Animal and Plant Health Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Old World Bollworm Management Program in Illinois

Draft Environmental Assessment—April 2023

Agency Contact:
Todd Gilligan
Old World Bollworm National Policy Manager
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road
Riverdale, MD 20737-1231

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List of Abbreviations and Acronyms

A	Acre
a.i.	Active ingredient
APHIS	Animal and Plant Health Inspection Service
ATV	All-Terrain Vehicle
BA	Biological assessment
CAS	Chemical Abstracts Service
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental assessment
EO	Executive Order
ESA	Endangered Species Act of 1973
fl.	fluid
ft	foot
*Ha*NPV	*Helicoverpa armigera* Nucleopolyhedrovirus strain BV-0003
IDA	Illinois Department of Agriculture
km	kilometer
lb	pound
LC	Lethal concentration
LD	Lethal dose
LOC	Level of concern
m	meter
MBTA	Migratory Bird Treaty Act of 1918
NEPA	National Environmental Policy Act
ORD	O'Hare International Airport
OWB	Old World bollworm
oz	ounce
PPE	Personal protective equipment
SLN	Special local need
Spp.	Species (plural)
UAS	Unmanned Aerial Systems
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service

I. INTRODUCTION

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), has the responsibility for taking actions to exclude, eradicate, and control plant pests under the Plant Protection Act of 2000 (7 United States Code (U.S.C.) 7701 et seq.). To protect the U.S. crop industry, APHIS Plant Protection and Quarantine, in cooperation with the Illinois Department of Agriculture (IDA), is proposing to implement a program to conduct survey activities and apply insecticide treatments to eradicate the Old World bollworm (OWB) (*Helicoverpa armigera*) (Lepidoptera: Noctuidae) in northern Illinois (hereinafter referred to as the Program). To date, OWB has only been detected in Cook and DuPage Counties.

This environmental assessment (EA) proposes a course of action to eradicate OWB from Cook and DuPage Counties and prevent its spread within the state or elsewhere in the United States where it can cause adverse impacts to agriculture and natural resources. This EA also includes the five neighboring counties (Kane, Kendell, Lake, McHenry, and Will Counties) that border Cook and DuPage Counties (Figure 1).

Figure 1. The Proposed OWB Program area includes Cook, DuPage, Kane, Kendall, Lake, McHenry, and Will Counties, Illinois.

A. Background

OWB is an invasive moth found in many areas of Africa, Asia, Europe, Australia, and the islands of the Western Pacific. It was first reported in the Americas from Brazil in 2012, and it is now currently found throughout much of South America and in parts of the Caribbean (Alake 2020). In the United States, OWB was first detected in Puerto Rico in 2014. It was reported for the first time in the continental United States when three specimens were captured in Florida in 2015, although subsequent surveys for this species were negative and APHIS declared the Florida detection an isolated regulatory incident (Alake 2020, Kriticos et al. 2015). In addition to Florida, many states in the continental United States are at particular risk for infestation by OWB including Alabama, Arizona, Arkansas, California, Georgia, Illinois, Iowa, Kansas, Louisiana, Michigan, Minnesota, Mississippi, Nebraska, New Mexico, North Carolina, Ohio, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, and Wisconsin (USDA APHIS 2001).

OWB has four distinct life stages (egg, larva, pupa, and adult), which is typical of all moths. The adult OWB (Figure 2) is a stout-bodied moth with a body length of 9/16 to 3/4 inches (14 to 19 millimeters). Color is variable, but males are usually yellowish brown, light yellow, or light brown, and females are orangish brown. The forewings have a black or dark brown kidney-shaped marking near the center. The hindwings are creamy white with a dark brown or dark gray band on the outer margin. OWB adults are similar in appearance to several other moths, making identification difficult. Larvae (Figure 3) are quite variable in color and grow to about 1½ inches in length.

OWB is one of the most important agricultural pests in the world. Larvae have been recorded feeding on more than 180 plant species, and they can cause severe damage to crops (Tay et al. 2013), including corn[1], cotton, small grains, soybeans, peppers, and tomatoes (USDA APHIS 2018b, 2023). The pest status of OWB is due in part to the broad host range of its larvae, their feeding preference among reproductive stages of plants, the high reproductive rate and mobility of adults, and the ability to enter facultative diapause[2], thus adapting to different climates (Cameron 1989, FDACS 2015, King 1994). Not all host plants are equally preferred for oviposition (depositing eggs), but most can be used in the absence of a preferred host. Appendix 2 provides a non-exhaustive host list; the OWB will feed on nearly any herbaceous plant.

OWB can tolerate a variety of climates and may become established if suitable host plants are present. The number of generations per year and seasonal abundance of OWB is influenced by temperature, humidity, host availability, emigration, immigration, natural enemies, and existing control measures at a given location (Fitt 1989, Haile et al. 2021, King 1994, USDA APHIS 2020). In subtropical and temperate regions, OWB completes 3–5 generations in a year (FDACS 2015). In the tropics, where climate and host vegetation allow continuous development, this pest can complete 10–12 generations (i.e., one generation every 28–30 days) (Fitt 1989, USDA APHIS 2020). The potential distribution of OWB can be predicted by using lower and upper

[1] Scientific names for plants attractive to OWB are found in Appendix 2.
[2] Diapause is a suspension of development that can occur at any life stage, depending on the species. Diapause that is facultative is triggered by environmental conditions such as high temperatures or food shortage.

threshold temperatures and the accumulated degree days as inputs for insect phenology models (USDA APHIS 2020). In Illinois, phenology models indicate OWB may have up to three generations per year, with one overwintering generation and two generations completed during the summer and fall seasons.

Figure 2. OWB adult moth.

Figure 3. OWB larva

B. Purpose and Need

In most places where OWB occurs, it is an economic pest (Haile et al. 2021, Kriticos et al. 2015) and one of the most destructive pests of agriculture worldwide (Stacke et al. 2018). Failure to manage invasive OWB populations in the United States could result in similarly severe economic impacts. The total value of crop production in the United States at risk from OWB is annually valued at approximately $72 billion (Kriticos et al. 2015), which has undoubtably increased since the time of that publication.

After no detections of OWB in the continental United States since 2015, APHIS trapped a single male OWB in 2019 during a routine port-environs survey using pheromone-baited bucket traps at O'Hare International Airport (ORD) in Chicago, IL. This detection triggered a more extensive survey for OWB around ORD in 2020, where two additional OWB were found. At the time, these three initial detections were thought to be moths that had escaped from ORD on arriving international airport cargo. However, a more comprehensive survey conducted in 2021 resulted in five OWB captures at three sites near the airport perimeter. In 2022, APHIS placed traps around the entire airport perimeter, and five additional OWB were found. APHIS also treated the three main detection areas in 2022 with pesticides designed to target young larvae. In total, thirteen OWB adults have been captured in the vicinity of ORD from 2019 to 2022.

OWB have not been detected in agricultural areas outside of Chicago, in neighboring states, or in any of the many other states that annually survey for it. This indicates that the moths found at ORD did not migrate from elsewhere within the U.S.

Also, no moths have been found in survey traps placed in international cargo warehouses within ORD as adult moths escaping from cargo is very rare. As such, APHIS has concluded that the

finds at ORD are the result of a low-level reproducing population around the airport, rather than separate ongoing introduction events. A pocket of Climate Hardiness Zone 6 that surrounds metro Chicago and the adjacent shore of Lake Michigan appears to have created marginally suitable conditions for a population to establish and overwinter. Because continued trapping, surveillance, and pesticide control in the Chicago area are needed to eradicate this OWB population, APHIS has prepared this EA.

APHIS has prepared this EA in compliance the National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.) §§ 4321 et seq.) as prescribed in implementing regulations adopted by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR) parts 1500-1508), USDA NEPA regulations at 7 CFR part 1b, and APHIS NEPA implementing procedures (7 CFR part 372) for the purpose of evaluating the potential effects of the proposed OWB Management Program on the human environment (40 CFR § 1508.1(m)). Similarly, conducting an OWB Program aligns with Executive Order (EO) 13112 Invasive Species, which directs Federal agencies to use their programs and authorities to prevent or control the spread of invasive species that cause economic or environmental harm, or harm to human health. The EA determines whether the methods of eradicating OWB in designated counties in Illinois abide by applicable federal laws and regulations and determines whether an environmental impact statement is required. Several endangered insects and plants are present in the seven-county area where these activities are occurring (or might likely occur), and the impacts on endangered species are addressed in a Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) on the OWB Program, discussed in Section 3.2. APHIS has taken action to curb the OWB population under prior categorical exclusions but is now providing this EA to inform the public of the proposed eradication program and solicit feedback.

II. ALTERNATIVES

NEPA implementing regulations (40 C.F.R. 1500 – 1508. 1(g)) require agencies to evaluate alternatives to the proposed action that would avoid or minimize adverse impacts, or enhance the quality of the human environment, while meeting the purpose and need for the agency's action. Impacts or effects may occur soon after the Agency decision or occur later in time. Impacts may be either beneficial or detrimental (40 CFR § 1508.1(g)). Potential impacts include impacts to environmental resources such as water, soil, and air quality; impacts to ecological resources such as plants and animals, as well as the components and functioning of affected ecosystems; impacts to public health; and impacts to historic, cultural, and social resources. Economic effects, such as those on employment or markets, may also be considered. APHIS and cooperating partners discuss and analyze alternatives for the OWB Management Program. Two alternatives are evaluated in this EA: (1) the No Action Alternative, which continues the effort to eradicate OWB in the seven counties identified above (Figure 1), and (2) the No Federal Program Alternative.

A. OWB Management Program Alternative (No Action Alternative)

Pursuant to CEQ regulations (40 CFR part 1502.14 (c)), NEPA requires the scope of analysis to include a No Action Alternative in comparison to other reasonable courses of action. The No

Action Alternative continues the effort to eradicate OWB in Cook and DuPage Counties, Illinois (around ORD). The Program area also includes Kane, Kendall, Lake, McHenry, and Will Counties. Under the No Action Alternative, APHIS would continue to conduct surveys for OWB and treat OWB infestations with pesticides to eradicate it. APHIS would provide funding and implement operations for OWB eradication in strategic cooperation with IDA.

i. Survey

OWB surveys use insect traps to delimit the infestation and identify potential treatment areas. The method for OWB surveys is to trap male OWB moths with a pheromone lure in a tricolor plastic bucket trap, known as a "Unitrap" (Figures 4 and 5) as outlined in USDA APHIS (2021). The pheromone lure volatilizes and disperses downwind, causing adult males to follow the pheromone plume upwind to its source. The lure attracts OWB as well as the related, native corn earworm (*Helicoverpa zea*).

The tricolor plastic bucket trap has a green lid, a lure basket with a cap, a yellow funnel, and a white bucket, best understood by seeing a half trap (Figure 5). A pesticide strip is attached to the inside of the trap to kill entrapped insects (Figures 6 and 7). The active ingredient in the pesticide strip is dichlorvos (DDVP), product name Vaportape® II (Hercon®).

The proposed OWB trapping activities will occur from approximately late May through early November. In 2023, the Program will trap in Cook, DuPage, Kane, Lake, and Will Counties and could expand trapping into Kendall or McHenry Counties in the future. APHIS Field Operations staff in Illinois will install the traps and service them every two weeks.

The Program determines the number of traps to place based on proximity to a positive OWB find. The Program establishes a core area with a ½-mile (0.8 km) radius around a positive find (USDA APHIS 2020). Under ideal circumstances, each core will contain approximately 49 traps/mi^2 (19 traps/km^2) spaced equidistantly throughout and at least 66 ft (20 m) apart. Actual trap spacing and density may depend on the surrounding landscape and infrastructure: buildings, roads, and surface water features near the positive find, for instance, may limit the number of suitable places available to put the traps. The urban landscape around the current outbreak at ORD significantly limits the number and relative proximity of suitable sites for installing traps.

After establishing a core area, the Program sets a buffer area around each one. Ideally, the buffer area extends in a 2.5-mile radius around the core. The Program sets a lower density of traps within the buffer area and focuses trap placement in areas considered high risk. These may include, but are not limited to, borders of natural areas, unmaintained weedy fields, roadsides, wholesale plant nursery or cut flower distributors, urban gardens, and other suitable locations for OWB larvae to feed and develop.

Broadly, APHIS will continue to place traps around the perimeter of ORD where finds have been documented. The Program also plans to place traps in areas with suitable habitat and host plants within an approximate 1–5-mile radius, 5–10-mile radius, and 10–25-mile radius of the airport. The density of these traps will decrease moving outward. Based on OWB finds in 2021 and 2022, areas to the north and east of ORD will be targeted for 2023, to further pinpoint the source of the suspected OWB population. Approximately 600–650 traps will be deployed during the

2023 field season. In subsequent years, traps will be placed at locations and in a manner that best suit the most recent available detection data.

Figure 4. Tricolor bucket trap with a label on the lid that indicates it is a Program trap with a phone number for questions.

Figure 5. Bucket trap cut in half to show its interior and size. The bucket traps are small, which limits the nontarget species that can be taken.

Figure 6. Vaportape II insecticidal strip.

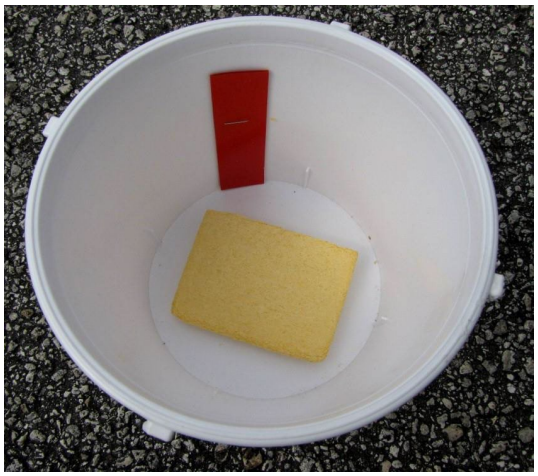

Figure 7. Insecticidal strip (red) adhered to the inside of the bucket to kill captured insects. The sponge prevents water from pooling in the base of the trap.

The Program services traps on a 2-week cycle. All survey activities are reported and managed in a mobile electronic application. Mobile data collection encompasses all current trap points with the contents of each trap stored according to the trap number and date, so that the insects captured in each trap can be analyzed in the laboratory and traced back to the source trap. If OWB are found, the area around the trap becomes a focus for additional trapping or spraying, depending on specific circumstances.

ii. Pesticide Use

The Federal Insecticide, Fungicide, and Rodenticide Act requires all pesticides sold or distributed in the United States to be registered by the U.S. Environmental Protection Agency (USEPA) (USEPA 2022a). During the registration process, USEPA prepares screening level risk assessments that evaluate the potential for harm to humans, wildlife, fish, and plants as well as the potential for contamination of surface water or groundwater from leaching, runoff, and spray drift (USEPA 2022b). USEPA evaluates toxicology studies that are carried out on plants and animal models which broadly represent nontarget organisms. Most toxicity studies report the lethal dose (LD) or concentration (LC) at which 50 percent of the test animals die when given a single exposure (LD_{50}/LC_{50}). USEPA assigns toxicity categories ranging from highly toxic to practically nontoxic based on the LD_{50} or LC_{50} values. Environmental fate and transport studies examine how the pesticide breaks down in water, soil, and light (USEPA 2022b). The studies also look at how easily the pesticide may enter the air and move through soil. USEPA uses the environmental fate and transport studies to estimate pesticide concentrations in the environment. USEPA combines the toxicity information with the amount of pesticide in the environment and the exposure potential to nontarget organisms to estimate a risk quotient which is a deterministic method used in risk assessments. USEPA has established levels of concern (LOC) that are used as a benchmark to compare with estimated risk quotients to determine if the risk for a pesticide exceeds an LOC. The Program uses USEPA screening level risk assessments in its evaluation of risks associated with the Program's use of pesticides to manage OWB.

The Program uses three pesticide active ingredients: dichlorvos (DDVP) in the survey bucket traps to neutralize captured adults, *Helicoverpa armigera* nucleopolyhedrovirus strain BV-0003 (*Ha*NPV) to kill feeding larvae, and chlorantraniliprole, also to target OWB larvae (Table 1). The Program's use pattern, pesticide's mode of action, and label restrictions for the three pesticide active ingredients are described below. In general, the Program only treats locations near current and prior detections that have suitable and sufficient host plants to support larval development. In the future, treatment could occur anywhere that OWB are found in the 7-county area, but current Special Local Need labels approved by the EPA are for DuPage and Cook counties only.

In 2022, the Program sprayed 393 total acres of weedy and managed open fields on the immediate perimeter of ORD around sites of the 13 known positive finds. For 2023, the Program expects to treat approximately 372 to 600 total acres (approximately 100 to 150 acres treated multiple times) of the same or similar habitat.

DDVP (Vaportape® II)

DDVP is an organophosphate insecticide that targets the insect's nervous system. Vaportape II insecticidal strips contain 10% DDVP (Table 1). The Program places DDVP insecticidal strips (Figure 6), per label instructions, inside OWB bucket traps (Figure 7) to ensure insects die rapidly. The label does not allow indoor use. The label does not allow applications directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark. It also does not allow the disposal of equipment wash-waters or rinsate into water resources. The Program proposes to place around 600–650 traps during the 2023 field season

(May through early November), each trap containing one DDVP insecticidal strip that is replaced approximately every 12 weeks per label instructions. The Program follows label instructions regarding the use and disposal of DDVP insecticidal strips. In the event that Vaportape® II is unavailable, an equivalent DDVP product will be used, providing it is appropriately labeled.

Table 1. Program-recommended pesticides for use in the OWB Management Program in Illinois.

Product	Formulation (active ingredient (a.i.))	Labeled Uses
Hercon® Vaportape™ II USEPA Reg. No. 8730-50 Registration 10/05/2022	Dichlorvos (Dimethyl 2,2-dichlorovinyl phosphate (DDVP)): 10% Related compounds: 0.75% Other ingredients: 89.25% (590 mg in 1"x4" strip)	Registered for use as an insecticidal strip in insect bucket traps only.
Helicovex® USEPA Reg. No. 69553-2 Registration June 25, 2021	*Helicoverpa armigera* nucleopolyhedrovirus strain BV-0003: 0.60% Other ingredients: 99.40% by wt. Contains a minimum of 7.5×10^{12} viral occlusion bodies/L	Labeled for use in greenhouses, open fields, row crops and home gardens. Labeled for use on a wide range of fruit, vegetable, and row crops.
Vantacor™ USEPA Reg. No. 279-9656 Registration 07/20/2022 Special Local Need (SLN) Label IL-220002 (expires March 15, 2027)	Chlorantraniliprole (3-Bromo-N-[4-chloro-2-methyl-6-[(methylamino) carbonyl]phenyl]-1-(3-chloro-2-pyridinyl)-1H-pyrazole-5-carboxamide): 47.85% by wt. Other ingredients: 52.15% by wt.	The Program operates under the SLN label: not labeled for use on food or feed crops. Restricted to ground application spray to grassy and weedy areas in outdoor landscapes, including commercial, industrial, rights-of-way, airport grounds, and other grassy weedy fields and areas where OWB has been found or may be present. SLN label specifies Cook and DuPage Counties.
Prevathon® Insect Control USEPA Reg. No. 279-9612 SLN Label IL-220001 (expires March 15, 2027)	Chlorantraniliprole: 5% by wt. Other ingredients: 95% by wt.	The Program operates under the SLN label: Ground application spray to grassy and weedy areas in outdoor landscapes including commercial, industrial, rights-of-way, airport grounds, and other grassy and weedy fields and areas where OWB has been found or may be present. SLN label specifies Cook and DuPage Counties.

***Helicoverpa armigera* nucleopolyhedrovirus (NPV) strain BV-0003 (Helicovex® Insect Control)**

Program personnel or qualified contractors apply *Ha*NPV to host material in confirmed OWB detection areas. *Ha*NPV is the active ingredient in Helicovex Insect Control (Table 1). Application occurs in accordance with product labeling (Andermatt 2022, USEPA 2021). Although the Program uses Helicovex, equivalent alternate brands could also be used if appropriately labeled. Except near waterways, the Program applies Helicovex as a tank mixture with the chlorantraniliprole pesticides, which are described below.

*Ha*NPV, a virus in the Baculoviridae family, specifically targets lepidopteran pests (USEPA 2015a). *Ha*NPV is based on a naturally occurring insecticidal virus that infects and kills larvae of *Helicoverpa* spp. and is labeled to control the corn earworm (*Helicoverpa zea*), tobacco budworm (*Helicoverpa/Heliothis virescens*), and OWB (USEPA 2015a, 2021). *Ha*NPV controls the larval stage of lepidopteran pests but does not affect adults (Andermatt 2022). An *Ha*NPV application is effective when it is sprayed before larvae hatch from the eggs and onto young instar larvae after hatching. The smaller the larvae, the better *Ha*NPV controls the larvae. The label recommends targeting smaller larvae or eggs that are about to hatch because the larvae eat part of the eggshell during hatching. If applied on large larvae, damage to crops might not be avoided in sufficient time. It is important to protect the plant during the whole larval hatching period until harvest or as long as the pest is present. After ingestion by the larva, the virus multiplies within the cells of the host insect causing a fatal infection. Rapid virus multiplication within the host cells results in cell destruction and death of the organism, typically within three to seven days (Gordon 2015, USEPA 2021). *Ha*NPV is on the list of the Organic Materials Review Institute, which indicates it is appropriate for organic operations; it is not toxic to humans, mammals, birds, aquatic vertebrates, and non-lepidopteran terrestrial and aquatic invertebrates.

Helicovex is applied at a rate of 0.5–2.5 fluid oz/acre, with repeat applications every 6–8 sunny days (USEPA 2021). Certain weather conditions, such as lower temperatures, may extend the egg laying and hatching over a longer period of time, making more applications necessary. Frequent applications at low rates may be more effective than one or two applications at high rates (USEPA 2021). Helicovex is labeled for use on a broad range of crops including sweet corn, soybeans, cotton, berries, vegetables, and ornamentals (USEPA 2015a). The registration includes agricultural/commercial use (greenhouses and open fields) as well as residential use (greenhouses and home gardens) (USEPA 2015a). The label has no specific buffer distance for applying near waterways, but it does not allow application directly to water or to areas where surface water is present. The Helicovex label specifies crops, application rate, personal protective equipment (PPE) required, application methods, and other requirements that will be followed by Program applicators (USEPA 2021).

The Program applies *Ha*NPV to areas where OWB is confirmed or likely to be present. In Illinois, phenology models indicate OWB may have up to three generations per year, with one overwintering generation and two generations completed during the summer/fall seasons. Because OWB has multiple generations in a year, the Program re-treats known detection areas within the same season. In 2022, the Program made OWB treatments (*Ha*NPV alone or mixed

with chlorantraniliprole) three times, totaling 393 acres by season's end. In 2023, the Program anticipates treating up to 150 acres in four treatment cycles (for a season maximum of up to 600 acres), targeting areas near previous OWB finds with suitable habitat.

The Program applies *Ha*NPV and chlorantraniliprole using ground-based equipment, such as backpack sprayers and all-terrain vehicle (ATV) mounted sprayers. APHIS has not made aerial applications. It is possible in the future the Program may use unmanned aerial systems (UAS). UAS used to spray pesticides have grown in popularity because they can apply pesticides with better precision, target specific areas, cover areas in dangerous terrain, reduce exposure to workers, and reduce the amount of pesticide used (Leffer 2021). The Program anticipates the drift potential from the use of UAS, about 16 feet (5 m) maximum at the appropriate speed, wind, and droplet size (about 200 microns), will be less or similar to ATV-mounted sprayers because UAS can be flown close to the ground (Hunter et al. 2019, USEPA 2020).

Chlorantraniliprole (Vantacor™ Insect Control and Prevathon® Insect Control)

Program personnel or qualified contractors apply Vantacor (USEPA registration #279-9656, SLN IL-220002) or Prevathon (USEPA Reg. #279-9612, SLN No. IL-220001) to host material in confirmed OWB detection areas. Application occurs in accordance with product labeling. The Program applies Vantacor or Prevathon as a tank mixture with *Ha*NPV. The Program uses Vantacor and Prevathon under a Special Local Need (SLN) label. Although the Program uses Vantacor and Prevathon, equivalent alternate brands could also be used if appropriately labeled.

Chlorantraniliprole (Chemical Abstracts Service (CAS) No. 500008-45-7, $C_{18}H_{14}N_5O_2BrCl_2$) is the active ingredient (a.i.) in Vantacor and Prevathon (Table 1). First registered with USEPA in 2008, the technical formulation has 95.3% chlorantraniliprole as the a.i. (USEPA 2008) (DuPont Rynaxypyr Technical, USEPA Reg. No. 352-728) has 95.3% chlorantraniliprole as the a.i. (USEPA 2008). Vantacor is a suspension concentrate of 47.85% chlorantraniliprole and 52.15% other ingredients by weight, containing 5.00 pounds (lbs) chlorantraniliprole per gallon (gal) (USEPA 2020). Methylated seed oil is optionally added as an adjuvant for foliar sprays at a 1% mix rate. The application rate for Vantacor on the SLN label is 1.7 ounces (oz)/Acre (A) (0.066 lbs a.i./A). Prevathon is a suspension concentrate of 5% chlorantraniliprole and 95% other ingredients by weight, containing 0.43 lbs a.i. per gal (USEPA 2022e). The application rate on the SLN label is 14.0-20.0 oz/A (0.047–0.067 lb. a.i. per acre). Both the Vantacor and Prevathon SLN labels are for commercial use only and are not labeled for residential use. Both labels allow applications to grassy and weedy areas in outdoor landscapes (Table 1).

The Program makes ground-based applications of chlorantraniliprole to general herbaceous vegetation, and to the low foliage of some non-herbaceous species in outdoor landscapes, including commercial, industrial, rights-of-way, airport grounds, and other grassy and weedy fields where OWB has been found or may be present (USEPA 2022c, e). Most of these locations are under controlled access by the airport authority and are not open to the public. The Program uses backpack and ATV/tractor mounted sprayers for ground-based applications. Although application by UAS has not yet occurred in the treatment area, this method of pesticide application may occur in the future depending on circumstances and label requirements.

For chlorantraniliprole application, the labels advise maintaining a level vegetative buffer strip between treatment areas and surface water, such as ponds, streams, and springs, to reduce the potential for movement into water sources from runoff and sediment. The labels also advise to avoid applications when rainfall is forecast within 48 hours to reduce runoff potential (USEPA 2022e, d). The Program evaluates the topography of the treatment area to ensure that a level, well-maintained vegetative buffer strip exists between chlorantraniliprole application and any surface water features. In some cases, depending on the nature of the terrain, the Program would use *Ha*NPV in these areas instead.

Although chlorantraniliprole has contact activity, it is most effective through ingestion of treated plant material (USEPA 2022c). After exposure to chlorantraniliprole, affected insects will rapidly stop feeding, become paralyzed, and typically die within one to three days (USEPA 2022c). Applications need to be timed to the most susceptible insect pest stage, typically at egg lay, egg hatch or newly hatched larvae, before populations reach damaging levels. Applications at or before egg deposition are the most effective in minimizing damage levels caused by insect pests. When pest populations are high, the highest listed application rate for that pest is used. For control of OWB, it can be applied at times targeting early instar larvae as a thorough coverage foliar spray (USEPA 2022c). For foliar sprays, increased spray volume compensates for dense foliage or if adverse conditions exist such as dry, hot weather (USEPA 2022c).

The Vantacor SLN label allows 3 applications per acre per calendar year and does not allow more than 5.1 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. The Prevathon SLN label allows for 4 applications per acre per calendar year and does not allow more than 60 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. Both labels have a minimum interval between treatments of 5 days (USEPA 2022c).

B. No Federal OWB Management Program Alternative

Under the No Federal OWB Management Program Alternative, a standard alternative analyzed under NEPA, APHIS would not assist with OWB management. Other entities could conduct OWB control activities but would do so without APHIS assistance or funding. In the absence of APHIS funding or technical support, control efforts would remain up to state and local governments, grower groups, and individuals.

Under the No Federal Program Alternative, a lack of APHIS funding and technical support could lead to an ongoing infestation and establishment of OWB. An expansion of the infestation could result in substantial economic losses to crop producers in the United States, as well as having negative impacts to the U.S. agricultural export markets.

C. Alternatives Considered but Not Analyzed in the EA

APHIS considered the alternatives below but did not analyze these further because these would not meet the need for action nor the obligations of APHIS under the Plant Protection Act (PPA) of 2000.

i. Technical Assistance Only Alternative

This alternative would allow APHIS to provide IDA and others with technical assistance to help them resolve the current OWB infestation. This would be counter to the PPA, in which Congress articulates that APHIS take steps to stop the dissemination of plant pests within the United States, including invertebrate pests, to protect plants. Thus, this is not a viable alternative to meet the need for action and federal objectives regarding the eradication of OWB.

ii. No Use of Pesticides for OWB or Limited Methods Alternative

The public may voice concerns against methods used to control OWB, particularly the use of pesticides. However, no other methods of controlling an outbreak of OWB quickly and decisively have been shown effective. After careful consideration, APHIS has chosen pesticides that are efficient, cost effective, and pose the least potential risk of off-target effects. The use of pheromone traps alone is not a sufficient control measure because pheromone traps only attract male OWB and they do not attract enough individuals to have a significant impact on the overall population. If OWB got established in the Program area, it would likely spread to surrounding counties and beyond. The current situation requires control methods that ultimately meet the goal of OWB eradication in Illinois. Thus, eliminating the primary control methods (pesticides) will not be considered for further analysis.

III. ENVIRONMENTAL CONSEQUENCES

This section evaluates the potential environmental impacts associated with the No Action Alternative (APHIS working together with IDA towards OWB eradication) and the No Federal OWB Management Program Alternative.

APHIS developed a list of topics for consideration in this EA based on issues identified in public comments submitted for the prior environmental assessments (USDA APHIS 2015), scientific literature on OWB eradication efforts, and the use of eradication methodologies:

- Impacts on Environmental Quality (Water and Soil)
- Impacts to Ecological Resources (Vertebrates, Invertebrates, and Plants)
- Impacts to Human Health and Safety

Environmental quality encompasses water and soil quality and considers the environmental transport and fate properties of pesticides as well as the label requirements and Program's use patterns that affect the environmental exposure potential. APHIS did not identify air quality concerns and does not cover air quality in this EA (see Appendix 1 for further discussion). Ecological resources include terrestrial vertebrates (birds, mammals, reptiles, and terrestrial-phase amphibians), aquatic vertebrates (fish and aquatic-phase amphibians), terrestrial and aquatic invertebrates (insects and mollusks), and terrestrial and aquatic plants. Human health and safety concern the people within the Program area. Each identified issue is evaluated under each alternative and the direct and indirect impacts is discussed for each. Impacts are estimated where applicable.

An impact is any change, beneficial or adverse, from existing (baseline) conditions described for the affected environment. Thus, impacts mean changes to the human environment, including human health and ecological resources that could result from the actions to eradicate OWB from Illinois. Pursuant to CEQ regulations (40 CFR § 1508.1(g)), impacts or effects considered are those that are reasonably foreseeable and have a reasonably close causal relationship to the action of the alternative being considered. Impacts may occur soon after the action or occur later in time. In considering whether the effects of the proposed action are significant, agencies analyze the potentially affected environment, and degree of the effects of the action in relation to the affected environment (40 CFR § 1501.3). Agencies must also consider connected actions consistent with 40 CFR § 1501.3(b). The potentially affected environment is defined by the area(s) potentially impacted by the proposed action (e.g., national, regional, or local), and associated resources (e.g., natural, cultural).

In considering the degree of the effects, agencies are to consider the following, as appropriate to the proposed action:

- Short and long-term effects
- Beneficial and adverse effects
- Effects on public health and safety
- Effects that would violate federal, state, tribal, or local laws protecting the environment

APHIS did not identify cultural and historic resources, including Tribal resources, within the Program area that would be impacted by either alternative. Appendix 1 provides additional explanation for not analyzing cultural, historic, and Tribal resources.

APHIS prepared a human health and ecological risk assessment for chlorantraniliprole for the Agency's Grasshopper and Mormon Cricket Program (USDA APHIS 2019). The environmental fate and toxicity information in that risk assessment apply to the OWB Management Program use of chlorantraniliprole. The risk assessment is incorporated by reference. Similarly, APHIS evaluated the use of DDVP in traps for its Fruit Fly Eradication Program (USDA APHIS 2018a); this evaluation applies to the use of DDVP in the OWB Management Program and is incorporated by reference.

A. Impacts on Environmental Quality

i. Continued OWB Management Program Alternative (No Action Alternative)

Water Quality

The area around ORD is characterized by urban development, industrial areas, suburban areas, parks, natural areas, and few croplands. During precipitation events, drainage and runoff from the airport, roadways, parking lots, and other hard surfaces can move into water resources in proximity to the current outbreak area which is around the perimeter of ORD. This drainage and runoff contain particulates, chemical pollutants, garbage, and other water impairments.

Program personnel carrying out OWB activities are not expected to impact water resources. Program personnel do not walk or drive through water resources. As discussed below, minimal soil disturbance is expected to occur during trap placement and servicing and pesticide applications, thus soil moving into water resources during OWB activities is negligible.

There is negligible impact to water resources from the Program's use of DDVP because of the proposed use pattern (inside bucket traps) and label instructions that indicate not to apply directly to water, to areas where surface water is present, or to intertidal areas (USEPA 2022f). DDVP insecticide strips are contained inside the bucket traps with minimal potential to get into the water. Traps are not placed over surface water and in the unlikely event a trap dislodges and falls into a waterbody, the small amount of DDVP in the strip and its rapid degradation through hydrolysis make significant impacts to surface water and groundwater unlikely (USEPA 2006a). Similarly, should water enter the trap during rain events, the leachate from the trap would not make significant impacts to surface and ground water.

The Helicovex label does not allow applications directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark (USEPA 2021). Ground-based spray applications could result in the exposure of surface fresh-waters through runoff or drift. The Program only makes ground-based applications and could add applications using UAS should that method become available. *Ha*NPV is sensitive to desiccation and ultra-violet radiation and is not expected to persist at high levels on most surfaces (USEPA 2015c); this would reduce the amount of viable *Ha*NPV that enter surface waters. In studies, baculoviruses are retained by soils (OECD 2002), indicating *Ha*NPV leaching through soil to surface water is of minor importance for its spread. *Ha*NPV is not pathogenic to aquatic species (USEPA 2015b); aquatic species contribute to water quality (impacts to ecological resources is covered below). In their assessment, based on the labeled use pattern for Helicovex, the USEPA did not find exposure likely through runoff or drift for estuarine and marine waters (USEPA 2015b). Based on the label's requirements, environmental fate properties of Helicovex/*Ha*NPV, and its lack of toxicity to aquatic species (see ecological resources below), the Program anticipates negligible impacts to water resources from Program applications.

Chlorantraniliprole (the active ingredient in Vantacor and Prevathon) is persistent in soil, water, and sediments (USDA APHIS 2019, USEPA 2020). Chlorantraniliprole can be persistent and mobile in terrestrial and aquatic environments, and the pesticide may impact surface water quality due to runoff of rainwater for several months or more after application (FMC 2020, USDA APHIS 2019, USEPA 2020). This is especially true for poorly drained soils and soils with shallow groundwater (USEPA 2020). APHIS follows label directions and therefore anticipates minimal potential to impact water quality in areas treated for OWB. The product labels require a level, well-maintained buffer strip between areas where chlorantraniliprole is applied and surface water features such as ponds, streams, and springs. This reduces the potential loading of chlorantraniliprole from runoff water and sediment. Runoff is also reduced by avoiding applications when rainfall is forecasted to occur within 48 hours (USEPA 2020). The Program makes ground application sprays, which significantly reduces potential spray drift compared to aerial applications. Should UAS become available, it is possible the Program would make treatments with this method. UAS would be flown close to the ground, at a similar height as ATV mounted sprayers, indicating spray drift potential would be similar between UAS and

ATV mounted sprayers. The label indicates to use a spray nozzle that produces medium-sized droplets to reduce drift (USEPA 2020, 2022c). Applying larger droplets reduces drift potential but will not prevent drift if applications are made improperly or under unfavorable environmental conditions, primarily wind. The presence of sensitive species nearby, the environmental conditions, and pest pressure may affect how an applicator balances drift control and coverage (FMC 2020). Prior to making pesticide applications, the Program evaluates the topography of the treatment area. It does not apply chlorantraniliprole if the area next to a water resource slopes towards the water resource; instead, it would apply *Ha*NPV. Based on the label restrictions for chlorantraniliprole and the Program's use pattern, minimal impacts to water quality in treatment areas are anticipated.

Soil Quality

Under the Continued OWB Management Program Alternative, the Program will have a minimal effect on soil in the seven County area of Illinois. Program personnel may cause some disturbance of soil during the placement and servicing of traps, as well as during ground-based pesticide applications, but overall APHIS expects negligible impacts during these activities.

The use of DDVP strips in traps prevents them from contacting the soil. Should a trap dislodge, the strip will likely remain inside the trap and not fall out. Should the strip encounter soil, the small amount of DDVP in the strip and its rapid volatilization and degradation make significant impacts unlikely (USEPA 2006a). During rain events, water may enter the bucket trap, and potentially become contaminated with DDVP. This contaminated water could leach from the trap onto the ground. However, the Program does not anticipate impacts from this leachate because of DDVP's environmental fate properties and the small amount of insecticide contained in each strip.

Chlorantraniliprole is expected to persist in soil and be mobile in terrestrial environments (USDA APHIS 2019, USEPA 2008). Adhering to label restrictions regarding the number of applications and maximum amount allowed per acre per year will reduce the accumulation of residues in soil from year to year, and the program does not intentionally apply chlorantraniliprole to bare soil. The Vantacor SLN label allows 3 applications per acre per calendar year and does not allow more than 5.1 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. The Prevathon SLN label allows for 4 applications per acre per calendar year and does not allow more than 60 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. The Program only treats in areas where OWB infestations are confirmed or suspected; the entire Program area, which includes seven counties, will not be treated. The Program currently uses ground-based applications, which reduces the potential for drift compared to other application methods, which, in turn, reduces the settling of the pesticide outside of the treatment area. Soil organisms are important to soil health and quality; chlorantraniliprole has low toxicity to most soil borne invertebrates (see ecological resources section below) (USDA APHIS 2019).

Although the Program does not intentionally apply Helicovex to bare soil, some exposure is expected to occur during application to plants or washing off the foliage during rain events. Spray drift is likely to occur and offsite movement due to runoff is possible (USEPA 2015c). Studies indicate good retention of baculoviruses by soil, indicating *Ha*NPV is not very mobile.

Persistence of the virus in the environment, particularly in soil, is possible if conditions are favorable (USEPA 2015c). *Ha*NPV is sensitive to desiccation and ultra-violet radiation and the USEPA does not expect it to persist at high levels on most surfaces (USEPA 2015c). Helicovex has specific toxicity to lepidopteran species; it is non-toxic to other soil inhabiting organisms (USEPA 2015b) that are important to soil quality and structure. Based on the use patterns, environmental fate, and low toxicity profile, the Program does not anticipate impacts to soil quality from its use of Helicovex.

Climate Change

EO 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, directs Federal agencies, as appropriate, to: 1) improve public health and the environment; 2) ensure access to clean air and water; 3) limit exposure to and pollution from dangerous chemicals and pesticides, especially for those that disproportionately harm communities of color and low-income communities; 4) reduce greenhouse gas emissions; 5) bolster resilience to the impacts of climate change; and 6) prioritize both environmental justice and employment. In this EA, the Program evaluates the public health and environmental impacts from its proposed actions and considers environmental justice and climate change issues where appropriate. The Program is committed to selecting actions that have the least impacts while meeting its goal to eradicate OWB.

EO 14008 ensures that federal agencies address reasonably foreseeable effects of a proposed action on climate change in NEPA documents. Climate change refers to long-term shifts in average weather patterns that define the Earth's local, regional, and global climates. This includes changes in average daytime and nighttime temperature, precipitation, drought periods, periodicity of tornadoes and rainfall, polar ice melting, and sea level rise. Human-produced impact on global temperature (also known as anthropogenic global warming) may be avoided or reduced by consideration of climate change during the NEPA process.

Climate change could lead to increased temperatures, resulting in OWB producing more generations per year, having increased reproductive rates, and surviving the winter in more northern locations. Extreme precipitation and soil erosion coupled with overall drought increases stress to plants, which may increase their vulnerability to pests and diseases. All these climate change effects elevate risks to U.S. agricultural and natural resources.

Specific examples of climate change impacts to program operations include: (1) extreme weather events that interfere with the servicing of traps and application of treatments, (2) higher temperatures and drought that reduce pesticide persistence in the traps triggering the need for shorter replacement intervals and increasing program costs, and (3) agricultural funding that is redirected to disaster relief and other emergency responses. Additionally, climate change could impact the effectiveness of pesticides to work due to changing levels of carbon dioxide in the atmosphere; for example, pesticides applied to plants may be assimilated differently under higher levels of carbon dioxide (CO^2 enrichment) and warmer temperatures (Matzrafi 2019).

Sources of greenhouse gas emissions inherent in OWB control activities include land vehicles used during the OWB Program activities. The Program mitigates its contribution of greenhouse gas emissions by efficiently combining vehicle trips by personnel as much as possible. The

Program expects its contribution of greenhouse gas emissions will be minimal compared to the surrounding airport and urban traffic.

ii. No Federal OWB Management Program Alternative

APHIS would not participate or provide funds to control OWB in the state of Illinois. Other Federal or non-Federal entities could implement control measures; however, no such agency currently has the necessary resources poised to do so. The lack of a timely and coordinated OWB management program would likely result in the spread of OWB to other areas outside of Chicago. This could lead to overall increased insecticide use to protect agricultural commodities as well as non-agricultural areas, such as parks and residential gardens, where OWB host material may occur. Commercial growers that already manage the corn earworm might be able to use the same pest management programs to manage OWB. However, OWB can rapidly develop resistance to some insecticides, so long-term control potential using current methods is unknown.

The primary impacts to environmental quality from this alternative are anticipated to be the results of uncoordinated use of insecticides. The expected increase in the use of insecticides with expansion of OWB could result in additional insecticide loading with commensurate adverse impacts to water and soil quality. These adverse impacts to environmental quality would be expected to exceed those of any proposed action because insecticide use would likely increase as OWB spreads and other, potentially more hazardous, insecticides may be used.

B. Impacts on Ecological Resources

The seven-County area around ORD is characterized by urban development, industrial areas, suburban areas, parks, natural areas, and few croplands. These areas have an array of wildlife and plants, especially species typically found in modified habitats.

i. Continued OWB Management Program Alternative (No Action Alternative)

Implementation of the Continued OWB Management Program Alternative will likely result in the eradication of the invasive OWB population found in Illinois around ORD. Along with the placement and servicing of bucket traps and pesticide applications, activities will include the use of ATVs, vehicles, and walking to and from trap and treatment sites.

Survey

The Program will place bucket traps to determine locations of OWB. Standard tricolor traps will be used as the Program default. About 600-650 traps are anticipated to be used during the 2023 field season but this number could go up depending on circumstances, such as the detection of OWB in new areas outside previously established cores. In areas where OWB are detected, more traps are used to characterize the extent of the outbreak.

APHIS (USDA APHIS 2022a) and others (Spears et al. 2021, Spears et al. 2016) have conducted studies on bucket traps to attempt to reduce the capture of nontarget species, also known as "bycatch," because capturing nontargets results in more insects to analyze and potentially harms

sensitive species. Based on the findings of these studies, the Program will switch from standard tricolor traps to green unicolor traps if an inordinate amount of pollinator bycatch is occurring. It has been found that the green buckets minimize bycatch, especially of bees, compared to tricolor traps, but green traps are also much less attractive to OWB, which reduces the efficacy of the survey. In cases where high pollinator bycatch persists, even with green traps, the Program will remove those specific traps entirely. The Program and the USFWS have developed a conservation protocol to protect rusty-patched bumblebee during trapping activities; see the section on Endangered Species below.

The Program continues to monitor areas post-treatment to determine if OWB is eradicated from the area or if additional treatments are required. The Program anticipates negligible impacts to nontarget species during the placement and servicing of traps. The Program expects bycatch of nontarget species in the traps, mostly insects, but does not expect this to affect insect populations significantly. Bycatch is expected primarily of corn earworm, as a result of the pheromones used, but minimally for other species, mostly incidental take. This is negligible take for most invertebrate populations.

DDVP

APHIS evaluated the ecological impacts from its use of DDVP in traps in its Exotic Fruit Fly Eradication Program (USDA APHIS 2018a). The findings in that analysis apply to the OWB Program's use of DDVP and are summarized here. DDVP is moderately to highly toxic to mammals in oral, inhalation or dermal acute exposures (USEPA 2005). DDVP is considered highly toxic to birds based on acute oral toxicity data and is moderately to practically non-toxic to birds in subacute dietary exposures (USEPA 2005). DDVP is highly toxic to many terrestrial invertebrates, including honeybees (WHO 1989). DDVP is moderately to highly toxic to fish and aquatic-phase amphibians in acute exposures (USEPA 2005). Similarly, it is highly toxic to aquatic invertebrates, which are more sensitive to DDVP than aquatic vertebrates based on acute exposures (USEPA 2005). Data on DDVP's toxicity to terrestrial plants is lacking; however, toxicity is expected to be low due to the mechanism of action of DDVP and the proposed use pattern that would eliminate the potential for significant exposure. DDVP has low toxicity to aquatic plants (USEPA 2005). DDVP will only be used in bucket traps, which have small openings that do not allow access to birds. Bucket traps are hung in areas where few wildlife can access them, other than flying invertebrate species, so significant exposure to terrestrial vertebrates and aquatic species from the Program's use of DDVP is unlikely to occur. Risk to terrestrial invertebrates that may contact the strip is inherent; however, these effects would be incidental and localized to individual traps.

***Ha*NPV**

*Ha*NPV is not toxic to mammals, birds, non-lepidopteran invertebrates, terrestrial plants and aquatic species (USEPA 2015b, c). *Ha*NPV is specific to lepidopteran species (USEPA 2015b). While birds, mammals, and other nontarget species may be exposed to *Ha*NPV, USEPA (2015a) found no adverse effects to nontarget species based on the label requirements and the specificity of *Ha*NPV. The use of *Ha*NPV is not expected to significantly affect the food supply for nontarget animals, because the range of species affected is expected to be narrow, primarily

bollworm species, and widespread reductions in most populations of nontarget, non-lepidopteran insects and other arthropods are not anticipated. Cross-infection experiments were conducted to determine the host range of *Ha*NPV to other lepidopteran species. Transmission of *Ha*NPV was successful only in a few of the tested pest species in the genera *Helicoverpa* and *Spodoptera. Ha*NPV could not be transmitted to 22 other lepidopteran species (in seven different families) nor to 15 species in non-Lepidopteran insect orders (Hymenoptera, Diptera, Coleoptera, Neuroptera, and Homoptera) (Burges et al., 1980, as cited in (USEPA 2015c)). Because *Ha*NPV host range within Lepidoptera is narrow (baculoviruses have restricted host ranges (Thiem and Cheng 2009)), the Program expects minimal to negligible effects to other lepidopteran species that are within the treatment area. Similar to USEPA's findings, APHIS does not expect that the Program's use of *Ha*NPV will have an effect on nontarget species.

Chlorantraniliprole (Vantacor/Prevathon)

APHIS evaluated the ecological impacts from its use of chlorantraniliprole in its Grasshopper and Mormon Cricket Program (USDA APHIS 2019). The toxicity and environmental fate information in that analysis applies to the OWB Management Program's use of chlorantraniliprole (Vantacor or Prevathon) and is summarized here. Chlorantraniliprole is expected to have low acute and chronic toxicity to wild mammals based on the available data (USEPA 2012). The acute toxicity of chlorantraniliprole to birds is also very low with no acute lethal or sublethal effects noted at all doses in oral gavage or dietary studies (USDA APHIS 2019). Chronic toxicity in birds was also low (USDA APHIS 2019). Available laboratory toxicity data for technical and formulated chlorantraniliprole suggest that the product is practically non-toxic to adult honeybees in acute oral or contact exposures (EFSA 2013, USEPA 2008), which suggests low risk to adult bees at relevant field application rates. Chlorantraniliprole has low toxicity to most soil borne invertebrates; springtails were the most sensitive test species while earthworms have low sensitivity (EFSA 2013, Lavtižar et al. 2016). The Program expects adverse effects to other lepidopteran species that are within the treatment area. This would include the monarch butterfly and other caterpillars; however, the host plant for the monarch butterfly is not a host for the OWB, but it is possible milkweed (*Asclepias* spp.) may occur in weedy areas with other OWB hosts. In several studies, there was a lack of toxicity in other insect groups that mostly feed on non-plant material. Chlorantraniliprole activity is primarily through ingestion and is toxic to invertebrates that eat treated plant material. Chlorantraniliprole demonstrates low toxicity to terrestrial plants (USEPA 2008).

Chlorantraniliprole has low toxicity to fish and it is not expected to bioconcentrate in fish (USEPA 2008). Chlorantraniliprole can be characterized as very highly toxic to aquatic invertebrates (USEPA 2008); chronic toxicity is high (USEPA 2008). Available aquatic plant toxicity data suggest low toxicity (USEPA 2008). Chlorantraniliprole degradates are of lower toxic potency than the parent (USEPA 2008).

The Safety Data Sheet for Vantacor™ lists propylene glycol (2-7%) (CAS No. 57-55-6) and alkylated naphthalene sulfonate sodium salt (1-5%) (CAS No.68425-94-5) as the other ingredients in the formulation (FMC 2020). The low occurrence of these other inert ingredients in the formulation and their toxicity profile suggests that chlorantraniliprole is the primary component in the formulation resulting in toxicity. This is supported by comparisons of

mammalian acute toxicity data between the formulation and the technical active ingredient that demonstrates similar toxicity profiles in oral, dermal, and inhalation exposures.

Nontarget species present at treatment sites would be exposed to chlorantraniliprole. Runoff and spray drift are the primary routes of movement from treated areas and could lead to exposure of nontarget species off-site (FMC 2020, USEPA 2020). However, following label restrictions minimizes the potential of runoff and reduces risks to water resources and potential exposure to species away from the treated area.

USEPA (2011) evaluated foliar application rates similar to those proposed in the Program and did not find a level of concern exceedance for birds, mammals, or terrestrial plants. Based on the environmental fate properties and toxicity profile of chlorantraniliprole, the Program anticipates minimal effects to birds and mammals that occupy, or access areas treated with chlorantraniliprole for OWB. Chlorantraniliprole will impact sensitive terrestrial invertebrates (particularly leaf-eating invertebrates) located within the treatment area. Because treatments are not directed to bare soil, adverse impacts to soil-dwelling invertebrates are expected to be minimal. Runoff from treated foliage to the soil surface from rain events is possible; however, the Program follows the label and does not make applications if rain is expected within the next 48 hours.

The labels do not allow chlorantraniliprole applications directly to water or to areas where surface water is present or to intertidal areas below the mean high-water mark (USEPA 2020). The Program does not anticipate harmful effects to aquatic species because it follows label requirements to minimize drift and runoff, including having a vegetative buffer strip between the treatment area and water resource, which reduces the exposure potential of aquatic resources. Should chlorantraniliprole move into aquatic resources from pesticide applications, the Program anticipates the amount would be minimal and would not cause significant population effects.

APHIS evaluated the potential drift to water resources from chlorantraniliprole applications using ground-based equipment to treat OWB. APHIS used the USEPA regulatory drift model AgDrift, to simulate ground-based applications and how much drift would be anticipated using a low boom tractor or all-terrain vehicle (ATV) application. In AgDrift, APHIS estimated an upper bound aquatic residue value using the highest application rate of chlorantraniliprole (0.066 lb. a.i./A) proposed for treating OWB. The water body used to estimate a residue was the USEPA-defined wetland (0.49 x 208.7 feet). The water body was assumed to be static with no inflow or outflow. An acute residue value of 493.17 nanograms (ng)/L was estimated based on the above input assumptions. This value does not account for any degradation or dissipation that would reduce residues. This value also does not include any contribution that could occur from runoff. Runoff is anticipated to be a minor contribution to offsite transport since applications are directed to host plants with minimal residues on soil. There is the possibility of some pesticide being removed from treated plants, however the label recommends that applications are made when there is no possibility of rain within 48-hours of treatment. In addition, the label recommends the use of vegetative buffer strips that would reduce the potential for runoff from chlorantraniliprole applications.

Hazard quotients listed in Table 2 were estimated by taking the estimated acute residue value in a wetland habitat and dividing by the respective toxicity endpoint. Acute residues were used to

estimate chronic hazard quotient values to provide an overly conservative estimate of chronic risk to invertebrates and vertebrates.

Table 2. Chlorantraniliprole hazard quotients for aquatic species.

Test Species	Exposure	Toxicity Value (mg/L)	Hazard Quotient
Daphnia magna	48 hours (EC_{50})	0.116	0.004
Chironomus riparius	28 days (LOEC[1])	0.0031	0.16
Labeo rohita	96 hours (LC_{50})	12.7	0.00004
Oncorhynchus mykiss	31 days (NOEC[2])	0.11	0.004

[1] LOEC is the lowest observable effect concentration
[2] NOEC is the no observable effect concentration

USEPA has established LOCs for acute and chronic risk quotients. Hazard quotient values above the LOC make a presumption of risk. For listed aquatic species USEPA uses an acute LOC of 0.05 and a chronic LOC of 1.0. Using USEPA assumptions for risk, the acute hazard quotients estimated in the above table are an order of magnitude below the acute LOC for aquatic invertebrates and three orders of magnitude below the LOC for aquatic vertebrates. Using the acute residue estimates, the chronic LOC values were below one for aquatic invertebrates and vertebrates, suggesting negligible risk to these taxa from chronic chlorantraniliprole exposures.

Chlorantraniliprole applications will likely cause a decrease in invertebrate populations where treatments occur. This reduction would reduce food availability to vertebrates that rely on invertebrates for their diet. However, this temporary reduction in food availability is not expected to significantly impact birds or mammals as they would find food items outside of treatment areas. Invertebrate species populations in the area are mostly common species, except those discussed below for threatened and endangered species, but no populations are anticipated to be affected significantly other than the rusty-patched bumblebee as discussed.

Endangered Species, Migratory Birds, and Bald and Golden Eagles

It is Federal policy, under the ESA, that all Federal agencies shall seek to conserve threatened and endangered species and shall use their authorities in furtherance of the purposes of the ESA (Sec.2(c)). Section 7 consultations with USFWS are conducted to ensure that "any action authorized, funded, or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species. Each agency shall use the best scientific and commercial data available" (Sec. 7(a)(2)).

APHIS has considered the impacts of the proposed OWB Management Program regarding listed species in the 2023 proposed program area (Table 3) in a Biological Assessment (USDA APHIS 2022b). APHIS submitted the Biological Assessment to the USFWS in March 2023, requesting formal consultation for the rusty-patched bumblebee because program activities are likely to adversely affect the insect. APHIS also requested concurrence with its determination that program activities may affect but are not likely to adversely affect the eastern massasauga, eastern prairie fringed orchid, and leafy prairie-clover. APHIS is currently awaiting the biological opinion for rusty-patched bumblebee and the concurrence letter for the other three

species. APHIS will not implement any irreversible or irretrievable commitment of resources until Section 7 consultation is completed with USFWS.

APHIS will reinitiate section 7 consultation with USFWS for this program if:

(1) New information reveals effects of the action that may affect the species in a manner or to an extent not considered in this determination; or
(2) The action is later modified in a manner that causes an effect to the species not considered in this consultation, including the expansion of the Program action area; or,
(3) Critical habitat is designated that may be affected by this action.

Table 3. Federally listed threatened and endangered species in the OWB project area of Illinois, their status, critical habitat designation, and determination of impacts by the OWB Program.

Species	Scientific Name	Status	Critical Habitat	OWB Program Impact Determination
Vertebrates				
Indiana Bat	*Myotis sodalis*	E	Hx	No Effect
Northern Long-eared Bat	*Myotis septentrionalis*	E	No	No Effect
Tricolored Bat	*Perimyotis subflavus*	PE	No	No Effect
Piping Plover (Great Lakes Distinct Population Segment)	*Charadrius melodus*	E	Hx	No Effect
Red Knot	*Calidris canutus rufa*	T	HPu	No Effect
Eastern Massasauga (=rattlesnake)	*Sistrurus catenatus*	T	No	NLAA
Invertebrates				
Sheepnose Mussel	*Plethobasus cyphus*	E	No	No Effect
Hine's Emerald Dragonfly	*Somatochlora hineana*	E	Hx	No Effect
Karner Blue Butterfly*	*Lycaeides melissa samuelis*	E	HPu	No Effect
Rusty-patched Bumble Bee	*Bombus affinis*	E	No	LAA
Plants				
Eastern Prairie Fringed Orchid	*Platanthera leucophaea*	T	No	NLAA
Lakeside Daisy	*Hymenoxys herbacea*	T	No	No Effect
Leafy Prairie-clover	*Dalea foliosa*	E	No	NLAA
Pitcher's Thistle	*Cirsium pitcheri*	T	No	No Effect
Prairie Bush-clover	*Lespedeza leptostachya*	T	No	No Effect

Status: T=Threatened, E=Endangered, P=Proposed
Critical Habitat: Hx-habitat in project area, HPu: habitat proposed but unknown if in project area, No – critical habitat not designated for species
Determination: (N)LAA=(Not) Likely to Adversely Affect
* Extirpated from project area

The Migratory Bird Treaty Act (MBTA) prohibits an individual to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird or any part, nest, or egg of any such bird (16 U.S.C. §§ 703-712; 50 CFR § 21). Additionally, eagles

have special protection under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) and are considered sensitive species and actions of the proposed OWB Program are considered for these two species. Similarly, EO 13186 directs Federal agencies taking actions with a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with USFWS that promotes the conservation of migratory bird populations. On August 2, 2012, an MOU between APHIS and the USFWS was signed to facilitate the implementation of this Executive Order. USFWS provided a list of birds of conservation concern to APHIS for the 7-county area in Illinois.

APHIS determined that migratory birds, including birds of conservation concern and eagles, will not be impacted by the OWB Management Program. As discussed above in connection with the three active ingredients that will be used in the field, APHIS expects no effects to terrestrial and aquatic vertebrates and aquatic invertebrates from Program activities. The Program does not expect its minor impacts to terrestrial invertebrates from its use of DDVP and chlorantraniliprole will affect food sources for migratory birds or birds of conservation concern because food sources would be available in nearby, untreated areas. APHIS expects disturbance from other activities, such as surveying or accessing treatment sites, will be of short duration and have negligible impacts to threatened and endangered species, migratory birds, and eagles if present. In general, the habitat where treatments have occurred are developed urban and industrial sites not conducive for use by species of conservation concern.

ii. No Federal OWB Management Program Alternative

Under this alternative, the lack of a coordinated OWB management program would lead to spread of OWB to other areas, followed by increased pesticide use to protect agricultural commodities as well as non-agricultural areas where OWB host material occurs. Increased pesticide use could increase the likelihood of adverse effects to nontarget wildlife and domestic animals, including some endangered or threatened species.

OWB has a wide plant host range and causes significant damage to commercial host crops, as well as other host plant species, including rare plant species. Commercial growers that already manage the corn earworm might be able to use the same pest management programs to manage OWB. However, OWB can rapidly develop resistance to some insecticides, so long-term control potential using current methods is unknown. The use of pesticides in other ecosystems could lead to adverse impacts to a range of terrestrial and aquatic species, depending on the pesticide used and the method of application. APHIS cannot predict the pesticides other entities may apply to control OWB. However, under this alternative, APHIS expects some pesticides used to control OWB will have greater toxicity to some ecological resources than the pesticides the Program proposes to use. Pesticide label restrictions minimize potential impacts to ecological resources, but an increased impact on nontarget species, such as the rusty-patched bumblebee, would likely occur. APHIS expects that the lack of coordinated effort to eradicate OWB would result in the spread of OWB potentially beyond eradication ability. These potential outcomes would lead to greater impacts to ecological resources under this alternative compared to the No Action Alternative.

C. Impacts on Human Health and Safety

This section evaluates the impacts Program activities may have on human health and safety. The Program evaluates two human populations: the general public and Program personnel (agricultural workers). Requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides are found in 40 CFR Part 170, which also contains requirements for training, decontamination, notification, and emergency assistance. The regulations also have specific instructions and exceptions pertaining to the statements on pesticide labels about PPE, restricted-entry intervals, and notification to workers, as applicable.

In its evaluation of pesticide impacts to human health, the Program evaluates the potential exposure pathways for DDVP (Vaportape), chlorantraniliprole (Vantacor or Prevathon), and *Ha*NPV (Helicovex) according to the Program's use patterns. The exposure pathways include (1) a release from a pesticide source, (2) an exposure point where contact can occur, and (3) an exposure route such as ingestion, inhalation or dermal.

i. Continued OWB Management Program Alternative (No Action Alternative)

Survey

The placement and servicing of traps will not impact the health of the general public or Program personnel. The traps are placed in areas that Program personnel can reach safely on foot. The Program currently does not place traps on residential properties. The Program places a label on each trap that provides contact information should someone have a question about the trap (Figure 4). The human health and safety of the DDVP insecticidal strip used in the traps is covered below.

DDVP

DDVP is toxic to humans through the inhibition of acetylcholinesterase of the peripheral or central nervous systems (USEPA 2006b). The technical active ingredient DDVP has high acute toxicity through dermal exposure, and moderate acute toxicity from oral and inhalation exposures. The formulated material is an eye and skin irritant and a possible skin sensitizer. Prolonged exposure to DDVP may cause a range of symptoms including headache, nausea, vomiting, diarrhea, abdominal cramps, muscle twitching, and confusion (USEPA 2006b).

APHIS evaluated the human health risks associated with its use of DDVP strips in insect traps and found negligible risks to the general public and workers, based on the application method and label instructions (USDA APHIS 2018a). Based on the application method, workers in the Program are the most likely human population segment to be exposed to DDVP. Occupational exposure to DDVP may occur through inhalation and dermal contact with this compound during application (placing the strips in the traps). However, dermal contact exposures are minimized because no mixing is required, and the label requires PPE such as gloves. Inhalation exposure is minimized because workers assemble the traps outdoors. Drift from the application is not

expected because DDVP is impregnated in strips placed inside the traps. Therefore, exposure to workers should be negligible under normal conditions.

***Ha*NPV**

The Program makes ground-based foliar applications using a backpack sprayer or ATV-mounted sprayer. The Program does not expect to use UAS for applications; but should this application method become available in the future, the Program expects the drift potential to be similar to the drift that could occur with ATV-mounted sprayers, to a maximum of 15 ft. given the correct droplet size (nozzle), height, wind speed, and UAS speed (Chen et al. 2022, Leffer 2021). Current treatment areas are in and around the airport and are industrialized areas, vacant lots, and rights-of-way; not typically places where the general public would be. Most of these locations are under controlled access by the airport authority and are not open to the public, or they are otherwise not conducive to general foot traffic. The Program does not treat residential properties.

The Program does not anticipate adverse impacts to the general public or Program applicators from its use of Helicovex. Helicovex (*Ha*NPV strain BV-0003) is not toxic or pathogenic to humans through acute oral, pulmonary, and injection routes of exposure (USEPA 2015b). It is classified as practically non-toxic in acute dermal and inhalation routes of exposure (USEPA 2015b). It is not considered an acute eye or primary dermal irritant (USEPA 2015b). It is "Not Likely to be Carcinogenic to Humans" based on the absence of increased tumor incidence in carcinogenicity laboratory studies. In addition, there are no genotoxicity, mutagenicity, neurotoxicity, or immunotoxicity concerns (Andermatt 2017, USEPA 2015a).

USEPA concluded that the risk posed to adults, infants, and children is likely to be minimal due to low acute toxicity and pathogenicity potential of *Ha*NPV strain BV-0003 and negligible exposure to the virus (USEPA 2015a). USEPA (2015a) concluded that acute and chronic aggregate dietary (food and water) risks were below levels of concern.

The label has no specific buffer distance for applying near waterways, but it does not allow application directly to water or to areas where surface water is present. Exposure to residues of *Ha*NPV strain BV-0003 in consumed drinking water is unlikely (USEPA 2015a). In addition, the Program's use pattern and current treatment areas, which are not in proximity to human drinking water sources, indicate exposure to drinking water is unlikely. Furthermore, the virus is not expected to significantly contaminate groundwater because microbial pesticides tend to be filtered out by the particulate nature of many soil types (USEPA 2015b). If it were to move to surface or groundwaters that are intended for eventual human consumption (e.g., through spray drift or runoff), it is unlikely that the virus would survive water treatment systems, such as chlorination, pH adjustments, filtration, or occasionally high temperatures (USEPA 2015a). In the remote likelihood that *Ha*NPV strain BV-0003 is present in drinking water (e.g., water not subject to treatment systems), based on the target pest specificity and other data, risks to human health are negligible (USEPA 2015a). Due to its lack of toxicity and its specificity to lepidopteran species, the USEPA exempts *Ha*NPV strain BV-0003 from the requirement of a tolerance for residues in or on all agricultural commodities (USEPA 2015a). Helicovex is OMRI accredited and is approved for use in organic production systems.

Because applicators may be subject to prolonged and repeat exposure to Helicovex, and repeated exposure to high concentrations of microbial proteins can cause allergic sensitization (Andermatt

2017, USEPA 2021), the USEPA (2015b) requires the label to instruct agricultural workers, which includes Program applicators, to wear a long-sleeved shirt, long pants, socks, shoes, and a dust/mist filtering respirator. The Helicovex label indicates it can cause moderate eye and skin irritation (USEPA 2021). The label has a restricted-entry interval of 4 hours.

Chlorantraniliprole

APHIS evaluated the human health risks associated with its use of chlorantraniliprole in its grasshopper and Mormon Cricket program (USDA APHIS 2019). Much of the toxicity and environmental fate information in that risk assessment extend to the OWB Program and are summarized here; consult the USDA APHIS (2019) risk assessment for details on risks to human health from chlorantraniliprole.

Chlorantraniliprole is not acutely toxic to humans and has no adverse short-term effects (USEPA 2008). Chlorantraniliprole is not neurotoxic, immunotoxic, carcinogenic, genotoxic, or a developmental toxicant (USEPA 2012). It is not an eye or skin irritant or a skin sensitizer.

The OWB Management Program proposes to apply chlorantraniliprole using ground-based applications (backpack or ATV-mounted sprayers) to treat areas where OWB is confirmed or expected to occur. The Program expects it could use UAS for applications; should this application method become available in the future, the Program expects the drift potential to be similar to the drift that could occur with ATV-mounted sprayers (Chen et al. 2022, Leffer 2021). Current treatment areas are in and around the airport and are industrialized areas, vacant lots, and rights-of-way; not typically places where the general public would be. Most of these locations are under controlled access by the airport authority and are not open to the public, or they are otherwise not conducive to general foot traffic. The Program does not treat residential properties.

Based on the application method, workers in the Program are the most likely human population segment to be exposed to chlorantraniliprole. Short-term occupational exposure to chlorantraniliprole may occur through direct contact with this compound during application (mixing, loading, applying, and post-application activities). However, direct contact exposure is minimized by adherence to label-required safety procedures and the use of PPE. Exposure to chlorantraniliprole through drift from ground spray applications is expected to be minimal because only protected handlers may be allowed in the area during application, and workers are not allowed entry into treated areas during the 4-hour restricted-entry interval. Although adverse effects have been observed in chronic exposures, the Program does not anticipate chronic exposure from pesticide applications because the label restricts the number of applications allowed per season. The Program uses Vantacor and Prevathon under SLN labels. The Vantacor SLN label allows 3 applications per acre per calendar year and does not allow more than 5.1 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. The Prevathon SLN label allows for 4 applications per acre per calendar year and does not allow more than 60 fl. oz. or 0.2 lb. a.i. chlorantraniliprole per acre per calendar year. The use of chlorantraniliprole by the Program will pose negligible risk to human health. Exposure to chlorantraniliprole via oral, inhalation, and dermal routes is expected to be minimized for workers by adherence to the label-required PPE. Accidental exposure may occur but would be of low exposure frequency and short-term duration.

Therefore, adverse health risk to workers associated with Program applications is not expected because of the lack of toxicity in acute and short-term exposures.

Chlorantraniliprole exposure to the general public is not expected from Program use based on adherence to label requirements that prevent such potential exposure. Only protected handlers may be in the area during application, and entry of the general public into the treated area is not allowed during the 4-hour restricted-entry interval period. Chlorantraniliprole has environmental fate properties that suggest a potential for transport to surface and groundwater (see impacts on environmental quality section), especially in areas where soils are permeable or poorly drained, and the water table is shallow (USEPA 2020). However, the potential exposure of the general public to chlorantraniliprole from drinking water sources from Program use is not expected based on adherence to the label requirements, which specify a vegetative buffer strip between applications and waterways and do not allow applications directly to water bodies (USEPA 2020). In addition, the current Program treatment areas are in and around ORD, which includes industrialized areas, vacant lots, and rights-of-way that are not near drinking water sources.

Human Health and Safety Associated Regulations

APHIS considered the potential environmental impacts of implementing the OWB Management Program on minority and low-income communities and sensitive populations in the Program area.

EO 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

EO 12898 focuses Federal attention on the environmental and human health conditions of minority and low-income communities and promotes community access to public information and public participation in matters relating to human health and the environment. This EO requires federal agencies to make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States. The OWB Program will have low potential to affect minority and low-income populations. The pesticides used and the label requirements will result in minimal risks to these populations. Eradicating OWB could benefit small family farm communities because this pest would have significant impacts to American agriculture should its spread not be stopped. Furthermore, failure to control the spread of OWB as soon as possible would likely lead to more pesticides being used in the long term and to higher food costs, which could disproportionately affect minority and low-income populations.

EO 13045—Protection of Children from Environmental Health Risks and Safety Risks

This EO acknowledges that children, as compared to adults, may suffer disproportionately from environmental health and safety risks due to their developmental stage, greater metabolic activity levels, and behavior patterns. This EO (to the extent permitted by law and consistent with the agency's mission) requires each Federal agency to identify, assess, and address environmental health risks and safety risks that may disproportionately affect children. The proposed Program

does not pose any disproportionately high adverse effects to children because they are unlikely to be present in the Program area where trap placement and pesticide applications occur. The current outbreak area is not next to schools. When pesticide applications are essential in areas where children may be present, the Program would adhere to restricted entry intervals on product labels and make ground applications with a backpack sprayer. Any exposure of children to applied products would be negligible based on the Program's application methods and the label requirements.

EO 13985 – Executive Order on Advancing Racial Equity and Support for Underserved Communities Through the Federal Government

EO 13985 "advances equity for all, including people of color and others who have been historically underserved, marginalized, and adversely affected by persistent poverty and inequality". It instructs Agencies "to assess whether, and to what extent, its programs and policies perpetuate systemic barriers to opportunities and benefits for people of color and other underserved groups". The human health and environmental effects from the proposed pesticide applications are expected to be minimal and are not expected to have disproportionate adverse effects on any minority or low-income families. The use pattern and available data regarding risk for each of the proposed pesticides suggest that minority and low-income populations will not be at a disproportionate risk. In fact, if OWB are eradicated, marginalized communities would benefit from overall protection of agricultural and ornamental plants.

ii. No Federal OWB Management Program Alternative

Under this alternative, there is a higher probability that the OWB population could expand and move into surrounding agricultural areas and to other states. This could have significant effects on agriculture and natural resources within and outside the seven-county area, result in adverse economic impacts to growers through loss of crops and nursery stock, and harm agricultural trade. A total of 46 countries considers OWB a quarantine species, and thus the likelihood of trade restrictions and embargos is high. The continuing spread of OWB would also reduce the amount of locally available produce from crops that are susceptible to this pest. The probable response from most growers and homeowners who see increased damage to plants would be to control OWB through pesticide applications. Without a federally coordinated management plan, greater pesticide quantities and types, along with higher frequency of application, and potentially duplicative treatments, could be anticipated. In addition to direct toxic effects to humans from the pesticide applications, cumulative impacts of multiple exposures are more likely with the lack of coordinated treatments. Human exposure to pesticides and resulting adverse consequences from this alternative would be expected to exceed any adverse effects from a coordinated program.

D. Cumulative Impacts

In terms of Federal and State activities in the Program area, there are no significant cumulative impacts to the human environment anticipated from implementing the No Action Alternative. If the OWB infestation expands, APHIS and IDA may expand the Program to include new areas (USDA APHIS 2022b). But based on APHIS review of existing and potential future OWB cooperative program treatments, there will be no cumulative impacts to the human environment

resulting from proper implementation of the No Action Alternative. OWB Management Program pesticide treatments are considered to pose minimal risk to the human environment.

IV. Appendix 1. Resources Not Evaluated in this Environmental Analysis.

APHIS did not evaluate air quality and cultural and historic resources, including Tribal resources, in this EA because it did not find any issues or concerns regarding these resources. The OWB Management Program primarily takes place in industrial, urban, and suburban areas in and around ORD. The actions discussed in this EA involve no construction or physical alteration of the environment and therefore geology, minerals, and flood plains will not be affected by the OWB management activities described under the alternatives analyzed.

The Clean Air Act is the primary Federal law that protects the Nation's air quality for the purposes of public health and welfare. The Clean Air Act requires USEPA to establish National Ambient Air Quality Standards for specific pollutants. These pollutants are known as criteria pollutants, and include ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. The standards are intended to represent the maximum concentration of a specific pollutant in the ambient air that will not adversely impact public health or welfare. The stringency of air pollution regulations in a specific area is based upon whether that area is in attainment (e.g., compliance) or nonattainment (e.g., not in compliance) with standards. Greenhouse gases impact air quality: these gases include carbon dioxide, methane, nitrous oxide, and fluorinated gases.

Air pollution levels in the seven-county area are low. Although air pollutants will be released from the use of Program vehicles and ATVs, these will be negligible. The overall quantity of emissions will be minimal and would not add significantly to greenhouse gas emissions. The lack of impacts to air quality precludes its analysis in this EA.

The Program pesticides are not expected to impact air quality. Chlorantraniliprole is unlikely to volatize to air because of its low vapor pressure (USEPA 2011). Helicovex is mostly non-volatile, but breathing vapors from mixtures may cause coughing (Andermatt 2017). Foliar applications of chlorantraniliprole and Helicovex will result in temporary and localized aerosols, but these fall rapidly to foliage and the ground. DDVP is volatile; however, the small amount of pesticide impregnated in the insecticidal strips and its use within traps indicate negligible risk to air quality.

EO 13175 ensures agencies communicate and collaborate with Tribal officials for proposed Federal actions with 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. APHIS did not find impacts to Tribes in the OWB treatment area. The alternative activities described in Section 2 will not involve treatments that excavate soil or create fugitive dust, so Program activities are unlikely to affect Native American artifacts. The Program would not place insect traps on tribal properties without their permission. To the extent that treatments may occur on land where there are Tribal interests, the Program will contact representatives from the identified Tribes to ensure adequate notification and consultation in a timely manner. If the Program discovers any archaeological Tribal resources, it will notify the appropriate individuals.

The National Historic Preservation Act of 1966, as amended (16 United States Code (U.S.C.) §§ 470 et seq.), requires Federal agencies to consider the potential for impact to properties included in, or eligible for inclusion in, the National Register of Historic Places (36 C.F.R. §§ 63 and 800) through consultation with interested parties where a proposed action may occur. This includes districts, buildings, structures, sites, and landscapes. APHIS Program actions, in this case, will not disturb historic places because there will be no placement of insect traps and no application of pesticides on historic properties, and the application methodologies minimize the potential for drift. Program treatments are targeted to OWB hosts, and do not alter, change (restore or rehabilitate), modify, relocate, or destroy any historic buildings, edifices, or nearby infrastructure. If the Program discovers any archaeological resources, it will notify the appropriate State Historic Preservation Office.

V. Appendix 2. Old World Bollworm Host Plants

Major crop hosts include:

alfalfa (*Medicago* spp.)
apple (*Malus* spp.)
barley (*Hordeum vulgare*)
bean (*Phaseolus vulgaris*)
bell pepper (*Capsicum annuum*)
carnation (*Dianthus caryophyllus*)
chickpea (*Cicer arietinum*)
citrus fruit (*Citrus* spp.)
corn (*Zea* spp.)
cotton (*Gossypium* spp.)
cruciferous crops (Brassicaceae spp. such as domesticated varieties of *Brassica oleracea* including broccoli, cauliflower, cabbage, kale, and Brussels sprouts)
cowpea (*Vigna unguiculata*)
eggplant (*Solanum melongena*)
finger millet (*Eleusine coracana*)
flax (*Linum usitatissimum*)
geranium (*Pelargonium* spp.)
hyacinth bean (*Lablab purpureus*)
mango (*Mangifera indica*)
oats (*Avena sativa*)
okra (*Abelmoschus esculentus*)
onion, garlic, leek, etc. (*Allium* spp.)
peanut (*Arachis hypogaea*)
pearl millet (*Pennisetum glaucum*)
pigeon pea (*Cajanus cajan*)
pea (*Pisum sativum*)
pine (*Pinus* spp.)
potato (*Solanum tuberosum*)
safflower (*Carthamus tinctorius*)
sorghum (*Sorghum* spp.)
soybean (*Glycine max*)
stone fruit (*Prunus* spp.)
sunflower (*Helianthus* spp.)
tobacco (*Nicotiana tabacum*)
tomato (*Solanum lycopersicum*)
wheat (*Triticum* spp.).

Wild hosts include:

annual sowthistle (*Sonchus oleraceus*)
black henbane (*Hyoscyamus niger*)
copperleaf (*Acalypha* spp.)
datura (*Datura* spp.)
pigweed (*Amaranthus* spp.).

Reference: (CABI 2021), consult this reference for a more extensive list of host plants.

VI. Appendix 3. Listing of Agencies Consulted

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

Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road
Riverdale, MD 20737

State Plant Health Director
Plant Protection and Quarantine
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
2300 East Devon Avenue, Ste. 210
Des Plaines, IL 60018

U.S. Fish and Wildlife Service
Illinois-Iowa Ecological Services Field Office
1511 47th Ave
Moline, IL 61265

Illinois Department of Agriculture
801 E Sangamon Ave,
Springfield, IL 62702

Illinois Department of Natural Resources
One Natural Resources Way
Springfield, IL 62702

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