or spinosad formulations and MB fumigation) target the Asian citrus psyllid and red imported fire ant (TDA, 2021b). The psyllid quarantine encompasses the entire State of Texas and includes chemical treatments in the citrus-growing zone of Texas (Brooks, Cameron, Hidalgo, Jim Hogg, Kenedy, Starr, Willacy, and Zapata Counties). The red imported fire ant quarantine includes all counties in the potential *Anastrepha* program area except Zapata County. USDA takes care when multiple pest species in the same area are targeted for treatment using the same chemical. To avoid additive chemical effects, the USDA adjusts *Anastrepha* program treatment schedules in locations where another State or USDA program may schedule similar treatments.

LC is a broad-spectrum pyrethroid insecticide for controlling most major aphid, caterpillar, and beetle pests on crops as well as public health pests such as mosquitoes and cockroaches in non-agricultural areas. The registered crops include fruits, vegetables, and row and field crops (e.g. alfalfa, corn, cotton, rice, soybean, and winter wheat) (USDA, 2018d). Pyrethroids are synthetic mimics of naturally occurring pesticides known as pyrethrins.

Malathion is a broad spectrum organophosphate insecticide which acts as an acetylcholinesterase inhibitor. It is generally prepared by combining O,O-dimethyl phosphorodithioate with diethyl maleate. Malathion is used to control a variety of outdoor insects in both agricultural and residential settings. It is registered for use on food, feed, and ornamental crops and is also used to suppress boll weevil, grasshopper/Mormon cricket, mosquito, and various species of fruit fly. Malathion is also an ingredient in shampoos regulated by the United States Food and Drug Administration to control head lice (NPIC, 2009). The Texas Boll Weevil Eradication Program treats cotton fields that meet treatment criteria with Malathion ULV at a rate of 12 ounces per acre. Spraying begins when cotton reaches pinhead square stage, decreases during the middle of the cotton season to preserve beneficial insects, and may continue until harvest or a killing freeze. (TBWEF, 2020).

MB is a regulatory treatment used to allow movement of Mexfly-host materials outside the program quarantine. MB is a broad spectrum fumigant used to control insects, mites, rodents, plant pathogens, nematodes, termites, and weeds. MB is used as a soil fumigant, as a post-harvest treatment of commodities, and for structural fumigation (USEPA, 2008). Additional uses were removed because MB is an odorless, colorless gas that depletes the ozone layer in Earth's atmosphere, allowing increased ultraviolet radiation to reach the planet's surface. USDA determined that use of MB as a fruit fly quarantine treatment poses negligible potential for additive or synergistic effects to the environment (USDA, 2002; 2007). Currently, there is limited use of MB as a pesticide for certain agriculture, quarantine and pre-shipment purposes.

Spinosad is a combination of spinosyns A and D derived from the fermentation of soil micro-organisms that is used as an insecticide. As a neurotoxin, it works by disrupting nicotinic acetylcholine receptors (USEPA, 2016). It has other labeled food and non-food uses including the control of fire ants, beetles, caterpillars, termites, and thrips (USDA, 2014; Merchant, 2004). Implementation of a governmental Mexfly eradication program could lead to an increase in spinosad use, and the possible overlap of USDA and non-USDA program treatments.

USDA does not know the types or amounts of pesticide use by private entities in the RGV *Anastrepha* Program area. Despite this, the USDA does not expect there to be significant additive or synergistic effects as a consequence of implementing the preferred alternative or its component treatment measures based on the very limited amount of pesticides used during this program. Under the preferred alternative, program pesticide applications are designed to avoid overlapping treatment cores, and to prevent nontarget exposure until pesticide residues degrade. Therefore USDA did not identify any reasonably foreseeable future actions that could result in incremental increases in environmental effects.

2. Human Health

The principal concerns for human health are related to potential program use of chemical pesticides. Factors that affect the human health risk include pesticide toxicity and the potential for human exposure. These factors are influenced by the use pattern and the environmental fate for each particular pesticide. 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, 2018a) and the human health sections of the supporting risk assessments (USDA, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2014, 2003) for more detailed information relative to human health risk.)

Pesticide toxicity varies with the mode of action. LC interferes with the normal function of nerve cells. Accidental exposure to LC may produce symptoms associated with dermal, respiratory, neurological, gastrointestinal, and ocular systems. USEPA concluded that there is no evidence that LC induces any endocrine disruption, and classifies LC as moderately toxic but not likely to be carcinogenic to humans (USDA, 2018d). Pica behavior is reported in 10 to 32 percent of children ages 1 to 6; the risks associated with residential children accidentally being exposed to treated soil through pica behaviors are low, because children of this age and with this disorder tend to be under adult supervision (USDA, 2018d).

USDA determined that the risk to human health from program uses of malathion is minimal, based on the low probability of exposure to people and the environment by adherence to label requirements, the use of personal protective equipment, and the proposed use pattern.

Spinosad has low acute toxicity for oral, dermal, and inhalation routes of exposures. It is not an eye or skin irritant. USEPA 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 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 USEPA label instructions (USDA, 2014, 2003). Spinosad applications restricted to target surfaces and made in accordance with USEPA label instructions have incrementally negligible effects to human health and the environment. After pesticide application, the potential for the public's exposure is low because spinosad does not persist in the environment (its half-life is 2.0 to 11.7 days on plant surfaces).

Human exposure to high concentrations of MB can cause central nervous system and respiratory system failures and can harm the lungs, eyes, and skin. Should treatment by MB fumigation be indicated, adherence to USEPA label restrictions and application in enclosed areas or containers will protect applicators and the public from risk of exposure to the fumigant (USDA, 2007, 2002). MB chamber fumigations are performed on picked fruit at the packing sheds and are never conducted in fields where malathion and/or spinosad treatments take place (G. Gracia, personal communication, 2021-02-05).

Exposure to program pesticides also varies with the use pattern. Of the 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. Workers who mix, load, and apply pesticides, and members of the public who live in or visit an *Anastrepha* spp. eradication area, are the potentially exposed human populations.

Accidental exposure is the most likely route of exposure to program workers during pesticide mixing, loading, and spraying. The risk of accidental exposure is minimal because only certified applicators working with state and federal agencies or persons under their guidance, work with chemical treatments in the RGV *Anastrepha* Program. Exposure of program workers is not expected based on the proper use of personal protective equipment and engineering controls.

Pesticide exposure by the public is unlikely based on program adherence to pesticide label requirements and mitigations. USDA does not expect adverse health risks to the public because there is a notification process that occurs in advance of the treatment, ground-treatments are highly localized, aerial treatments are restricted to commercial cultivation, and the program maintains restricted entry and post-harvest intervals. Public notification includes sharing information concerning program control actions via press releases and media announcements to the public. Depending on the treatment area, 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. Notices will be left with homeowners after the treatment that detail any precautions they should take and identify any intervals of time that should elapse before

harvesting fruit on the property. The risks to the public associated with dietary consumption of fruit from treated plants are low, based on the program's removal of fruit in treated areas and required notification of the public.

In addition, USDA does not expect adverse health risks to the public because ground-treatments are highly localized, aerial treatments are restricted to commercial cultivation, and the program maintains restricted entry and post-harvest intervals. Site inspections ensure chemical treatments are not likely to affect humans and ecosystems. Trap placement and chemical applications may be rescheduled if strong winds or rainfall is forecast for the program area. Applications also may be rescheduled when there are forecasts for strong winds or rainfall in nearby areas. These procedures reduce the potential for pesticide movement in water and air to nontarget locations. The destruction or relocation of traps and treatments due to weather events is unlikely to adversely effect the human environment, because the amount of pesticide is diluted during the storm's water and air movement. The program establishes no-spray buffer areas to reduce the potential for pesticide drift and runoff. For these reasons, program operations are highly unlikely to effect soil and water features in the affected environment.

USDA 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 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.

3. 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 potential 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 be minimal to no ground disturbance. Any visual, atmospheric, or auditory effects during application of program chemicals will be limited in duration, intensity, and area. USDA's proposed program activities will not alter, change (restore or rehabilitate), modify, relocate, abandon, or destroy any historic buildings, edifices, or nearby infrastructure, therefore, implementing the preferred alternative will not directly or indirectly alter the characteristics of a historic place that qualify it for inclusion on the National Register.

The State Historic Preservation Officer, Executive Director of the Texas Historical Commission ("SHPO"), concurred with our finding that historic places are not affected by the proposed fruit fly program activities in the Rio Grande Valley (THC, 2020). If we discover historic properties or there are unanticipated effects on historic properties, work shall cease in the immediate area. USDA considers all federally listed historic properties within each county as 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, 31 in Cameron County, 22 in Hidalgo County, nine in Starr County, eight in Webb County, two in Willacy County, and four in Zapata County (THC, 2021). This is five fewer sites than in prior consultations which reflects that some sites choose not to renew their status or otherwise become delisted. The Texas Historic Commission Atlas also lists current and historic cemeteries (THC, 2021). USDA 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 (e.g., courthouses, schools, historic districts, and period dwellings) that may have host plants in the surrounding landscaping (THC, 2021).

In general, USDA's fruit fly eradication programs are compatible with the preservation of historic sites because USDA discreetly integrates control activities into the site; the proposed program activities will not disturb the ground, and the treatments do not affect human-made structures. USDA restricts program treatments and activities to an as needed basis and can modify normal program activities at historically significant locations to reduce pesticide use. If USDA discovers any archaeological resources, it will notify the appropriate individuals.

Federal agencies identify and address the disproportionately high and adverse impacts to human health or environmental effects, as described in Executive Order ("EO") 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" and EO 13985, "On Advancing Racial Equity and Support for Underserved Communities Through the Federal Government." To ensure equity, USDA engages local people in collaborative decisions on trap placement whenever possible. USDA considered the potential environmental effects of the alternatives on Native American Tribes and underserved communities as summarized below.

Under all the alternatives, humans will vary in the extent of their exposure to USDA program activities based on how likely they are to be near treatment areas. Residents include adults and children living in colonias. Exposure to fruit fly program activities is unlikely for most residents during their normal activities because treatments do not occur when people are nearby. 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, 2018a). There is minimal exposure to program chemicals for USDA and cooperating Texas employees during their work duties because of the required use of personal protective equipment (USDA, 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 (TOSS, 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 with only about two-thirds having graduated high school, who 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 nearly 20 percent lower than the state (USCB, 2021).

Table 5. Select Demographics in the Potential Program Area.

Location	Percent language other than English at home[1]	Percent high school graduate or higher[1]	Percent below poverty level[2]
State of Texas	35.5	83.7	13.6
Brooks County	61.8	68.8	29.6
Cameron County	71.4	67.9	25.5
Hidalgo County	83.4	65.7	26.9
Starr County	95.2	53.3	32.5
Webb County	89.9	67.6	20.9
Willacy County	63.5	65.7	30.5
Zapata County	89.3	61.9	30.1
County Averages	554.5/7 = 79.2	450.9/7 = 64.4	196/7 = 28.0

[1] Based on U.S. Census Bureau population estimates, July 1, 2019. or 2015-2019 estimates for other demographic categories, last accessed January 22, 2021. (Source: USCB, 2021)
[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)

All of the potential *Anastrepha* program area except for Brooks County falls within Region 11, one of thirteen service regions designated by the Texas Department of Housing and Community Affairs (TDHCA, 2021). Information gathered about the population of Region 11 in 2019 indicated that 91.8 percent identifies as White and 91.0 percent identifies as Hispanic or Latino: these are the highest reported figures for these categories 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).

To meet the needs of these underserved communities, USDA will provide advance notice of program activities and potential exposure hazards in Spanish 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 station 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, 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 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 invites all stakeholders, including colonia ombudspersons and residents of colonias, to any public meetings. If possible, within budgetary constraints, USDA may provide a Spanish translation of the EA and FONSI to program workers and Texas officials 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 stations 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.

Despite COVID-related reductions in the use of school properties, the program will avoid applying baits to the more than 300 elementary schools in the potential program area (TSG, 2019) because children remain likely to play in the outside areas. When pesticide applications are essential, USDA would use either a bait station 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 or underserved communities because (1) people are unlikely to be present when USDA applies treatments or maintains bait stations, 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 program representatives discussed fruit fly eradication efforts (among other matters) 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 contacts with the Tonkawa Tribe of Oklahoma indicated their interests extend only to the disposition of artifacts that may be inadvertently uncovered (USDA, 2013b).

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

A lack of federal action could result in adverse economic and health effects 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 reasonably foreseeable effects may occur to a lesser extent under the quarantine and commodity certification alternative. USDA does not anticipate these types of adverse effects as a result of carrying out the preferred alternative's surveillance activities, trapping, SIT, and the program chemical applications.

4. Nontarget Species

Potential environmental effects of the no action alternative, or the quarantine/commodity certification alternative, on nontarget species could include loss of animal and plant life and habitat from unregulated pesticide use by the public, or from *Anastrepha* spp. host damage. Under the current Mexfly program in Texas, the principal concerns for nontarget species, including threatened and endangered species, relate to potential harm from the use of insecticides, including spinosad and LC. Potential effects associated with program applications of spinosad and LC were analyzed in previous EAs (i.e., USDA, 2020a; 2020b) and their associated risk assessments (USDA, 2014; 2018d). These documents are incorporated by reference in their entirety. USDA found that use of these insecticides has low potential for adverse effects to non-target species. In addition, program use of SIT is not expected to adversely effect nontarget species, and MB fumigation methods protect nontarget species by preventing exposure to this pesticide (USDA, 2007, 2002). When used in accordance with label instructions, the types of pheromone lures, food bait, and sticky panels approved for trapping *Anastrepha* spp. pose little threat to nontarget plants and animals. The small number of nontarget arthropods that may be caught in program traps would have a minimal, transitory effect on the overall population of their species.

Under the preferred alternative, ground and aerial applications of malathion will be treatment options for the RGV *Anastrepha* Program. Paralleling human health risk, the risk to nontarget species is related to malathion's fate in the environment, and its toxicity and exposure to nontarget species. Potential effects to nontarget species from malathion applications were analyzed in EIS1 (USDA, 2018a) and its associated malathion risk assessment (USDA, 2018e), and the analysis from those documents is summarized below. (Refer to the nontarget sections of these documents and associated references for additional consideration of the potential effects of malathion to nontarget species.)

Terrestrial Species

Potential effects to terrestrial species will be reduced by the use of a large droplet size that is consistent with bait applications. Malathion is slightly to moderately toxic to mammals based on data for mammalian effects related to human health. Malathion is also slightly to moderately toxic to birds. Malathion is non-systemic in plants. There is limited data on the degradation of malathion in plants, but it occurs by hydrolysis. The half-life of malathion on plant surfaces ranges from <0.3 to 8.7 days.

Malathion is a broad spectrum insecticide and non-target insects are likely to be adversely affected if sprayed during premise treatments. Malathion is highly toxic to honey bees, alkali and alfalfa leafcutter bees. Plant residue toxicity studies using the honey bee suggest there is greater malathion toxicity during direct contact in comparison to contact with residues on plants. Malathion treatment is likely to temporarily depress the population numbers of sensitive terrestrial invertebrates within a treated area. The size of the treatment area and number of treatments will influence the ability of effected invertebrate populations to recover.

Aerial treatments will only occur on actively managed commercial premises. Any effects to terrestrial invertebrates would mostly be limited to these areas because malathion treatments are made using a large droplet size with a bait to attract the target fruit fly species. The larger-sized droplet will minimize off-site transport, and reduce the risk to terrestrial invertebrates that are not attracted to the bait. The use of ground applications, when feasible, will further reduce the potential for exposure and risk to any off-site terrestrial invertebrates.

Indirect effects could also occur to local populations of vertebrates that depend on invertebrate prey as food items. Field studies show that mammals, birds, reptiles, and terrestrial amphibians are unlikely to be affected by direct toxicity, but some species dependent upon insects for food (insectivore) or pollination of food plants could be stressed by environmental conditions after malathion applications. Insectivorous vertebrates with small home ranges within commercial premises would be at greatest risk from the loss of invertebrate prey food items. Large scale treatments are not anticipated based on use patterns for malathion over the last 20 years.

Aquatic Species

Acute toxicity to fish and amphibians is variable. Amphibian toxicity is based on the sensitivity of different species and time of exposure. The acute toxicity of malathion varies from moderately toxic to some species of fish to very highly toxic to other species. Studies demonstrate malathion can bioaccumulate in fish tissues. However, malathion is metabolized by aquatic organisms making biomagnification in the food chain unlikely.

Malathion is moderately to very highly toxic to most aquatic invertebrates on an acute basis, depending on the sensitivity of the species. Amphipods and cladocerans are the most sensitive groups of aquatic invertebrates.

The metabolite, malaoxon, can form in aquatic systems and is approximately 1.5 to 6 times more toxic to fish and 1.8 to 93 times more toxic to amphibians. However, it has a rapid rate of

breakdown and low percentage of occurrence in aquatic systems. Little data appear to exist for malaoxon toxicity to aquatic invertebrates. The conversion of malathion to malaoxon in aquatic environments can range from approximately 1.8 to 10 percent. For these reasons, malaoxon is not anticipated to pose a greater aquatic risk in comparison to malathion.

The exposure and risk to aquatic resources from malathion bait applications will be minimized by following label requirements that reduce the potential for off-site transport. Examples of label requirements include mitigation measures to reduce drift and application buffer zones around aquatic areas. Risk will be greatest when making aerial applications, but the use of a large droplet size, which is consistent with bait applications, will reduce exposure to aquatic resources. Malathion degrades quickly under most conditions so there is only a short-term potential for exposure. The low frequency of use of malathion, the proposed use pattern in the Program, and label restrictions suggest malathion will have a low potential for direct and indirect risk to aquatic resources.

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 potential program area. USDA's *Anastrepha* spp. programs are designed to prevent the introduction of program chemicals into nontargeted areas. Sites near a 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 *Anastrepha* spp. detections occur at such locations.

a) Migratory Birds

Unless permitted by regulation, the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703–712) prohibits intentional take[4] of migratory birds or any part, nest, or egg of migratory birds.

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 ("USFWS"); this promotes the conservation of migratory bird populations. On August 2, 2012, USDA and USFWS signed an MOU to facilitate the implementation of this EO.

More than 500 species of birds are documented to use resources in the lower RGV including food, water, and habitat (USFWS, undated; Cornell Lab of Ornithology, 2018). The lower RGV is an important migration corridor providing suitable habitat for many bird species. (See Table 6

[4] "Intentional take." I.e., 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.

for a list of migratory birds of conservation concern in Brooks, Cameron, Hidalgo, Starr, Webb, Willacy, and Zapata Counties.) Bird species, subspecies, and populations of migratory nongame birds are considered "birds of conservation concern" when, without additional conservation actions, they are likely to become candidates for listing under the Endangered Species Act of 1973, as amended (16 U.S.C. §§ 1531 *et seq*.) ("ESA").

USDA evaluated the proposed *Anastrepha* program in terms of potential effects to migratory avian species. Acute and chronic toxicity to birds from spinosad is low (USDA, 2014). The localized and direct application of spinosad baits to host plants would not effect wild bird foods based on the targeted application of the spinosad baits to *Anastrepha* spp. host plants within 500 meters of *Anastrepha* detections, despite their usual use in residential areas.

Birds would not be exposed to MB treatments. Available oral and dietary dosing studies suggest that LC is practically non-toxic to birds. Toxicity data for birds as well as the proposed use pattern suggest that the probability of exposure to a significant amount of LC that would result in adverse effects to birds is very low (USDA, 2018d). For malathion, direct avian acute and chronic risk is expected to be minimal (USDA, 2018e) because malathion degrades quickly in the environment and residues are not expected to persist on bird foods. This assessment is conservative (assumes the greatest risk) because the residues are based on upper bound estimates, assume that all affected birds will feed exclusively on one type of food item, and that all of the food they consume has maximum malathion residues.

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 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

Common Name	Scientific Name	Breeding Season
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
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

Common Name	Scientific Name	Breeding Season
Wilson's plover	*Charadrius wilsonia*	April 1–August 20
**Also protected under the Bald and Golden Eagle Protection Act.*		

(Source: USFWS, 2018)

In a July 2015 concurrence letter for ESA consultation, USFWS made recommendations regarding the protection of migratory birds (USFWS, 2015). USFWS 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, USFWS recommends surveying for nests prior to commencing work. If a nest is found, if possible, USFWS 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 USFWS 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 consults with USFWS 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*), 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*) (USFWS, 2020).

USDA prepared a programmatic biological assessment ("BA") for program activities in Cameron, Hidalgo, and Willacy Counties that was submitted to USFWS 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 submitted a BA to USFWS to add Webb and Zapata Counties to the programmatic consultation; Brooks and Starr Counties were added in 2017. USDA submitted a BA to USFWS in March 2020 for adding an additional treatment using soil drenches of the pyrethroid LC beneath host plants and received a concurrence letter for this treatment dated March 20, 2020.

Most recently, in November 2020, USDA submitted a revised programmatic BA that included the addition of ground and aerially-applied malathion bait sprays (USDA, 2020c). USDA determined that the addition of malathion will have no effect on the West Indian manatee (*Trichechus manatus*); ocelot (*Leopardus* (=*Felis*) *pardalis*); Gulf Coast jaguarundi (*Herpailurus*

(=*Felis*) *yagouaroundi cacomitli*); green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), Kemp's Ridley (*Lepidochelys kempii*), loggerhead (*Caretta caretta*), and hawksbill (*Eretmochelys imbricata*) sea turtles; red knot (*Calidris canutus rufa*); least tern (*Sterna antillarum*); and South Texas ambrosia (*Ambrosia cheiranthifolia*). USDA has also determined that addition of malathion may affect but is not likely to adversely affect northern aplomado falcon (*Falco femoralis septentrionalis*); piping plover (*Charadrius melodus*) and its critical habitat; yellow-billed cuckoo (*Coccyzus americanus*) and its proposed critical habitat; Texas hornshell (*Popenaias popei*); ashy dogweed (*Thymophylla tephroleuca*); star cactus (*Astrophytum asterias*); Texas ayenia (*Ayenia limitaris*); Walker's manioc (*Manihot walkerae*); and Zapata bladderpod (*Lesquerella thamnophila*) and its critical habitat. USDA received USFWS concurrence with these determinations in a letter dated December 21, 2020 (USFWS, 2020). A complete administrative record of this review is available upon request.

USDA coordinates with USFWS, Texas Coastal Ecological Services Field Office in Houston, Texas, and the Alamo Ecological Services sub-office before implementing *Anastrepha* program activities. USFWS reviews maps of the quarantined area and notifies USDA if listed species are present in the program area. If listed species are present, USDA implements protection measures for those species, as described in the most recent programmatic BA (USDA, 2020d).

If the RGV *Anastrepha* Program area expands, or additional species are federally-listed as threatened or endangered, or critical habitat is designated in the program area, USDA will reinitiate consultation with USFWS and other appropriate agencies, as necessary.

IV. 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–Specialty Crops and Cotton Pests
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

Appendix A. Texas *Anastrepha* Quarantines in 2020

CHRONOLOGY

12/09/2020. The Cameron Quarantined Area is hereby modified. The Cameron Quarantined Area has expanded to 709.7 square miles in Cameron, Willacy, and Hidalgo counties.

11/30/2020. The Cameron Quarantined Area is hereby modified. The Cameron Quarantined Area has expanded to 692.7 square miles in Cameron, Willacy, and Hidalgo counties.

11/30/2020. The Lasara Quarantined Area is hereby modified. The Lasara Quarantined Area has expanded to 97.0 square miles in Willacy and Hidalgo counties.

11/09/2020. The Lasara Quarantined Area is hereby added to the quarantined areas in Rule §19.502. This quarantined area spans 64.0 square miles in Willacy and Hidalgo counties.

11/04/2020. The Cameron Quarantined Area is hereby modified. The Cameron Quarantined Area has expanded to 631.1 square miles in Cameron, Willacy, and Hidalgo counties.

10/23/2020. The Brownsville Quarantined Area is modified. The Brownsville Quarantined Area has been renamed to the Cameron Quarantined Area in Rule §19.502. This quarantined area has expanded to 601.8 square miles in Cameron, Willacy, and Hidalgo counties.

10/07/2020. The Brownsville Quarantined Area is modified. The Brownsville Quarantined Area has merged with the Bayview Quarantined Area and has expanded to 507.1 square miles in Cameron and Hidalgo counties. The Bayview Quarantined Area is hereby removed from the quarantined areas and core areas in Rule §19.502. All core areas in the Brownsville Quarantined Area are hereby removed from the core areas in Rule §19.502.

09/14/2020. The Laredo Quarantined Area is removed from the quarantined areas and core areas in Rule §19.502. This quarantined area was within Webb County.

09/13/2020. The Zapata Quarantined Area is removed from the quarantined areas and core areas in Rule §19.502. This quarantined area was within Zapata County.

09/09/2020. The Brownsville Quarantined Area is modified. Brownsville Core Areas 18 and 27 are modified. Brownsville Core Areas 50 and 51 are added to the core areas in Rule §19.502, while Core Areas 5, 7, 11, 15, 17, 22, 31, 36-38, and 44-45 are removed from core areas in Rule §19.502. This quarantined area has been reduced to 125.3 square miles and is within Cameron County. The Bayview Quarantined Area is added to the quarantined areas in Rule §19.502. Bayview Core Areas 36, 37, 38 of the Bayview Quarantined Area are hereby added to the core areas in Rule §19.502. This quarantined area spans 95.8 square miles in Cameron County.

08/25/2020. The Harlingen Quarantined Area is removed from the quarantined areas and core areas in Rule §19.502. This quarantined area was in Cameron and Hidalgo counties.

08/02/2020. The Harlingen/Brownsville Quarantined Area is removed from the quarantined areas and core areas in Rule §19.502. The Harlingen Quarantined Area and Core Areas 33, 35, and 42 are added to the quarantined areas and core areas in Rule §19.502. The Harlingen Quarantined Area spans 162 square miles in Cameron and Hidalgo counties. The Brownsville Quarantined Area and Core Areas 5, 7, 11, 15, 17, 18, 22, 27, 31, 36-38, and 44-45 are added to the quarantined areas and core areas in Rule §19.502. The Brownsville Quarantined Area spans 405.2 square miles in Cameron county.

07/22/2020. The Lasara Quarantined Area is removed from the quarantined areas and core areas in Rule §19.502. This quarantined area was within Willacy and Hidalgo counties.

05/19/2020. The Zapata Quarantined Area is added to the quarantined areas in Rule §19.502. Zapata Core Areas 1-3 of the Zapata Quarantined Area are added to the core areas in Rule §19.502. This quarantined area spans 79.8 square miles in Zapata county.

04/30/2020. The Harlingen/Brownsville Quarantined Area is modified. Harlingen/Brownsville Core Areas 33 and 35 are modified. This quarantined area has expanded to 869.0 square miles and includes areas of Cameron, Willacy and Hidalgo counties.

03/30/2020. The Harlingen/Brownsville Quarantined Area is modified. Harlingen/Brownsville Core Areas 1-23 are removed from the core areas in Rule §19.502. Harlingen/Brownsville Core Areas 1-15, 17-22, 24-25, 27-37, and 40-45 are hereby added to the core areas in Rule §19.502. This quarantined area has expanded to 865.8 square miles and includes areas of Cameron, Willacy and Hidalgo counties.

03/04/2020. The Lasara Quarantined Area is modified. Lasara Core Area 2 of the Lasara Quarantined Area is added to the core areas in Rule §19.502. This quarantined area has expanded to 133 square miles and includes areas of Willacy and Hidalgo counties.

03/03/2020. The Laredo Quarantined Area is added to the quarantined areas in Rule §19.502. Laredo Core Area 1 and Laredo Core Area 2 of the Laredo Quarantined Area are added to the core areas in Rule §19.502. This quarantined area spans 76.6 square miles in Webb county.

02/10/2020. The Harlingen/Brownsville Quarantined Area is added to the quarantined areas in Rule §19.502. This quarantined area is a merger of the Harlingen Quarantined Area and the Brownsville Quarantined Area, as well as an expansion of the quarantined area due to additional Mexican fruit fly detections. Harlingen Core Areas 1-6, and Brownsville Core Areas 1-6 are removed from the core areas in Rule §19.502. Harlingen/Brownsville Core Areas 1-23 are added to the core areas in Rule §19.502. This quarantined area spans 773.5 square miles in Cameron, Willacy and Hidalgo counties.

01/23/2020. The Brownsville Quarantined Area is added to the quarantined areas in Rule §19.502. Brownsville Core Area 1, Brownsville Core Area 2, Brownsville Core Area 3, Brownsville Core Area 4, Brownsville Core Area 5, and Brownsville Core Area 6 of the Brownsville Quarantined Area are added to the core areas in Rule §19.502. This quarantined area spans 233.5 square miles in Cameron county.

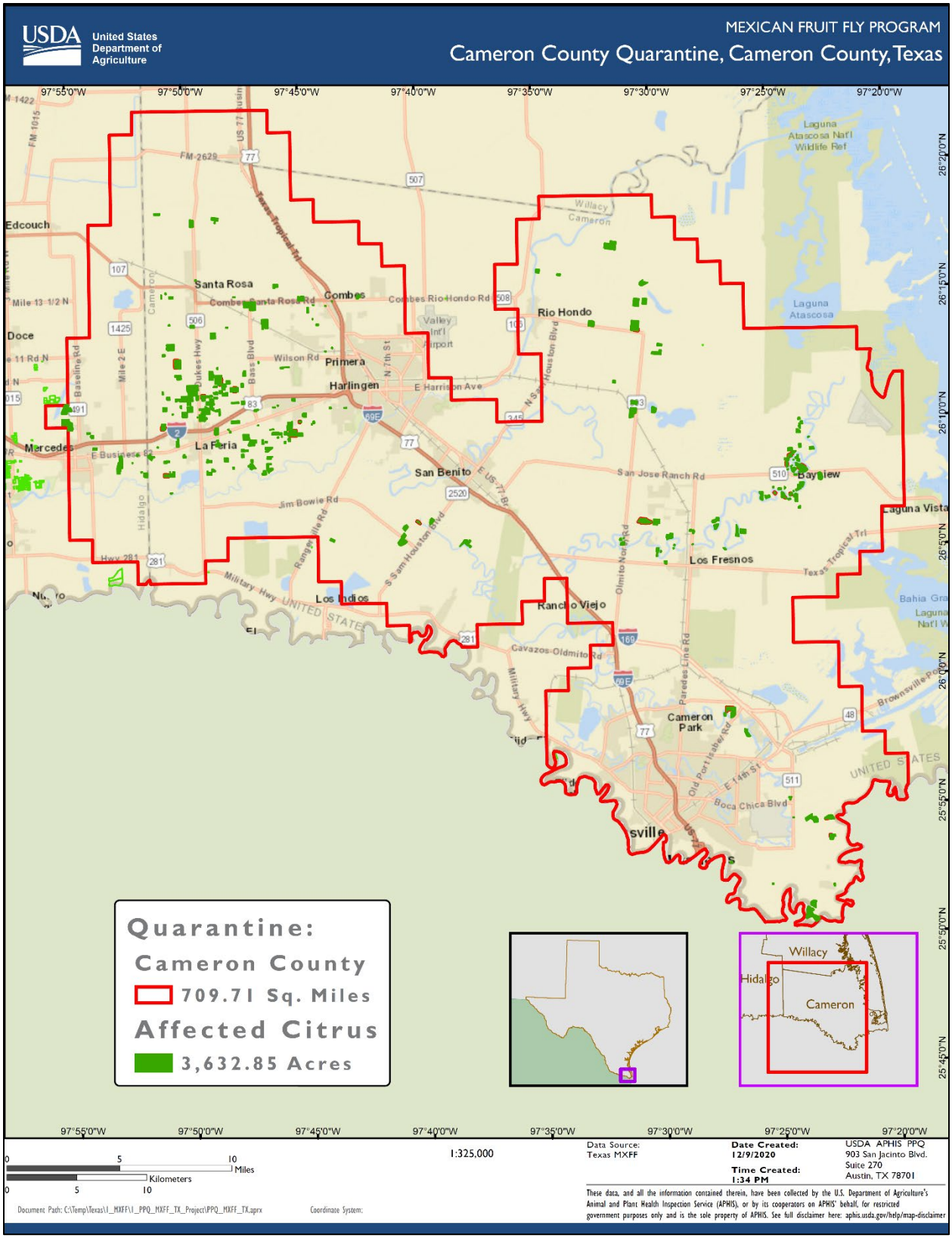
01/23/2020. The Harlingen Quarantined Area is modified. Harlingen Core Area 2, Harlingen Core Area 3, Harlingen Core Area 4, Harlingen Core Area 5, and Harlingen Core Area 6 are added to the core areas in Rule §19.502. The Harlingen Quarantined Area is expanded to 268.9 square miles and includes areas of Cameron, Hidalgo, and Willacy counties.

01/22/2020. The Lasara Quarantined Area is added to the quarantined areas in Rule §19.502. Lasara Core Area 1 of the Lasara Quarantined Area is added to the core areas in Rule §19.502. This quarantined area is 83.0 square miles and in Willacy and Hidalgo counties.

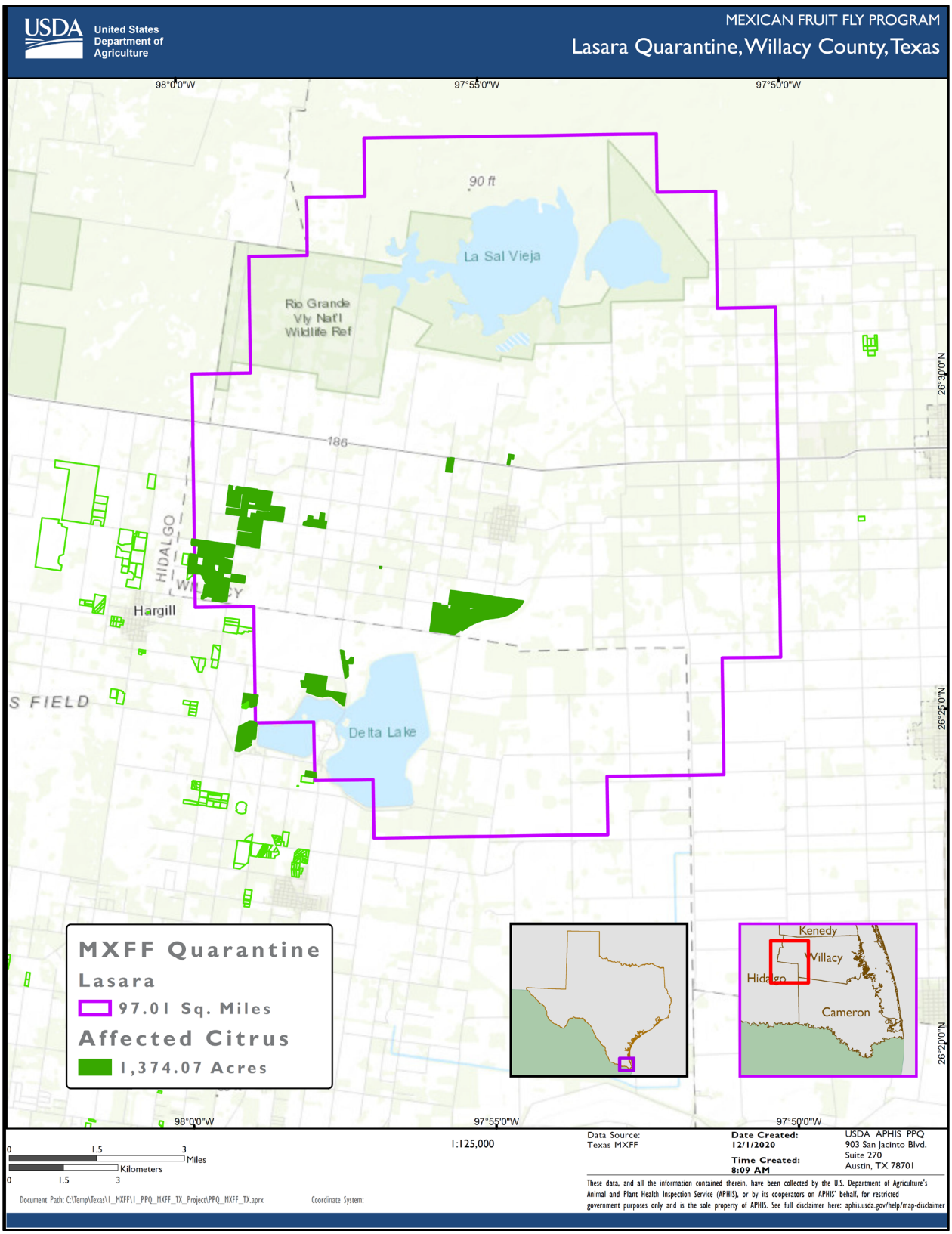
01/15/2020. The Harlingen Quarantined Area is added to the quarantined areas in Rule §19.502. Harlingen Core Area 1 of the Harlingen Quarantined Area is added to the core areas in Rule §19.502. This quarantined area is 81.0 square miles and in Cameron and Hidalgo counties.

The last Mexfly Quarantined Area of 2019 is removed on October 23, 2019 after a successful cooperative eradication program.

(Source: TDA, 2020)



Portions of Cameron, Hidalgo, and Willacy Counties lie within the Cameron Quarantine.
Map source: USDA



Portions of Cameron, Hidalgo, and Willacy Counties lie within the Lasara Quarantine.

Map source: USDA

Appendix B. Geospatial Data Resources Used in Cooperative Fruit Fly Program NEPA Analysis

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 Report: 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

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