CALIFORNIA DEPARTMENT OF FOOD & AGRICULTURE

Statewide Plant Pest Prevention and Management Program Environmental Impact Report

Volume 1 - Main Body

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Horizon WATER and ENVIRONMENT

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FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT

CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE

Statewide Plant Pest Prevention and Management Program

SCH #2011062057

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Executive Summary

The California Department of Food and Agriculture (CDFA) is mandated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds in California (California Food and Agricultural Code Section 403). To accomplish this, CDFA implements the Statewide Plant Pest Prevention and Management Program (Statewide Program), an ongoing effort by CDFA to protect California's agriculture from damage caused by invasive plant pests. The Statewide Program is implemented in partnership with a number of different entities, including international trading partners, the U.S. Department of Agriculture, County Agricultural Commissioners, other public agencies, industry groups, and academia.

CDFA has prepared this Final Program Environmental Impact Report (PEIR) to provide an up-to-date, transparent, and comprehensive evaluation of CDFA's activities. The PEIR will serve as an overarching CEQA framework for efficient and proactive implementation of Statewide Program activities. As part of this, CDFA plans to implement a CEQA Tiering Strategy, a checklist tool and guide for project-level CEQA compliance and integration of new pest programs and management techniques. The Statewide Program activities as they are described in this PEIR are referred to as the "Proposed Program."

This PEIR is intended to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of implementation of the Proposed Program. This Final PEIR has been prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended) and the CEQA Guidelines (Title 14, California Code of Regulations Section 15000 et seq.).

Overview of the Statewide Program

Goals and Objectives

The overarching goal of the Statewide Program is to protect California's agriculture from damage caused by invasive plant pests. Other goals of the Statewide Program include: (1) providing rapid response resources in order to address pest infestations as they occur, and (2) using an Integrated Pest Management (IPM) approach in conducting activities (described further below).

In meeting these goals, the Proposed Program has the following objectives:

- Exclude invasive or harmful plant pests from California and prevent or limit the spread of newly discovered pests within the state;
- Protect California from damage caused by the introduction or spread of harmful plant pests;
- Minimize the impacts of pest management approaches on human health and urban and natural environments;

- Promote the production of a safe, healthy, secure food supply;
- Support CDFA's goal of rapid response by streamlining project-level implementation activities, addressing new pests as they are detected, and integrating new pest management approaches as they are developed;
- Implement a program that is broad enough to apply to a wide range of pest management methods and types of pests in California;
- Be consistent with existing CDFA permits, protocols, and policies, including the National Pollutant Discharge Elimination System (NPDES) Permit issued to CDFA by the State Water Resources Control Board (SWRCB);
- Coordinate CEQA compliance for the multiple, interrelated pest prevention and management programs under the Statewide Program; and
- Develop a checklist evaluation tool to assess the potential environmental impacts of proposed activities that can be understood and reviewed by the public.

Program Area

Plant pests are found in a combination of urban, rural, natural, and agricultural settings in the state; therefore, Statewide Program activities occur in various locations throughout California (Figure ES-1). The potential geographic extent of a pest infestation depends on a number of factors, including suitable climatic and ecological conditions for the pest and its hosts.

Proposed Program activities may occur anywhere that a pest is (or may be) found in agricultural or nursery settings (in cooperation with commercial growers), in residential communities[1], at border protection stations, and sometimes outside California (for activities conducted by others besides CDFA, in response to restrictions on importation of potentially infested commodities and equipment from outside the state). Proposed Program activities would be guided by specific management decision criteria, including confirmation of a pest population, population numbers, and the severity of the threat to agriculture and the surrounding environment. The location, area and extent of specific activities under the Proposed Program ultimately would be evaluated based on the site-specific situation and dictated by the targeted pest, the regulatory requirements and the management approaches available.

Summary of Statewide Program Activities

The Statewide Program encompasses a range of prevention, management and regulatory activities, carried out or overseen by CDFA against specific injurious pests, and their vectors, throughout California. The Statewide Program is made up of a variety of focused programs, each including a set of options for controlling target pests.

[1] Aerial spraying would not occur in residential areas, without conducting additional tiered CEQA analysis and associated public review.

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Figure ES-1
Program Area

CDFA uses an IPM approach for pest prevention and management of the Statewide Program staff and in the development of regulations. IPM is the coordinated use of information about pest population biology and the host environment, combined with all available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment, while achieving adequate efficacy to meet the goal of the program. The IPM approach considers information on the life cycles of pests and their interaction with the environment, and all appropriate pest management options. Implementation often results in a combination of strategies, including mechanical control, biological control, cultural control, and the use of pesticides where indicated (note that mechanical and cultural controls are collectively referred to as "physical management approaches" in this PEIR).

Activities conducted under the Statewide Program include: pest rating (evaluation of pest's environmental, agricultural, and biological significance); identification, detection and delimitation of new pest populations; pest management response, which may include rapid eradication and/or control of new and existing pest populations, and prevention of the movement of plant pests into and within California. The Statewide Program includes a set of options to achieve CDFA's goals and objectives, including physical, biological, and chemical management techniques.

Public notification is a necessary and important component of the Statewide Program. A protocol for public notification is established for every program response plan and may include:

- Property-specific notifications via personal service;
- Notification by mail, in local newspapers, and/or on official websites;
- Establishing a Proclamation of an Eradication Project or Proclamation of Emergency Project;
- Providing authorities with a justification for the response;
- Notification to the governing boards of affected cities and counties, including county agricultural commissioners and health officers, including:
  - A description of the public notification process associated with the response;
  - An identification of the IPM analysis of treatment methods;
  - The project work plan;
  - A pest profile; and
  - A map of the affected area;
- Holding public meetings, which would include:
  - CDFA project staff, Office of Environmental Health Hazard Assessment (OEHHA) staff, California Department of Pesticide Regulation (CDPR) staff, local Agricultural Commissioner staff;
  - Providing information about any pesticides that may be used, and the method or methods of application;
  - The CDFA Hotline to address further questions, information, or scheduling concerns;
  - A map of the affected area;
  - An opportunity for the public to ask questions; and

- Providing regulatory information to affected growers, businesses, and residents about quarantine regulations and applicable restrictions or prohibitions on the movement of pests, hosts, or host material from quarantine areas

The Proposed Program is described in detail in Chapter 2, Proposed Program Description, and Chapter 3, Proposed Program Activities.

Nature of the Discretionary Action Considered in the PEIR

The Statewide Program is ongoing and currently is implemented pursuant to existing CEQA authorizations. This PEIR is intended to provide CEQA compliance for the future Statewide Program activities (i.e., the "Proposed Program"), described in Chapter 2, Proposed Program Description, and Chapter 3, Proposed Program Activities. CDFA will use the PEIR in deciding whether to approve, approve with modifications, or deny the Proposed Program.

This PEIR is intended to meet CEQA requirements for CDFA's reasonably foreseeable plant pest prevention, management, and regulatory activities. The Proposed Program does not attempt to capture all potential future Statewide Program activities, only those that are reasonably foreseeable based on existing information regarding the status of specific pests and management approaches. This PEIR builds on and reflects existing CEQA documents for ongoing Statewide Program activities. It also updates and integrates the various physical, biological, and chemical management activities into a comprehensive program, and provides a consolidated set of Management Practices (MPs) and mitigation measures, using the most current technology and scientific information. If CDFA approves the Proposed Program, these MPs and mitigation measures will replace those identified in prior CEQA documents and will serve as a comprehensive management framework for implementation of Proposed Program activities.

Finally, the PEIR will be used for subsequent CEQA evaluation, for both project-level pest prevention and management activities and program-level compliance for newly developed management approaches or other program activities, such as newly identified types or species of plant pests. Use of the PEIR to facilitate CEQA compliance for individual activities and program components will enable CDFA to respond consistently with its goals of rapid response and minimizing risk to human health and environmental resources. The strategy to be implemented for the Proposed Program is described further below, under CEQA Tiering Strategy.

Prior CEQA Documents

CDFA has previously adopted a number of other pest-specific CEQA documents. These CEQA documents evaluated numerous pest prevention and management activities conducted by CDFA for some of the pests covered under the Statewide Program, as described in further detail in Chapter 4, Prior CEQA Coverage. As described above, this PEIR builds on these existing CEQA documents, updating and integrating the various activities into a comprehensive program, and provides a consolidated set of MPs and mitigation measures. If CDFA approves the Proposed Program, these MPs and mitigation measures would replace those identified in prior CEQA documents.

CEQA Tiering Strategy

To facilitate the determination of whether activities and management approaches proposed as part of a future activity have been sufficiently described in the Statewide Program and adequately addressed in the PEIR, a CEQA Tiering Strategy and checklist have been developed and are provided in Appendix C. Using these tools, future Statewide Program activities would be assessed to determine the extent to which potentially significant environmental impacts have been adequately addressed in this PEIR.

Risk Assessment

The potential impacts related to pesticide applications that may be used for pest management activities under the Proposed Program were analyzed quantitatively in the Ecological Risk Assessment and Human Health Risk Assessment, provided in Appendices A and B, respectively.[2] These assessments were based on a review of the chemicals and equipment to be used in the Proposed Program, and followed a standard risk assessment process involving hazard identification, toxicology/dose-response, exposure assessment, and risk characterization. Conservative assumptions were used throughout to ensure that risk was not understated. Throughout the development of the risk assessment, regular consultation and review of risk assessment methods, assumptions, and results were conducted in coordination with OEHHA and CDPR staff to help ensure that they supported the risk assessment methodology and conclusions.

The risk assessment concluded that, if chemicals are used as described in the Proposed Program, they would not pose a human health risk exceeding a level of concern to workers or others who may be exposed to these chemicals. Although impacts on ecological receptors were determined to be possible, mitigation measures were identified to reduce such impacts. For a more complete description of the risk assessment, its conclusions, and the CEQA analysis which builds off of the risk assessment, please refer to Section 6.0.6, Environmental Risk, Section 6.2, Air Quality, Section 6.3, Biological Resources, Section 6.5, Hazards and Hazardous Materials, and Appendix A (the complete report).

Public Involvement Process

Public disclosure and dialogue are priorities under CEQA and for CDFA. Accordingly, CEQA mandates two periods during the environmental impact report (EIR) process when public and agency comments on the environmental analysis of a project or program are to be solicited: during the scoping comment period and during the review period for the Draft EIR. CEQA and the CEQA Guidelines also allow for lead agencies to hold public meetings or hearings to obtain scoping comments, and provide the public and agencies with an opportunity to review both the draft and final versions of an EIR. Brief descriptions of these milestones are provided below, as they apply to this document; for a more complete description, please refer to Chapter 1, Introduction.

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[2] Certain chemicals that were determined to not have the potential to pose significant risk to humans or ecological receptors, as well as certain chemicals that commonly are used in household or other settings (such as bleach) were not subjected to a quantitative analysis.

Notice of Preparation

A Notice of Preparation (NOP) for the Statewide Program was circulated on June 23, 2011. The NOP presented general background information on the Statewide Program, the scoping process, the environmental issues to be addressed in the Draft PEIR, and the anticipated uses of the Draft PEIR. The NOP invited the public to offer comments during the scoping period, which ended on July 25, 2011.

Scoping Comments and Meetings

During the scoping period, CDFA conducted five scoping meetings across the state, in Chico, Sacramento, Irvine, San Francisco, and Fresno. These meetings welcomed input from the public and interested public agencies regarding the nature and scope of environmental impacts to be addressed in the Draft PEIR. Scoping meeting information and notices were mailed to potentially interested parties, published in local newspapers, and posted on CDFA's website (http://www.cdfa.ca.gov/go/peir) before the meetings to invite attendees.

Oral comments were received at the scoping meetings; in addition, 100 comment letters were received during the scoping period. These comments have been summarized, as well as included in their entirety, in a Program Scoping Report, provided in Appendix D. The information contained in the NOP (e.g., program description, range of topics) was further refined, based on the helpful input received in written and oral comments, and was reflected in the text of the Draft PEIR.

Draft EIR Public Review and Comment Period

CDFA issued a Notice of Availability (NOA) to provide agencies and the public with formal notification that the Draft PEIR was available for review. The publication of the NOA initially triggered a 45-day public review period, from August 25, 2014 to October 8, 2014. Based on requests from the public, the public review period was extended to 68 days, with comments due by October 31. During the public review period, CDFA also hosted five public hearings, in San Diego, Los Angeles, Tulare, Sacramento and Napa counties. Volume 5, Comments and Responses on the Draft PEIR, contains copies of all written comments submitted during the Draft PEIR public review period.

Preparation of the Final EIR and Public Hearing

Written and oral comments received in response to the Draft PEIR are addressed in this Final PEIR, which is a Response to Comments document that, together with the Draft PEIR and any related changes to the substantive discussion in the Draft PEIR, will constitute the PEIR in its entirety. The PEIR, in turn, if certified by CDFA, will inform CDFA's exercise of its discretion as a lead agency under CEQA in deciding whether to approve, approve with modifications, or deny the Proposed Program.

Areas of Known Controversy

Section 15123(b)(2) of the CEQA Guidelines requires that the summary of an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. Several potential effects of implementing the Proposed Program are expected to be controversial, including:

- The appropriateness and efficacy of CDFA's IPM approaches, including the use of pesticides, to control agricultural pests in the State of California;
- Use of aerial spraying in residential areas for pest control, and related risks to human health (note that the Proposed Program does not include aerial spraying in residential areas without conducting additional tiered CEQA analysis and associated public review);
- Effects of pesticide use (in particular, use of neonicotinoids) on honeybee populations;
- The science and limitations of Risk Assessment methodologies;
- Concern over cumulative or synergistic effects of pesticide exposure;
- Public involvement and input regarding CDFA's IPM activities and decision making process; and
- Effects of CDFA's pest management activities on organic farming.

Issues to be Resolved

Section 15123(b) of the CEQA Guidelines requires that an EIR summary identify issues to be resolved including the choice among alternatives and whether or how to mitigate the significant effects of a proposed project. No issues were identified which require resolution.

Overview of Environmental Topics Evaluated in the Draft PEIR

This section presents the resource topics evaluated in the PEIR, and presents an overview of key impacts and conclusions. Environmental areas that potentially would be affected by the Proposed Program include:

- Agricultural Resources and Economics
- Air Quality
- Biological Resources
- Global Climate Change
- Hazards and Hazardous Materials
- Noise
- Water Quality

Chapter 6, Environmental Setting and Impacts Analysis address each of these environmental resource topics and the potential impacts of the Proposed Program in greater detail.

Agricultural Resources and Economics

Overall, by eliminating or reducing the extent of injurious pest infestations the Proposed Program would be beneficial to agriculture and help to prevent the conversion of farmland to non-agricultural use. Within that overall context, several specific issues were evaluated in the PEIR.

First, the impact evaluation addressed the potential for pesticide use under the Proposed Program to adversely affect organic farms, either by mandating use of non-organic pesticides where no other effective strategies exist, or as a result of pesticide drift from adjacent areas onto organic farms. The analysis concluded that neither of these scenarios would cause organic farms to lose their organic certification. MPs addressing appropriate weather conditions under which pesticides may be applied, and other methodologies, would be sufficient to reduce the risk and extent of pesticide drift. In addition, while crops treated with pesticides not approved by the National Organic Program would not be allowed to be marketed as organic, the farms themselves would maintain their organic certification. While the lower price premium for non-organic products may have economic effects on organic farms, the analysis concluded that this did not have the reasonably foreseeable potential to result in conversion of farmland to non-agricultural use.

The analysis also addressed the potential for pesticide use under the Proposed Program to adversely affect non-target beneficial insects such as pollinators to such an extent that farmland may go out of production. As part of the Proposed Program, CDFA has committed to taking steps to benefit pollinator populations, described in further detail in Appendix K.

Considering these measures, and the fact that despite existing declines in pollinator populations, the acreage of pollinator-dependent crops has continued to increase in the state, the analysis concluded that the adverse effects on pollinators and other beneficial insects from pesticide use under the Proposed Program would not have the reasonably foreseeable potential to result in the conversion of farmland to non-agricultural use.

Air Quality

To support the analysis of the Proposed Program's potential effects on air quality, an emissions inventory of existing Statewide Program activities was conducted for each air basin in the state, and future emissions were estimated, assuming the same level of activity. If the level of activity remained unchanged in the future, emissions would decrease due to several factors, such as federal and state regulations targeted at reducing emissions. Because the extent to which Proposed Program activities may increase over time in a particular air basin is related to the locations and extent of future pest infestations and related management activity, which currently are unknown, the analysis concluded that criteria air pollutant emissions possibly could increase to a level that would be significant. CDFA already implements all available and feasible measures to control and reduce emissions, but it lacks the authority to mandate emission reductions on the equipment used by individual growers and applicators in response to CDFA quarantines. Thus, no feasible mitigation exists that would reduce the impact to a level that would be less than significant. Therefore, the impact would be significant and unavoidable.

The evaluation also addressed the potential for individuals to be exposed to substantial pollutant concentrations on a local (site-specific) level. Because of the short-term nature of Proposed Program activities at any time in any given location, such exposure would not be substantial. Furthermore, using conservative assumptions, the Human Health Risk Assessment concluded that the health risk associated with exposure to toxic air contaminants from pesticide use under the Proposed Program would not reach a level that would be significant under CEQA or unacceptable from a public health perspective.

Finally, the evaluation determined that the Proposed Program would not conflict with or obstruct implementation of applicable air quality plans and policies, and would not generate substantial objectionable odors.

Biological Resources

The evaluation of biological resources considered the potential for Proposed Program activities to result in substantial adverse effects on special-status species and sensitive natural communities. Physical and biological management activities were evaluated qualitatively and determined to have either no impact or a less than significant impact on biological resources. For chemical management activities, the analysis leveraged the results of the Ecological Risk Assessment (Appendix A), which considered a variety of chemical use scenarios and their potential acute and chronic effects on special-status species. The risk assessment used surrogate species, selected to represent the range of special-status species that may be found in proximity to the sites where chemical management activities could occur. A number of scenarios were found to not have potential to exceed a level of concern for any or a subset of surrogate species, and therefore such impacts would be less than significant. Where modeled risk to a special-status species was estimated to potentially exceed the level of concern, the impact would be potentially significant. In these cases, CDFA would evaluate potential site-specific effects (e.g., whether suitable habitat for the species would be located in proximity to the activity), would identify mitigation measures that would avoid impacts, such as buffer zones, and would implement the appropriate mitigation measures. As part of this process, CDFA would obtain technical assistance from the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and/or the National Marine Fisheries Service so that the selected mitigation measures would be effective in avoiding take.

Global Climate Change

The emissions inventory of existing Statewide Program activities conducted for the air quality analysis also quantified greenhouse gas (GHG) emissions, and future emissions were estimated assuming the same level of activity. If the level of activity remained unchanged in the future, emissions would decrease due to several factors, such as federal and state regulations targeted at reducing emissions. Because the extent to which Proposed Program activities may increase over time is related to the locations and extent of future pest infestations and related management activity, which currently are unknown, the analysis concluded that GHG emissions possibly could increase to a level that would be significant. CDFA already implements all available and feasible measures to control and reduce emissions, and it lacks the authority to mandate emission reductions on the equipment used by individual growers and applicators in response to CDFA quarantines. Thus, no feasible mitigation measures would reduce the impact to a less-than-significant level. Therefore, the impact would be significant and unavoidable.

Hazards and Hazardous Materials

The evaluation of the Proposed Program's impacts related to hazards and hazardous materials addressed several topics, including the hazards associated with use of equipment and related hazardous materials (e.g. fuels), the risk to human health associated with pesticide applications, the potential to encounter site contamination during pest management activities, the impacts of activities conducted near or at schools or airports, and the potential for pest management activities to generate wildfires. In general, impacts were found to be less than significant by following regulatory requirements and MPs for transport, storage and use of hazardous substances, and by implementing appropriate measures in the event of an accident. Mitigation measures were included requiring records searches to avoid sites of known contamination, and identifying the steps to take in the event of an accidental discovery of a contaminated site.

For the Human Health Risk Assessment (Appendix B), various groups with the potential to be exposed to pesticides under a number of different pesticide application scenarios were evaluated. These groups included workers and nearby residents, with consideration given to sensitive populations and additive and/or synergistic effects. For all scenarios, pesticide application approaches were developed that would maintain the human health risk below a level of concern. Mitigation measures were included in the Proposed Program requiring that CDFA educate its staff regarding safe handling and use of pesticides, as well as notify and educate the potentially affected public and agricultural workers regarding ways to avoid exposure. A mitigation measure also was included to require that the approaches described in this PEIR, or approaches which would ensure that risk to human health would be below the level of concern, would be implemented when using pesticides under the Proposed Program.

Noise

For the noise analysis, typical noise-generating equipment that may be used for the various types of pest management activities were identified, and noise generation estimates were developed for each activity. The analysis then identified the distance from sensitive receptors at which noise thresholds would be exceeded. Daytime noise generation was determined to not have the potential to result in significant impacts. Although such activities generally would not be conducted at night, nighttime activities were considered. In cases where nighttime noise thresholds could be exceeded, mitigation measures were included that would require such activity to be conducted during daytime.

Water Quality

The PEIR evaluated potential impacts on water quality from implementation of the Proposed Program, based on the degree to which the Proposed Program could result in violations of water quality standards, impairment of beneficial uses, or water quality conditions that could be harmful to aquatic life or human health. The evaluation considered applicable permits and relevant MPs (described in Chapter 2, Proposed Program Description), designed to reduce the potential for drift, runoff, or erosion. The analysis of chemical management activities leveraged information from the Ecological Risk Assessment (Appendix A), which calculated maximum possible water concentrations as part of its evaluation of risk to special-status species.

The analysis concluded that the majority of potential water quality impacts would be less than significant. In particular, chemical management activities would be subject to a number of regulatory requirements, and the chemicals would have fate and transport properties that would make them unlikely to be found in water at concentrations which could exceed relevant standards or impair beneficial uses. The potential for significant impacts would be possible in cases where affected parties implement certain activities in response to quarantines; in these cases, protective mitigation measures would be implemented as part of compliance agreements between CDFA and regulated entities (e.g., growers).

Chemical applications in proximity to waterbodies listed as impaired under the Clean Water Act also would be potentially significant, because those waterbodies would have no additional assimilative capacity. In these cases, mitigation measures would be implemented to avoid discharges to these waterbodies.

For chemicals having no existing numerical standard, future standards could be adopted with the potential to be exceeded, which would be a significant impact. CDFA would implement a mitigation measure to track emerging standards and evaluate them against the anticipated concentrations of Proposed Program chemicals, and would implement additional mitigation measures as needed to avoid exceeding any standards.

Alternatives Considered

The purpose of the alternatives analysis in an EIR is to describe a reasonable range of potentially feasible alternatives to a proposed project that could feasibly attain most of the objectives of a proposed project while reducing or eliminating one or more of a proposed project's significant effects. The range of alternatives considered must include those that offer substantial environmental advantages over the proposed project in question, and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

The following alternatives were evaluated for their potential feasibility and their ability to achieve most of the program objectives while avoiding, reducing, or minimizing significant impacts identified for the Proposed Program:

- No Program Alternative
- No Pesticide Alternative
- U.S. Department of Agriculture (USDA) Organic Pesticide Alternative
- No Eradication Alternative

No Program Alternative

The No Program Alternative would occur if the Proposed Program is not authorized through this PEIR process. Under the No Program Alternative, CDFA would continue to establish and enforce interior quarantines to prevent the spread of invasive pests, would continue to carry out statewide detection and survey programs, and would continue pest exclusion management activities. Rapid response/eradication activities would continue to be conducted, often on an emergency basis. Past and present plant pest prevention and management activities under CDFA's authority would continue into the future. CDFA would need to consider appropriate CEQA review and documentation for any new plant pest programs that are proposed in the future. Coordination of CEQA compliance across multiple interrelated pest prevention and management programs would not be achieved.

No Pesticide Alternative

Under the No Pesticide Alternative, CDFA would continue to generate a list of high priority pests, would continue its biological control activities, would continue to release sterile insects, and would continue developing and enforcing State quarantine regulations and requiring that they do not result in use of pesticides. CDFA also would develop a tiering strategy for future CEQA compliance. However, CDFA would no longer conduct rapid response/eradication activities involving pesticides and would not use pesticide products in detection and delimitation surveys. Rapid response/eradication activities would use physical and biological management approaches; examples of such approaches include host removal, non-pesticide bait stations and trapping, and targeted releases of sterile insects. Eradication and control of many pests would not be anticipated to be achievable (for more discussion of which pests can and cannot be effectively controlled using physical and biological management approaches, refer to the pest-specific discussions under Section 7.4.3, USDA Organic Pesticide Alternative). Growers, packers, and shippers would continue to make individual decisions regarding private on-farm pesticide use, but they would be restricted from using pesticides in response to an interior quarantine regulation. Because CDFA does not have the authority to regulate pesticide use outside the state, out-of-state growers, packers, and shippers would continue to make individual decisions regarding pesticide use, to maintain pest-free crops in compliance with exterior quarantine regulations.

CDFA would continue to use the IPM approach in developing a management strategy for each pest infestation, in an attempt to eradicate or control that pest. Development of biological control agents (BCAs) and sterile insect releases would continue as a part of the IPM approach under the No Pesticide Alternative. Because the development of effective BCAs and sterile insects requires a long lead time for research and development, some pest populations could be expected to increase during the development phase. In the event that effective BCAs are released, the expected outcome would be control of the target pest, rather than eradication. Therefore, on-farm cultural practices may change, and on-farm pesticide use could increase over the short term and may be sustained in the long term. For growers to comply with interior quarantine regulations, a substantial increase in removal of host material in quarantine areas would be expected, resulting in a large amount of produce, nursery stock, soil, and entire orchard trees removal and disposal.

USDA Organic Pesticide Alternative

Under the USDA Organic Pesticide Alternative, CDFA would continue to generate a list of high priority pests, would continue pest detection surveys, would continue implementing the Biological Control program, would continue to release sterile insects, and would continue developing and enforcing State quarantine regulations. However, Proposed Program activities would only employ natural pesticide products or synthetic pesticide products that are specifically allowed under Title 7, Part 205.601 (Synthetic Substances

Allowed for Use in Organic Crop Production) of the Code of Federal Regulations. Proposed Program pest management activities would continue to use horticultural oil, sticky traps, synthetic pheromones and bait stations, sulfur, pyrethrum, kaolin clay, *Bacillus thuringiensis*, insecticidal soaps, and spinosad, among others, as allowed by USDA Organic regulations.

Under the USDA Organic Pesticide Alternative, eradication and control of certain priority pests, including the Asian citrus psyllid (ACP), Japanese beetle, exotic fruit flies, and glassy-winged sharpshooter (GWSS) would not be expected to be achievable. These pests have been shown to respond poorly (or their potential response is speculative) to physical, biological, and USDA Organic chemical treatment methods, as described in more detail below. Eradication and control of the remaining priority pests are expected to be achievable with only the use of physical, biological, and USDA Organic-approved chemical management approaches. Under the USDA Organic Pesticide Alternative, populations of GWSS, ACP, exotic fruit flies, and Japanese beetle are expected to grow and spread within the state. Individual growers may choose to use conventional pesticides for these four priority pests, outside the framework of the Proposed Program.

Because conventional pesticide use under the Statewide Program only includes a very small amount of conventional pesticide use for agricultural and other purposes throughout the state, this alternative would not be anticipated to lead to widespread conversion of conventional farms to organic practices.

No Eradication Alternative

This alternative was suggested during the Draft PEIR scoping process. Under the No Eradication Alternative, CDFA would establish a goal of managed pest population control rather than eradication for all high-priority pests. For context, consideration of the Proposed Program's approach is warranted first. Under the Proposed Program, eradication of priority pests would be achieved using the most effective combination of chemical and non-chemical practices, and chemical use would be performed using the smallest effective dose over the smallest effective area to achieve eradication. In contrast, under the No Eradication Alternative, CDFA's control of priority pest populations at an acceptable level would be expected to increase use of pesticides overall (both under the Statewide Program and otherwise), because pesticide use would occur over a larger geographic area and over a longer duration (into the foreseeable future) compared to more targeted pesticide use for eradication activities at their anticipated frequency under the Proposed Program.

Environmentally Superior Alternative

Considering all environmental aspects, the Proposed Program is considered to be environmentally superior. It would strike an appropriate balance between protecting natural and agricultural resources from the adverse impacts of pest invasions while providing for impact avoidance and minimization through a coordinated program for management of Statewide Program activities, including PEIR mitigation and other protective measures.

Because the Proposed Program is not an alternative per se, an environmentally superior alternative also has been identified from among the alternatives carried forward for full analysis in the Draft PEIR. The No Program Alternative is considered to be this environmentally superior alternative. It generally would have impacts that would be similar to the Proposed Program, although it would not benefit from the impact minimization and avoidance offered by the Proposed Program's coordinated approach to managing Statewide Program activities, including PEIR mitigation and other protective measures.

Under CEQA, if the environmentally superior alternative is the "no project" alternative, an EIR also shall identify an environmentally superior alternative among the other alternatives. Of the remaining alternatives, the USDA Organic Pesticide Alternative is considered to be environmentally superior. It would avoid any potential impacts associated with use of non-USDA organic conventional pesticides, but could result in some offsetting adverse effects, such as impacts associated with greater reliance on, and increased applications of, USDA organic pesticides approved for organic crop production. The alternative also could result in other adverse environmental impacts because of the inability to achieve effective eradication and control of certain priority pests. Such effects may include resource degradation from more widespread invasions of these pests into natural and agricultural areas. In addition, use of conventional pesticides outside the framework of the Statewide Program and CDFA's authority may increase to address these pests, which would have impacts similar to those potential impacts associated with the Proposed Program but without the benefit of a coordinated program for management of such activities, including PEIR mitigation and other protective measures.

The other alternatives were not selected as the environmentally superior alternative for the following reasons:

- **No Pesticide Alternative.** This alternative would avoid potential impacts associated with Statewide Program pesticide use but could result in other adverse environmental impacts because alternative management methods are not anticipated to be as effective in controlling or managing pests. Such effects may include resource degradation from more widespread pest invasions into natural and agricultural areas. In addition, pesticide use outside the framework of the Statewide Program and CDFA's authority may increase in response, without the benefit of a coordinated program for management of such activities, including PEIR mitigation and other protective measures. The overall adverse effects of a potential increase in resource degradation and increase in non-Statewide Program pesticide use would render this alternative less environmentally desirable than the Proposed Program, the No Program Alternative, or the USDA Organic Pesticide Alternative.

- **No Eradication Alternative.** This alternative would avoid impacts associated with eradication activities; however, the overall intensity of pest management activities and related pesticide use would be anticipated to increase because pests would become established and would require more effort to manage at a level that would avoid unacceptable economic and environmental damage. Therefore, the No Eradication Alternative would be anticipated to have greater impacts overall compared to the Proposed Program or any of the other alternatives.

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Chapter 1
INTRODUCTION

The California Department of Food and Agriculture (CDFA) has prepared this Final Program Environmental Impact Report (PEIR) to provide the public, responsible agencies, and trustee agencies with information about the potential environmental effects of the Proposed Program. This Final PEIR has been prepared in compliance with the California Environmental Quality Act (CEQA) of 1970 (as amended) and the CEQA Guidelines (Title 14, California Code of Regulations, Section 15000, et seq.). The primary purposes of this Final PEIR are to provide comprehensive and transparent CEQA coverage for future activities conducted under the Statewide Program, and to provide an efficient tool to streamline future CEQA compliance for implementation of these activities.

1.1 General Overview

Agriculture is a major industry in California. With 80,500 farms and ranches, California's agriculture is a $44.7 billion per year industry that generates at least $100 billion annually in related economic activity (CDFA 2014).

CDFA is responsible for protecting and promoting California's agriculture. CDFA has seven divisions and operates from over 100 locations. Many of CDFA's activities are conducted in partnership with the federal government (in particular, the U.S. Department of Agriculture), local county offices of agricultural commissioners and sealers, and commercial growers. CDFA also strives to adapt public policy to California's rapidly changing agricultural industry by collaborating with industry groups, academia, and public agencies. Specific goals of CDFA are to:

- Ensure that only safe, healthy, and quality food reaches the consumer;
- Protect against invasion of pests and diseases;
- Promote California's agriculture and food products both at home and abroad;
- Ensure an equitable and orderly marketplace for California's agricultural products; and
- Build coalitions supporting the State's agricultural infrastructure to meet evolving industry needs.

1.2 Overview of Activities Conducted under the Statewide Program

CDFA is mandated to prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds in California (California Food and Agricultural Code Section 403). To meet these requirements, CDFA has established a range of prevention, management, and regulatory programs, carried out or overseen by CDFA against specific injurious agricultural and other pests, and their vectors, throughout California[1]. To accomplish this, CDFA implements various activities to control individual target pests. The activities that are the subject of this Final PEIR are administered through CDFA's Plant Health and Pest Prevention Services Division (Plant Health Division) and Pierce's Disease Control Program (PDCP).

Activities conducted by the Plant Health Division and PDCP include pest rating, detection and delimitation of new pest populations, eradication and control of pest populations, and prevention of the movement of plant pests into and within California. This is accomplished using a suite of physical, biological, and chemical management methods to achieve CDFA's legislatively-mandated goals for pest prevention, eradication, and control.

Each activity is carried out using the overarching framework of Integrated Pest Management (IPM). IPM is the coordinated use of information about pest population biology and the host environment combined with all available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment, while achieving adequate efficacy to meet the goal of the program. IPM uses information on the life cycles of pests and their interaction with the environment, and takes advantage of all appropriate pest management options including mechanical control, biological control, and the use of pesticides where indicated.

1.3 Existing CEQA Coverage

CDFA has previously certified the following CEQA documents:

- Japanese Beetle Environmental Impact Report (EIR) (May 1974) (CDFA 1974);
- Gypsy Moth EIR (January 1992) (CDFA 1992);
- Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR (March 1993) (CDFA 1993);
- Exotic Fruit Fly Eradication Program using Aerial Application of Malathion and Bait EIR (April 1994) (CDFA 1994);

[1] Pests and diseases of animals as well as vertebrate pests of plants are not included in the Statewide Program; these are regulated by the U.S. Department of Agriculture's Wildlife Services, the California Department of Public Health, the Center for Disease Control, and CDFA's Animal Health and Food Safety Services Division.

- Pierce's Disease Control Program EIR (May 2003) (CDFA 2002, CDFA 2003); and
- Light Brown Apple Moth Eradication Program EIR (March 2010) (CDFA 2009, CDFA 2010).

These EIRs evaluated numerous pest prevention and management activities conducted by CDFA for some of the pests covered under the Statewide Program, as described in further detail in Chapter 4, Prior CEQA Coverage.

1.4 Overview of CEQA Requirements

CEQA's basic purposes are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring implementation of feasible mitigation measures or project alternatives that would substantially lessen any significant effects that a project would have on the environment; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

As described in the CEQA Guidelines (CEQA Guidelines Section 15121[a]), an EIR is an informational document that assesses potential environmental effects of a proposed project, and identifies mitigation measures and alternatives to the project that could reduce or avoid potentially significant environmental impacts. Other key CEQA requirements include developing a plan for implementing and monitoring the success of the identified mitigation measures and carrying out specific public notice and distribution steps to facilitate public involvement in the environmental review process. As an informational document used in the planning and decision-making process, an EIR's purpose is not to recommend either approval or denial of a project. An EIR does not expand or otherwise provide independent authority of the lead agency to impose mitigation measures or avoid project-related significant environmental impacts beyond the authority already within the lead agency's jurisdiction.

CDFA is the lead agency for preparation of this Final PEIR under CEQA.

1.5 Scope and Intent of this Document

Statewide Program activities as they would be implemented in the future (if CDFA approves the Proposed Program following completion of this CEQA process) are referred to as the "Proposed Program." These activities are identified in Chapter 2, Proposed Program Description and Chapter 3, Proposed Program Activities of this Final PEIR, and they constitute a discretionary project subject to CEQA (CEQA Guidelines Section 15378). CDFA will use the analyses presented in this Final PEIR, public and regulatory agency comments on the Draft PEIR, and the entire administrative record to evaluate the Proposed Program's environmental impacts as well as to inform and support CDFA's further modifications, approval, or denial of the Proposed Program.

1.5.1 Type of EIR

Program EIR

This Final PEIR when certified will serve as a program-level EIR, pursuant to CEQA Guidelines Section 15168, or as a first-tier EIR prepared pursuant to CEQA Guidelines Section 15152. The Final PEIR will provide a foundation for subsequent, more detailed analyses associated with individual activities conducted under the Proposed Program. One of CDFA's intentions in preparing the Final PEIR is to minimize the amount of duplicate information that may be required in the future at a project level of environmental review by dealing as comprehensively as possible at the program level with cumulative impacts, regional considerations, and similar overarching issues. Substantial efforts have been made to provide project-level detail for these activities where it is feasible to do so. To the extent that the potential impacts of the activities have been addressed in the Final PEIR, no additional CEQA compliance would be necessary.

According to CEQA Guidelines Section 15168(c)(5), "(a) program EIR will be most helpful in dealing with subsequent activities if it deals with the effects of the program as specifically and comprehensively as possible." Later environmental documents (EIRs, mitigated negative declarations, negative declarations) can incorporate by reference materials from the Final PEIR regarding regional influences, secondary impacts, cumulative impacts, broad alternatives, and other factors (CEQA Guidelines Section 15168[d][2]). These later documents need to focus only on new impacts that have not been considered in the PEIR or other tiered documents (CEQA Guidelines Section 15168[d][3]).

CEQA Guidelines Section 15168(c) states:

> Subsequent activities in the program must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared.
>
> 1. If a later activity would have effects that were not examined in the program EIR, a new Initial Study would need to be prepared leading to either an EIR or a Negative Declaration.
> 2. If the agency finds that pursuant to Section 15162, no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required.
> 3. An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into subsequent actions in the program.
> 4. Where the subsequent activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and

the activity to determine whether the environmental effects of the operation were covered in the program EIR.

CDFA will provide written checklists for future Proposed Program activities as necessary to determine to what extent the environmental review for such projects and programs may rely on the Final PEIR. CEQA Guidelines Section 15152 provides that, where a first-tier EIR has "adequately addressed" the subject of cumulative impacts, such impacts need not be revisited in second- and third-tier documents. Furthermore, second- and third-tier documents may limit the examination of impacts to those that "were not examined as significant effects" in the prior EIR or "(a)re susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means." In general, significant environmental effects have been "adequately addressed" if the lead agency determines that:

A. They have been mitigated or avoided as a result of the prior EIR and findings adopted in connection with that prior EIR.
B. They have been examined at a sufficient level of detail in the prior EIR to enable those effects to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the later project.

Accordingly, new analyses for future Proposed Program activities would focus on issues and impacts not "adequately addressed" in the PEIR under the meaning of the CEQA statute and CEQA Guidelines. The new analyses for these future activities would address impacts that cannot be "avoided or mitigated" by mitigation measures that either (1) were adopted in connection with the Proposed Program or (2) were formulated based on information in the PEIR. Section 1.5.3, CEQA Tiering Strategy (below) further discusses tiering.

Recirculated EIR

The PEIR is also characterized as a recirculated EIR, prepared pursuant to CEQA Guidelines Section 15088.5, in response to the 2005 First District Court of Appeal opinion finding the PDCP EIR to be inadequate under CEQA in certain respects. As such, the PEIR is intended to rectify the deficiencies in the 2003 PDCP EIR identified by the Court of Appeal. A more complete discussion of how this PEIR responds to the Court of Appeal's opinion is provided in Section 4.2.5, Pierce's Disease Program EIR.

1.5.2 Existing CEQA Coverage and Nature of This Discretionary Action

Many of the Statewide Program activities are ongoing and have been the subject of prior CEQA documents. This CEQA document is not intended to supplant prior CEQA efforts. Instead, it addresses the following discretionary actions:

- Authorization of the future activities described in Chapters 2 and 3 of the Final PEIR as an integrated, comprehensive program.

- Adoption of a consolidated set of updated management practices (MPs) and mitigation measures using the most current technology and scientific information, which would replace those identified in prior CEQA documents.
- Adoption of a project-level checklist and methodology for evaluation of potential impacts related to implementation of future activities.

Chapter 4, Prior CEQA Coverage, provides a summary of the CEQA compliance activities already conducted for CDFA's existing pest prevention and management programs. The summary also generally describes changes in existing programs that have occurred since prior CEQA documentation was completed.

The Final PEIR is not intended to address emergency projects. An "emergency" is defined as a "sudden, unexpected occurrence, involving a clear and imminent danger, demanding immediate action to prevent or mitigate loss of, or damage to, life, health, property, or essential public services" (PRC Section 21060.3). When CDFA determines that a newly identified pest population requires an emergency response, CDFA authorizes an emergency project. In accordance with CEQA Guidelines Section 15269, emergency projects authorized by CDFA are exempt from CEQA. However, use of the Final PEIR should lessen the likelihood that emergency exemptions would be invoked and would facilitate fast responses to new pest infestations, reducing impacts of these pests.

1.5.3 CEQA Tiering Strategy

Future plant pest prevention and management activities requiring CEQA analysis that may be covered by the Final PEIR include:

- Implementation of individual activities under various pest management programs;
- Authorization of newly developed management methods or alteration of existing management methods; and
- Development of management programs and implementation of individual activities for newly detected pest species and/or types of pests.

To assist CDFA with future tiering, a CEQA Tiering Strategy has been developed and provided as Appendix C of this Final PEIR. The CEQA Tiering Strategy includes a series of questions or directions to: determine whether a given activity would be subject to CDFA's discretion under the Statewide Program; determine if the activities were considered in this Final PEIR; identify applicable Final PEIR requirements; and determine tiering needs for activities partially considered or not considered in the Final PEIR. The CEQA Tiering Strategy includes a checklist to be used for documenting the conclusions of such evaluations. The checklist is accompanied by guidelines to assist those completing the checklist and evaluating Proposed Program activities for conformity with the Final PEIR.

Tiered CEQA documents follow CEQA's public participation requirements, which vary based on the type of tiered document. For a tiered EIR, the same public participation steps are required as for a standalone EIR or first-tier EIR (such as this PEIR). Other types of tiered documents (e.g., a mitigated negative declaration, or a negative declaration) also follow the same public participation requirements as the comparable first-tier document type.

1.6 Public Involvement Process

CEQA mandates two periods during the EIR process when public and agency comments on the environmental analysis of the Proposed Program are to be solicited: during the scoping comment period and during the review period for the Draft PEIR. CEQA and the CEQA Guidelines also allow for lead agencies to hold public meetings or hearings to obtain scoping comments, and review both the draft and final versions of an EIR. Brief descriptions of these milestones are provided below, as they apply to this document.

1.6.1 Notice of Preparation

A Notice of Preparation (NOP) for the Proposed Program was prepared pursuant to CEQA Guidelines Section 15082 and was circulated on June 23, 2011. The NOP presented general background information on the Statewide Program, the scoping process, the environmental issues to be addressed in the Draft PEIR, and the anticipated uses of the Draft PEIR.

The NOP invited the public to offer comments during the scoping period, which began on June 23, 2011. Initially, the NOP indicated that the close of the comment period would occur on July 19, 2011; however, to provide additional time for the submission of comments in Los Angeles County, CDFA extended the comment period through July 25, 2011. This extension of the comment period was noted on the CDFA website (http://www.cdfa.ca.gov/go/peir) and was appropriately published in the outreach materials. Although the extended comment period was intended for Los Angeles County residents possibly affected by a delayed NOP posting, all scoping comments received during this time were considered in the Program Scoping Report (provided in Appendix D), regardless of origin. A copy of the NOP and the Los Angeles County extension amendment are provided in the Scoping Report.

1.6.2 Scoping Comments and Meetings

To provide the public and regulatory agencies with additional opportunities to ask questions and submit comments on the scope of the Draft PEIR, public scoping meetings were held during the NOP review period. CDFA conducted five scoping meetings across the state, based on the Proposed Program's standing as a "project of statewide, regional, or areawide significance." These meetings welcomed input from the public and interested public agencies regarding the nature and scope of environmental impacts to be addressed in the Draft PEIR.

Scoping meeting information and notices were mailed to potentially interested parties, published in local newspapers, and posted on CDFA's website before the meetings, to invite attendees.

The scoping meeting dates, times, and locations were as follows:

- **Chico, CA**: July 6, 2011, 5:30–7:30 p.m., Chico Municipal Center (421 Main Street, Chico, CA 95928)
- **Sacramento, CA**: July 7, 2011, 5:30–7:30 p.m., Department of Health Care Services and Department of Public Health Building (1500 Capitol Avenue, Sacramento, CA 95814)
- **Irvine, CA**: July 12, 2011, 5:30–7:30 p.m., Irvine Ranch Water District's Duck Club (3512 Michelson Drive, Irvine, CA 92618)
- **San Francisco, CA**: July 13, 2011, 5:30–7:30 p.m., San Francisco Public Library (100 Larkin Street, San Francisco, CA 94102)
- **Fresno, CA**: July 14, 2011, 5:30–7:30 p.m., University of California, Fresno Business Center (5245 N. Backer Avenue, Fresno, CA 93740)

The July 7 meeting in Sacramento was simultaneously broadcast live as a "webinar" session via the Internet, for those interested in participating remotely. Webinar participants were able to view the meeting in real time and provide comments electronically on the scope of the Draft PEIR.

All the scoping meetings used the same format, and interested parties were invited to attend one or all of the meetings. At the beginning of each meeting, CDFA staff made a brief presentation to provide an overview of the Proposed Program, the objectives and range of information to be included in the Proposed Program, and a general summary of the CEQA process. Afterwards, a public comment session was held, during which time CDFA staff received public comments about the Proposed Program. In addition to oral comments, CDFA accepted written comments during the meetings, as well as during the scoping period that concluded on July 25, 2011. Comment forms were distributed at the scoping meetings for submission of written comments during or after the meeting.

Oral comments were received at the scoping meetings; in addition, 100 comment letters were received during the scoping period. These comments have been summarized, as well as included in their entirety, in a Program Scoping Report, provided in Appendix D. The information contained in the NOP (e.g., program description, range of topics) was further refined, based on the helpful input received in written and oral comments, and is reflected in the text of this Final PEIR.

1.6.3 Draft EIR Public Review and Comment Period

CDFA issued a Notice of Availability (NOA) to provide agencies and the public with formal notification that the Draft PEIR was available for review. The NOA was sent to all responsible and trustee agencies, any person or organization requesting a copy, and county clerks' offices for posting. The notice also was published in 5 general-circulation newspapers. CDFA also submitted the NOA and a Notice of Completion (NOC) to the State Clearinghouse. All notices are contained in this Final PEIR in Volume 5, Attachment 1.

Publication of the NOA initially triggered a 45-day public review period, from August 25, 2014 to October 8, 2014. Based on requests from the public, the review period was extended to 68 days, with comments due by October 31, 2014. During the public review period, CDFA also hosted five public hearings in locations throughout the state. The public hearing dates, times, and locations were as follows:

- **San Diego, CA**: September 22, 2014, 5:30–7:30 p.m., San Diego County Farm Bureau (1670 E. Valley Parkway, Escondido, CA 92027)
- **Los Angeles, CA**: September 23, 2014, 5:30–7:30 p.m., Huntington Library (1151 Oxford Road, San Marino, CA 91108)
- **Tulare, CA**: September 24, 2014, 5:30–7:30 p.m., Tulare County Agricultural Commissioner's Office (4437 S. Laspina, Tulare, CA 93274)
- **Sacramento, CA**: September 29, 2014, 5:30–7:30 p.m., California Department of Food and Agriculture (1220 N Street, Auditorium, Sacramento, CA 95814)
- **Napa, CA**: September 30, 2014, 5:30–7:30 p.m., Napa County Agricultural Commissioner's Office (1710 Soscol Avenue, Napa, CA 94559)

Each meeting began with an approximately 20-minute open-house session, where participants were invited to peruse informational posters on the Proposed Program, the CEQA process, and the risk assessment, and to chat with Program staff. This open-house session was followed by an approximately 30-minute PowerPoint presentation by CDFA and consultant staff on the Proposed Program, environmental analysis, and CEQA process. After the presentation, members of the public were given the opportunity to provide comments or ask questions about the Proposed Program.

The September 29 hearing in Sacramento was simultaneously broadcast live as a "webinar" session via the Internet. Webinar participants were able to view the hearing in real time and submit comments electronically.

1.6.4 Preparation of the Final EIR and Public Hearing

CEQA requires the lead agency to prepare a final EIR, addressing all substantive comments received on the draft EIR, before approving a project. The final EIR must include a list of all individuals, organizations, and agencies that provided comments on the draft EIR, and must contain copies of all comments received during the public review period along with the lead agency's responses.

Written comments received in response to the Draft PEIR are addressed in Volume 5 of this Final PEIR. When certified, this Final PEIR will inform CDFA's exercise of its discretion as a lead agency under CEQA in deciding whether to approve, approve with modifications, or deny the Proposed Program. As this Final PEIR has identified significant and unavoidable environmental effects of the Proposed Program, a statement of overriding considerations must be prepared should CDFA choose to approve the Proposed Program. As described in the CEQA Guidelines, the statement of overriding considerations must describe CDFA's reasons for approving the Proposed Program despite its significant impacts. This statement of overriding considerations must be mentioned in the Notice of Determination, which is to be filed with the State Office of Planning and Research (CEQA Guidelines Section 15093[c]).

1.7 Organization of this Final PEIR

Volume 1 – Main Body

Executive Summary: A summary of the Statewide Program, a description of the issues of concern, a discussion of the program alternatives, and a summary of environmental impacts are provided in this chapter.

Chapter 1, Introduction: This chapter discusses the purpose and organization of the Final PEIR and its preparation, review, and certification process.

Chapter 2, Proposed Program Description: This chapter summarizes the Proposed Program by providing a statement of the Proposed Program's purpose and objectives; describing administration of the Proposed Program; stating the categories of pest prevention and management activities implemented by CDFA; detailing particular programs and projects conducted under Proposed Statewide Program; noting the Proposed Program area; listing the regulatory aspects of the Proposed Program; and discussing future intended uses of the Final PEIR.

Chapter 3, Proposed Program Activities: This chapter provides an in-depth description of the specific program activities that are proposed to be carried out under the Proposed Program.

C**hapter 4, Prior CEQA Coverage**: This chapter describes the Statewide Program activities that have been evaluated previously under CEQA.

Chapter 5, Cumulative Scenario: This chapter identifies the cumulative setting of analysis, and characterizes the significance of cumulative impacts to which the Proposed Program may contribute.

Chapter 6, Environmental Setting and Impacts Analysis: This chapter begins with an introductory section that identifies resource areas determined not to be affected by the Proposed Program. An overview also is provided regarding the methodology used to assess the environmental impacts of Proposed Program activities in the PEIR. The chapter includes the following seven sections, divided by resource topic, that describe the existing environmental setting and evaluate potential impacts of the Proposed Program, including potential cumulative impacts:

Section 6.1, Agricultural Resources and Economics

Section 6.2, Air Quality

Section 6.3, Biological Resources

Section 6.4, Global Climate Change

Section 6.5, Hazards and Hazardous Materials

Section 6.6, Noise

Section 6.7, Water Quality

Chapter 7, Alternatives Analysis: This chapter describes the process in which alternatives to the Statewide Program were developed and screened, describes in detail the alternatives that were carried forward for full analysis in the Draft PEIR, describes the alternatives not considered in detail, presents an impact analysis and conclusions for alternatives carried forward, and identifies the environmentally superior alternative.

Chapter 8, Other Statutory Considerations: This chapter addresses the Proposed Program's potential to induce growth, and describes the potential energy impacts and energy conservation aspects of the Proposed Program, pursuant to the CEQA Guidelines.

Chapter 9, Glossary and Acronyms: This chapter provides a glossary of key terms and a list of acronyms used throughout this Final PEIR.

Chapter 10, Report Preparation: This chapter lists the individuals involved in preparing the Draft PEIR (a list of those individuals involved in preparing this Final PEIR are provided in Volume 5, Chapter 7).

Chapter 11, References: This chapter provides a bibliography of printed references, websites, and personal communications used in preparing the Draft PEIR (a bibliography for preparation of this Final PEIR is provided in Volume 5, Chapter 8).

Volume 2 – Appendix A

Appendix A, **Ecological Risk Assessment**

Volume 3 – Appendices B through G

Appendix B, **Human Health Risk Assessment**

Appendix C, **CEQA Tiering Strategy**

Appendix D, **Program Scoping Report Appendix E**, **CDFA's Statewide General NPDES Pesticide Permit**

Appendix F, **Pest Profiles**

Appendix G, **2003 Pierce's Disease Control Program Environmental Impact Report Court of Appeal Decision**

Volume 4 – Appendices H through P

Appendix H, **Air Quality and Greenhouse Gas Technical Report**

Appendix I, Special-Status Species in California

Appendix J, Sensitive Natural Communities in California

Appendix K, Potential Effects of Pesticide Use and Other Stressors on Pollinators and Associated Biological Resources

Appendix L, Crosswalk between Surrogate Species and Californian Native Wildlife Species Federally or State-Listed as Threatened or Endangered

Appendix M, List of Chemicals and Synonyms of Chemical Names

Appendix N, Noise Technical Report

Appendix O, Regulatory Setting

Appendix P, Mitigation Reporting Program

Volume 5 – Comments and Responses to Comments on the Draft PEIR

Chapter 1, Introduction

Chapter 2, Master Responses

Chapter 3, Individual Responses to Comments

Chapter 4, List of Letters Addressed Entirely by Master Responses

Chapter 5, Form Letters

Chapter 6, Revisions to the Draft PEIR

Chapter 7, Report Preparation

Chapter 8, References

Chapter 9, Glossary and Acronyms

Attachment A, Draft PEIR Notices and Mailing List

Attachment B, Draft PEIR Meeting Materials

Attachment C, Copies of Letters Addressed Entirely by Master Responses

Attachment D, Copies of Form Letters

Chapter 2
PROPOSED PROGRAM DESCRIPTION

2.1 Introduction

This chapter presents a broad overview of the Proposed Program and is organized as follows:

- 2.1 Introduction
- 2.2 Program Goals and Objectives
- 2.3 Program Area
- 2.4 Program Administration
- 2.5 Pierce's Disease Control Program
- 2.6 Pest Management Activities
- 2.7 Pest Control
- 2.8 Pest Prevention and Integrated Pest Management Approach
- 2.9 Overview of Pest Management Activities
- 2.10 Existing Permits and Consultations
- 2.11 Program Management Practices
- 2.12 Actions to Benefit Pollinators
- 2.13 Uses of the PEIR

Technical terminology used throughout this chapter is defined in the Glossary, included in Chapter 9, Glossary and Acronyms. Additional details about specific activities that may be conducted under the Proposed Program are included in Chapter 3, Proposed Program Activities. Chapters 2 and 3 describe the Proposed Program pursuant to Section 15124 of the CEQA Guidelines.

The Proposed Program would encompass a range of pest prevention, management and regulatory activities, to be carried out or overseen by CDFA to address specific plant pests. The Proposed Program would consist of a variety of focused programs, using a set of integrated pest management (IPM) options for controlling target pests.

This Final PEIR is intended to meet CEQA requirements for CDFA's reasonably foreseeable plant pest prevention, management, and regulatory activities. This Final PEIR builds on and reflects existing CEQA documents for ongoing Statewide Program activities. It also updates and integrates the various activities into a comprehensive program, and provides a consolidated set of updated Management Practices (MPs) and mitigation measures, using the most current technology and scientific information. If CDFA approves the Proposed Program, these MPs and mitigation measures would replace those identified in prior CEQA documents and would serve as a comprehensive framework for MP and mitigation implementation for Proposed Program activities.

2.2 Program Goals and Objectives

CDFA is mandated to prevent the introduction and spread of injurious plant pests in California (California Food and Agricultural Code [CFAC] Section 403). The Secretary of Food and Agriculture has the authority to establish, maintain, and enforce quarantine, eradication, and other regulations necessary to circumscribe, exterminate, or prevent the spread of any pest not generally distributed within California (CFAC Sections 5321 and 5322). CDFA will use all reasonable means to contain or eradicate newly discovered pests (CFAC Sections 5251 through 5254).

Accordingly, the mission of the Statewide Program is to protect California from damage caused by the introduction or spread of harmful plant pests. Goals of the Statewide Program include: (1) providing rapid response resources in order to address pest infestations as they occur, and (2) using an IPM approach in conducting activities (described further below).

In meeting these goals, the Proposed Program has the following objectives:

- Exclude invasive or harmful plant pests from California and prevent or limit the spread of newly discovered pests within the state;
- Protect California from damage caused by the introduction or spread of harmful plant pests;
- Minimize the impacts of pest management approaches on human health and urban and natural environments;
- Promote the production of a safe, healthy, secure food supply;
- Support CDFA's goal of rapid response by streamlining project-level implementation activities, addressing new pests as they are detected, and integrating new pest management approaches as they are developed;
- Implement a program that is broad enough to apply to a wide range of pest management methods and types of pests in California;
- Be consistent with existing CDFA permits, protocols, and policies, including the National Pollutant Discharge Elimination System (NPDES) Permit issued to CDFA by the State Water Resources Control Board (SWRCB);
- Coordinate CEQA compliance for the multiple, interrelated pest prevention and management programs under the Statewide Program; and
- Develop a checklist evaluation tool to assess the potential environmental impacts of proposed activities that can be understood and reviewed by the public.

2.3 Program Area

Plant pests are found in a combination of residential, urban, rural, natural, and agricultural settings in the state; therefore, Statewide Program activities occur in various locations throughout California (Figure 2-1). The potential geographic extent of a pest infestation depends on a number of factors, including suitable climatic and ecological conditions for the pest and its hosts.

Proposed Program activities may occur anywhere that a plant pest is (or may be) found in agricultural or nursery settings (in cooperation with commercial growers), in residential communities[1], at border protection stations, and sometimes outside California (for activities conducted by others besides CDFA, in response to restrictions on importation of potentially infested commodities and equipment from outside the state). Proposed Program activities would be guided by specific management decision criteria, including confirmation of a pest population, population numbers, and the severity of the threat to agriculture and the surrounding environment. The location, area and extent of specific activities under the Proposed Program ultimately would be evaluated, based on the site-specific situation and dictated by the targeted pest, the regulatory requirements and the management approaches available.

[1] Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review.

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Horizon WATER and ENVIRONMENT

Figure 2-1
Program Area

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2.4 Program Administration

Proposed Program activities would be administered by the Plant Health and Pest Prevention Services Division (Plant Health Division) and the Pierce's Disease Control Program (PDCP), the latter of which administers all Proposed Program activities pertaining to Pierce's disease and glassy-winged sharpshooter (GWSS). An overview of the organization and functions of the Plant Health Division is provided in Figure 2-2.

The Plant Health Division maintains overall leadership for all aspects of the Proposed Program, except those administered by the PDCP. Proposed Program activities can be divided into four general categories:

- Pest Evaluation
- Public Notification
- Promulgation of Regulations and Issuance of Permits
- Branch Operations

2.4.1 Pest Evaluation

CDFA has developed a Pest Rating Process to evaluate pests and determine the appropriate (if any) level of management response. CDFA's authority to develop a Pest Rating Process is provided in Section 5261 of CFAC, which mandates that CDFA (based upon available federal funding) develop and maintain a list of invasive pests with a reasonable likelihood of entering California for which detection, exclusion, eradication, control, or other type of management may be appropriate, including pests for which these activities may be undertaken by state or federal agencies.

The Pest Rating Process is contained in Title 3, Section 3162, Pest Ratings and Mitigating Actions, of the California Code of Regulations (CCR) and will become effective January 1, 2015. The Pest Rating Process establishes a uniform and transparent method of evaluating pests, and provides opportunities for public input. Proposed ratings will be available on CDFA's website for a 45-day comment period. Any interested third party will be able to use the standardized Pest Rating Proposal Form to propose a rating for a pest.

The use of the Pest Rating Process ensures that any management response associated with a pest is consistent with the Proposed Program's goals and objectives. Organisms are evaluated through the use of the Pest Rating Proposal Form to determine if they are a pest. The rating dictates the management response, which can include refusal of entry, return to owner, quarantine, treatment, holding, or destruction.

The Pest Rating Process first establishes a "Consequence of Introduction" by evaluating multiple criteria pertaining to each pest and its host(s). Criteria considered include host range (wide to limited), suitability of California's environment to the pest's survival, the pest's dispersal potential, and the potential economic and environmental impacts of the pest's establishment. Points are assigned to each criterion, and the overall Consequence of Introduction is determined by tallying the points. The Consequence of Introduction can be categorized as "Low," "Medium," or "High," depending on the number of points assigned during the evaluation process.

A pest rating is then determined by factoring in the current, known distribution of the pest in the state. Pests are assigned an A, B, C, D, or Q rating. Management responses (described in Section 2.6, Pest Management Activities and Chapter 3, Proposed Program Activities) may be carried out for pests receiving an A, B, or Q rating. CDFA does not engage in a management response for pests receiving a C or D rating.

2.4.2 Public Notification

Public notification is a necessary and important component of the Statewide Program. A protocol for public notification is established for every program response plan and may include:

- Property-specific notifications via personal service;
- Notification by mail, in local newspapers, and/or on official websites;
- Establishing a Proclamation of an Eradication Project or Proclamation of Emergency Project;
- Providing authorities with a justification for the response;
- Notification to the governing boards of affected cities and counties, including county agricultural commissioners and health officers, with the following:
  - A description of the public notification process associated with the response;
  - An identification of the IPM analysis of treatment methods;
  - The project work plan;
  - A pest profile; and
  - A map of the affected area;
- Holding public meetings that include CDFA project staff, OEHHA and CDPR staff, local Agricultural Commissioner staff, to provide:
  - Information about the method or methods of applying the pesticide;
  - The CDFA Hotline to address further questions, information, or scheduling concerns;
  - A map of the affected area;
  - Information about plant pest; and
- Providing regulatory information to affected growers, businesses, and residents about quarantine regulations and applicable restrictions or prohibitions on the movement of hosts from quarantine areas.

2.4.3 Promulgation of Regulations and Issuance of Permits

Promulgation of Regulations

CDFA promulgates emergency and non-emergency regulations for pest management activities pertaining to quarantine and eradication. Authority to promulgate pest management regulations is provided in Sections 401, 403, 407, 5401-5405, and 5761-6764 of CFAC. Such regulations are promulgated after official identification of the plant pest by the scientists of the Plant Pest Diagnostics Branch.

A regulation establishing an Eradication Area for a pest is promulgated when it has been determined, through investigation, survey, or other means, that a probability exists that the pest will spread, and that abatement of the pest in the established area is necessary to prevent further economic and environmental damage.

A State Interior Quarantine regulation is promulgated when a pest population is detected that meets a particular trigger for the species; usually the trigger relates to detection of numbers of individual pests or particular life stages of that pest that support a reproductive population.

Within the boundaries of an interior quarantine, regulated articles are prohibited from being transported outside the quarantine area without first complying with a quarantine requirement. CDFA establishes quarantine areas/boundaries in California so that quarantine requirements are met either directly or indirectly through compliance agreements with regulated entities (e.g., growers). Quarantine requirements for interior quarantines are specific to transporting plant material that may harbor the regulated pest, known as host material. Quarantine requirements may include either a "prescribed standard" or a "performance standard." A prescribed standard requires the grower to use a particular treatment method to eliminate the pest from the host material. A performance standard requires the grower to demonstrate that the commodity is pest free and allows the grower to use any available treatment method, as long as it appears on an approved list, to comply with the standard. For performance standard-based quarantine requirements, only the methods to ensure the host material is pest free (described in Chapter 3, Proposed Program Activities, and evaluated in this Final PEIR) are allowable. Other methods may be allowable if they are determined to fall within the scope of the PEIR's analysis or have been evaluated in tiered CEQA documentation.

Issuance of Permits

As provided in Title 3, Section 3154 of the CCR, CDFA may issue special permits, allowing entry of articles or commodities (otherwise prohibited by quarantine subject to limitations, conditions, and/or provisions to prevent introduction, escape or spread of the pest quarantined against) into the state or movement within the state. Such limitations, conditions, and/or provisions may vary, depending on the intended use of the articles or commodities and the potential risk of pest escape, as specified in the permit.

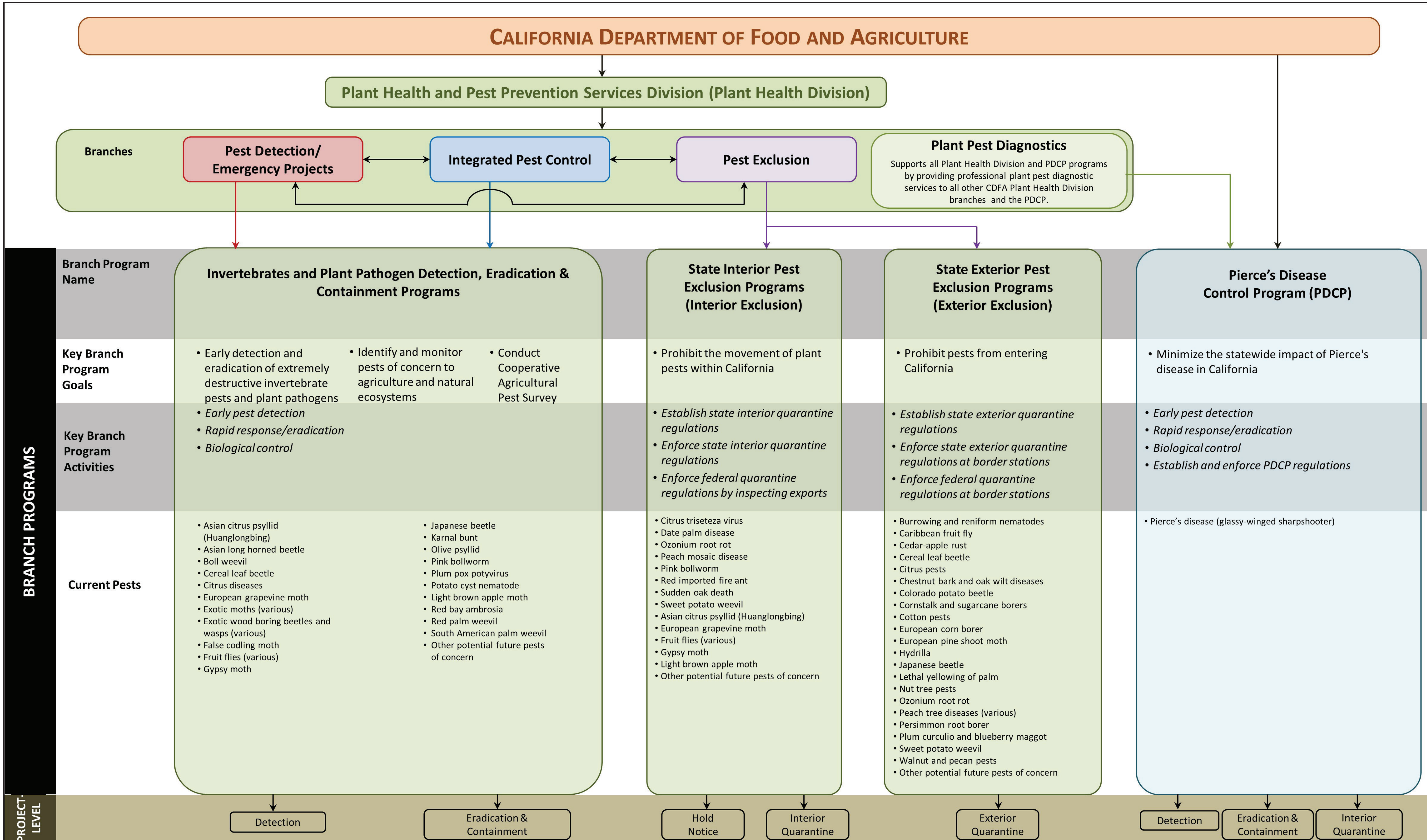
2.4.4 Branch Operations

The Plant Health Division's Pest Prevention System is divided into four branches. All pest management activities (described in Section 2.6, Pest Management Activities and Chapter 3, Proposed Program Activities) are carried out or overseen by one of these branches. Responsibilities of each branch are as follows:

- **Plant Pest Diagnostics (PPD or Lab) Branch**. The PPD Branch serves as the scientific resource for providing information on pests and making all official identifications and diagnoses for suspect pests and diseases. The PPD includes five laboratories specializing in botany, entomology, nematology, plant pathology, and seed. All references herein to identified pests and diseases that result in CDFA activities under the Proposed Program have first been identified by scientists of the PPD Branch, in support of all other Plant Health Division branches and the PDCP.

The PPD Branch also serves as a scientific and technical resource to the U.S. Department of Agriculture (USDA), other federal and state agencies, county agricultural commissioners, the University of California, other universities, researchers and the scientific community, the agriculture industry, and the public.

- **Pest Detection/Emergency Projects (PD/EP) Branch**. The PD/EP Branch initiates and operates programs designed to detect, suppress, and/or eradicate priority pests, before the pests become established in California. Within the branch, PD implements statewide detection programs through trapping and survey, and EP provides first response resources for eradication or suppression of the detected pest introductions. In addition, the PD/EP Branch houses the USDA–CDFA Preventative Release Program (focused on control and eradication of fruit fly infestations in southern California), as well as the Biological Control staff, Farm Bill Surveys, and the Cooperative Agricultural Pest Survey (CAPS).
- **Integrated Pest Control (IPC) Branch**. The IPC Branch conducts a wide range of pest management and eradication projects in cooperation with growers, county agricultural commissioners, and federal and state agencies and non-governmental organizations. The IPC Branch houses the primary vertebrate scientist and maintains a staff of scientists with expertise in weed and vertebrate pests. The IPC Branch provides assistance with the rating of noxious weeds and general supervision, technical assistance, and training in vertebrate pest control to county agricultural commissioner personnel.
- **Pest Exclusion (PE) Branch**. The PE Branch is responsible for preventing the entry and spread of harmful plant pests into the state via the administration of the State Interior Program, the Exterior Program, and the Nursery, Seed and Quality Cotton Program. The State Interior Program oversees enforcement of quarantines, inspection of packages at parcel carrier terminals, and phytosanitary certification of exports. The State Exterior Program manages 16 border stations, which are responsible for inspections of all commercial and private vehicles entering the state. The Nursery, Seed and Cotton Quality Program focuses not only on preventing the introduction and spread of plant pests through nursery stock, but also inferior, defective, or diseased plant and seed stock. This program also provides the agricultural industry with registration and certification services for plant materials.



** The list of pests addressed by each branch program changes over time. Not all pests listed here are considered in the PEIR.*

Figure 2-2
Statewide Program Organization

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2.5 Pierce's Disease Control Program

The PDCP administers projects that focus on prevention and management of Pierce's disease. Pierce's disease is a deadly disease of grapevines, caused by the bacterium *Xylella fastidiosa*, which is spread by a xylem-feeding leafhopper, the GWSS. For the PDCP, CDFA's involvement includes early detection, identification and diagnosis, rapid response, integration of the IPM approach, use of biological control, establishment and enforcement of PDCP quarantine regulations, and implementation of detection, eradication, exclusion, and control projects. The State legislature has twice enacted specific statutory provisions to address Pierce's disease and GWSS. Assembly Bill (AB) 1232 was enacted in October 1999. It mandated creation of an advisory task force and appropriated funds for 3 years for Pierce's disease research (CFAC Section 12798.1). A second bill, Senate Bill (SB) 671, was enacted in May 2000. SB 671 recognized the clear and present danger presented by Pierce's disease and GWSS, and mandated certain measures to control the disease. In response to the legislative recognition, facts, and circumstances that indicated the existence of an emergency, CDFA undertook immediate measures to mitigate and prevent damage from Pierce's disease and GWSS, and developed the PDCP. The mission of the PDCP is to minimize the statewide impact of Pierce's disease.

2.6 Pest Management Activities

The Proposed Program's pest management activities that would be carried out or overseen by the four branches discussed in Section 2.4.4, Branch Operations, are discussed next.

2.6.1 Detection

Timely detection is critical to prevent the infestation and establishment of pests in the environment. CDFA's early detection programs involve statewide surveys for the detection of plant pests, which are identified by PPD Branch scientists. The detection survey efforts are focused on known high-priority pests or pests that are likely to occur in California based on the presence of suitable climate, habitat requirements, and entry pathways. The surveys follow well-established protocols that determine when (seasonality) and where the pest is likely to be found. A focused, organized detection survey often is conducted to facilitate the export of agricultural products, collect and manage data, and/or prove absence of a population. Early detection occurs through a collaborative effort between USDA, CDFA, county agricultural commissioners, industry groups, and producers.

Pest detection is administered by the PD/EP Branch through trapping contracts with 46 county departments of agriculture, while the Branch maintains the trapping programs in Marin, Orange, Riverside portions of San Diego, San Francisco, Santa Barbara, Santa Clara, Ventura, and Yuba counties. These combined efforts deploy over 111,000 traps annually (CDFA 2013). Official identification of suspect pests is made by PPD scientists.

In addition to surveys administered under the statewide trapping program, other detection surveys are administered under USDA's CAPS program. The primary purpose of the CAPS program is to provide a survey profile of exotic plant pests deemed to be of regulatory significance. The surveys are created by the National CAPS Committee and are selected by state CAPS committees that are charged with creating bundled surveys that best fit the pest risk, agriculture, and environment of their state or regions. CAPS survey guidelines were updated in 2013 to reflect a new USDA Plant Pest Quarantine organizational structure. The newest guidelines split the surveys between CAPS and the Farm Bill, to emphasize specialty crops (Farm Bill) and leverage other funding sources. The following is a list of surveys that have been funded historically under the CAPS program but may be reorganized to regular detection and funded under the Farm Bill:

- **Statewide Survey for Exotic Woodboring Pests in California**. This survey targets a group of exotic woodboring beetles, which includes the red bay ambrosia beetle and the Asian longhorned beetle. It is conducted from July through October in southern California, from June through September in central and northern parts of the state, and from December through March in the desert area of southeastern California.
- **Statewide Survey for Exotic Pests of Citrus in California**. This survey targets citrus pests, including citrus canker, huanglongbing, citrus variegated chlorosis, sweet orange scab, Asian citrus psyllid, brown citrus aphid, and citrus longhorned borer. The survey begins in March, with inspection of commercial citrus areas for citrus pests, and continues through November, with inspection and trapping in high-risk urban areas. It is performed in a 4-year cycle, with approximately 25 percent of all commercial citrus groves inspected annually, so that each grove is surveyed every fourth year.
- **Regional Asian Forest-Defoliating Moth Survey at High-Risk Seaports and Transportation Corridors and Hubs**. This survey targets Asian gypsy moth, nun moth, rosy moth, and Siberian silk moth, and is conducted from May through September. Traps containing lures for the four target species are placed in a 1-mile radius around 11 port locations statewide: Eureka, San Francisco, Oakland, Benicia, Pittsburgh, West Sacramento, Stockton, Port Hueneme, Long Beach, Los Angeles, and San Diego.
- **Stone Fruit Commodity-based Survey**. This survey targets summer fruit tortrix moth, plum fruit moth, cherry bark tortrix, European cherry fruit fly, European stone fruit yellows, and plum pox virus. It is conducted from April through August. Traps containing lures for target species are placed by CDFA and county agricultural commissioner staff in up to 13 counties with commercial stone fruit production.
- **False Codling Moth Survey**. This survey is conducted from May through October. Approximately 1,000 traps containing false codling moth lures are deployed statewide in up to 30 counties.
- **Cereal Leaf Beetle Survey**. For this survey, sweep nets are used to collect beetles from grass and brush. Similar to butterfly nets, sweep nets are swept back and forth quickly over host plants to capture pests. In 2010, PD/EP Branch entomologists conducted sweep net surveys at 2,229 sites in 57 counties to monitor for cereal leaf beetles.
- **Karnal Bunt Survey**. For this survey, samples of host plants are collected and analyzed. Karnal bunt is a fungal disease of wheat, durum wheat, rye, and triticale. In 2010, 23 counties participated in a voluntary survey for Karnal bunt; 50 samples of wheat were collected during the wheat harvest.
- **Potato Cyst Nematode Survey**. This survey targets the potato cyst nematode, which is a parasite of over 90 species of solanaceous plants, including potato,

tomato, and eggplant. In the survey, approximately 10 percent of the production fields within selected counties are selected randomly for sampling.

Further details on these surveys are discussed in Section 3.4, Current Pest Management Program, in the narrative descriptions of activities conducted for specific pests.

2.6.2 Delimitation

Once a plant pest is detected and identified, an intensive survey is conducted to determine the extent of its boundaries (known as delimitation) and whether an infestation exists. Delimitation defines the area that may require a pest management response for successful eradication. Delimitation is conducted by increasing the density of traps in the vicinity of the detection and/or by visual surveys or other appropriate methods. Delimitation under the Proposed Program would utilize an IPM approach and would occur mainly in residential areas, but may occur in areas that contain both agricultural and residential areas. These activities are described in detail in Chapter 3, Proposed Program Activities.

2.6.3 Pest Risk Analysis

The detection of a pest does not necessarily trigger a pest management response. Using the Pest Rating Process discussed in Section 2.4.1, Pest Evaluation, CDFA determines the rating of a pest and, if necessary, conducts additional analysis on the risk of the pest to the state. The analysis considers feasibility of eradication or control, available resources and technology to achieve program goals related to the pest, and other pest-specific factors that may affect the outcome of pest management activities. Based on this analysis, CDFA determines if, and what type of a pest management response should be pursued.

2.6.4 Priority Pests

CDFA maintains a list of "priority pests" for which the Proposed Program activities would be carried out. Pests that do not meet the definition of a priority would be subject only to State holding actions and to pest management activities conducted by a county agricultural commissioner or other entities. Current priority pests, and the management activities under the Proposed Program associated with each, are presented in Chapter 3, Proposed Program Activities. Future priority pests would be included in the Proposed Program, consistent with the Pest Rating Process.

2.6.5 Pest Management Response

CDFA's first objective in invasive pest management is prevention—the avoidance of the potential for priority pests' introduction into California—followed by early detection of incipient invasions and coordinated responses when introduction cannot be prevented. Once introduced, the goal for outcome of a management response is eradication of the pest.

CDFA bases its management response on the following criteria:

- Whether the pest generally is distributed throughout the state or represents a new potential infestation;

- The current severity of the pest infestation (population extent and density);
- The potential severity of the pest infestation (i.e., fecundity, pathways, availability of hosts, availability of vectors) as determined by the USDA's New Pest Advisory Group and the CDFA's Primary State Scientists;
- The potential environmental and economic consequences of not taking action against the pest;
- Availability of short-term and long-term resources (such as funding personnel and equipment) to undertake a management response;
- Potential feasibility and efficacy of available management responses; and
- Feasibility of eradication or suppression/control.

2.7 Pest Control

2.7.1 Exclusion

Pest exclusion involves restricting the transport of certain host commodities and other articles into or within California to limit the artificial movement of pests. Pest exclusion activities are conducted at both state borders and internal locations that are likely pathways for the movement of pests within the state.

Pest Management Activities at Border Protection Stations

Exclusion begins with monitoring vehicles entering the state to determine whether they are free of pests. The Exterior Pest Exclusion Program operates 16 border protection stations, located along the state's northern and eastern boundaries on each major highway entry point into California from other states. All identification of incoming suspect pests and diseases are made by PPD scientists.

State exterior quarantine regulations prohibit the movement of regulated articles (e.g., host material) into California without first complying with a quarantine requirement. The owner of a regulated article is required to comply with quarantine requirements by implementing necessary actions before entering California. CDFA conducts inspections at California border stations to verify that quarantine requirements have been fulfilled, which often, but not always, occur through presentation of a quarantine verification certificate, demonstrating compliance with a quarantine requirement. Specific quarantine requirements for articles regulated under the Proposed Program are discussed in Section 3.4, Current Pest Management Program.

CDFA routinely intercepts regulated articles that are infested with a quarantine pest during border inspections. When this occurs, the owner of the regulated article is provided options, including to:

- Return the regulated article to the place of origin;
- Discard the regulated article and move past the inspection point without the regulated article; or

- Treat the regulated article with a treatment method approved for the quarantined pest and move the regulated article past the inspection point only after it is determined to be free of the targeted pest. In cases where a specific treatment has not been established by regulation, any treatment method approved for use in California can be used.

Because the actions required by inspection programs are not pre-established and are decided by the owner of the regulated article, CDFA does not provide guidance or oversight on which option is selected.

Exterior quarantines established by CDFA would continue under the Proposed Program (CFAC Sections 5301 thorough 5312), with issue of inspection certificates for transports of agricultural commodities into the state (CFAC Sections 5341 through 5353).

Pest Management Activities in Interior Quarantine Areas

Interior quarantine areas are established when eradication is determined to be infeasible, or to prevent the spread of pests from designated areas while other pest management activities, such as eradication or control, are underway. Interior quarantine areas allow for a detectable and reproducing pest population within a given location or set of locations in the state, limited to a population threshold. Enforcement of interior quarantines' regulations and hold notices are used to achieve pest containment.

If a new pest is detected and identified, and no state or federal quarantine exists, interim action may be taken to contain the organism on a premise via a hold notice (CFAC Sections 5701 through 5705). The owner of the premise is required to meet certain conditions (i.e., a hold on a plant or possible carrier, issuance of compliance agreements and/or shipping permits, or abatement) before his/her commodity may be moved outside the area.

Compliance agreements allow regulated entities to continue to move and market their commodities, as long as they implement quarantine requirements and other stipulated conditions designed to provide containment of the pest (CFAC Section 5705). A regulated entity is defined as someone who has to comply with the quarantine requirements in order to move their products outside of the regulated area. This may include but not be limited to growers, nurseries, and commodity shippers. The stipulated conditions are determined by CDFA, based on pest-specific/commodity-specific criteria. Stipulated conditions can include MPs and mitigation measures to be used while specific management approaches are implemented.

Pest Management Activities at Other Points of Entry

CDFA's Statewide Program includes additional pest management activities conducted by county agricultural commissioners at locations within the state through which pests can enter. Such locations include post offices, airport air freight terminals, sea ports, and parcel carrier facilities. Activities at these locations include inspection of shipments and monitoring shipments to determine whether they are free of pests and in compliance with quarantine requirements. When pests are intercepted and identified, enforcement options include treatment, destruction, or return of the shipment to its origin. (CFAC Sections 5350 through 5353, and 6461 through 6465).

2.7.2 Eradication

When a plant pest is detected in an area of the state where the pest is not known to occur, CDFA may convene a Scientific Advisory Panel or USDA may convene a Technical Working Group to consider each situation before deciding on a response plan. If the pest has an established Action or Work Plan, that plan will be considered by reviewing previous program plans, trapping densities and grids, and all scientific information necessary to make a determination. If eradication is recommended, a rapid response is considered essential to prevent establishment of the pest. The goal of a rapid response is to provide resources in a coordinated and timely manner.

Eradication strategies are aimed at totally eliminating the pest from a designated area and preventing the establishment of a reproducing population. Because most pests spread rapidly, the window of opportunity for successful eradication is brief.

Eradication projects use a combination of complementary IPM approaches to achieve their goals. Such approaches include sterile insect releases, host plant/fruit/flower removal, mass trapping, and chemical applications. Chapter 3, Proposed Program Activities provides further detail on these approaches.

2.7.3 Suppression

During the course of an eradication program, methodologies and strategies may be reviewed and updated to include a suppression program. A suppression program allows for maintenance of a population density below a critical threshold in some areas while initiating eradication in other areas where eradication remains feasible. A suppression program may have all the components of eradication, but also may include other combinations of IPM strategies, including the release of biological control agents (BCAs), intensive survey, monitoring, and a sterile insect program.

2.8 Pest Prevention and Integrated Pest Management Approach

IPM is the coordinated use of information about pest population biology and the host environment, combined with all available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment, while achieving adequate efficacy to meet the goal of the program. The IPM approach considers information on the life cycles of pests and their interaction with the environment, and all appropriate pest management options. Implementation often results in a combination of strategies, including mechanical control, biological control, cultural control, and the use of pesticides where indicated.

CDFA's Statewide Program utilizes the IPM approach to prevent, suppress, eradicate, or control pest populations, and is a consideration in the development of regulations. IPM would continue under the Proposed Program, using a four-tiered approach:

1. **Pest Identification/Rating**: When information is received on the existence of a pest that generally is not distributed within the state and the identity of the pest is

confirmed by PPD scientists, CDFA investigates the likelihood of its spread, the economic and environmental implications of such a spread, and the feasibility of eradication or control of the pest. In addition, to facilitate early pest identification, CDFA conducts activities to inform the public about its programs and role in pest identification.

2. **Establishment of a Population Threshold**: When a pest is identified, CDFA must determine the point at which an incipient infestation may occur that would result in an established pest population. For detections of priority pests generally not distributed in the state, eradication is the primary goal, and CDFA takes actions to prevent a reproducing population. The population thresholds are pest-specific and are set based on input from USDA, the University of California, other State agencies, and others in the scientific and research community.

3. **Selection of Management Approaches**: Based on experience and knowledge of the available methods, and after consideration of potential risks to human health and the environment, the least damaging and most economical method or combination of methods to be used is selected. Management approaches are selected only after careful consideration of:

    - Human Risk: Human health risk is the highest priority consideration and the chance of harmful effects to human health must be minimized.
    - Environmental Damage: This includes risk to non-target organisms, water resources, air quality, and other environmental resources.
    - Efficacy: Efficacy is the ability of a management approach to produce the desired result.
    - Available Resources: Both short- and long-term resources for implementing a management approach, including personnel, time, and cost.

4. **Monitoring**: Every pest prevention and management project includes a monitoring component. Monitoring evaluates the effect of a management activity or a particular pest management program on the target pest population. Monitoring can be qualitative or quantitative.

CDFA's IPM approach is shown in Figure 2-3.

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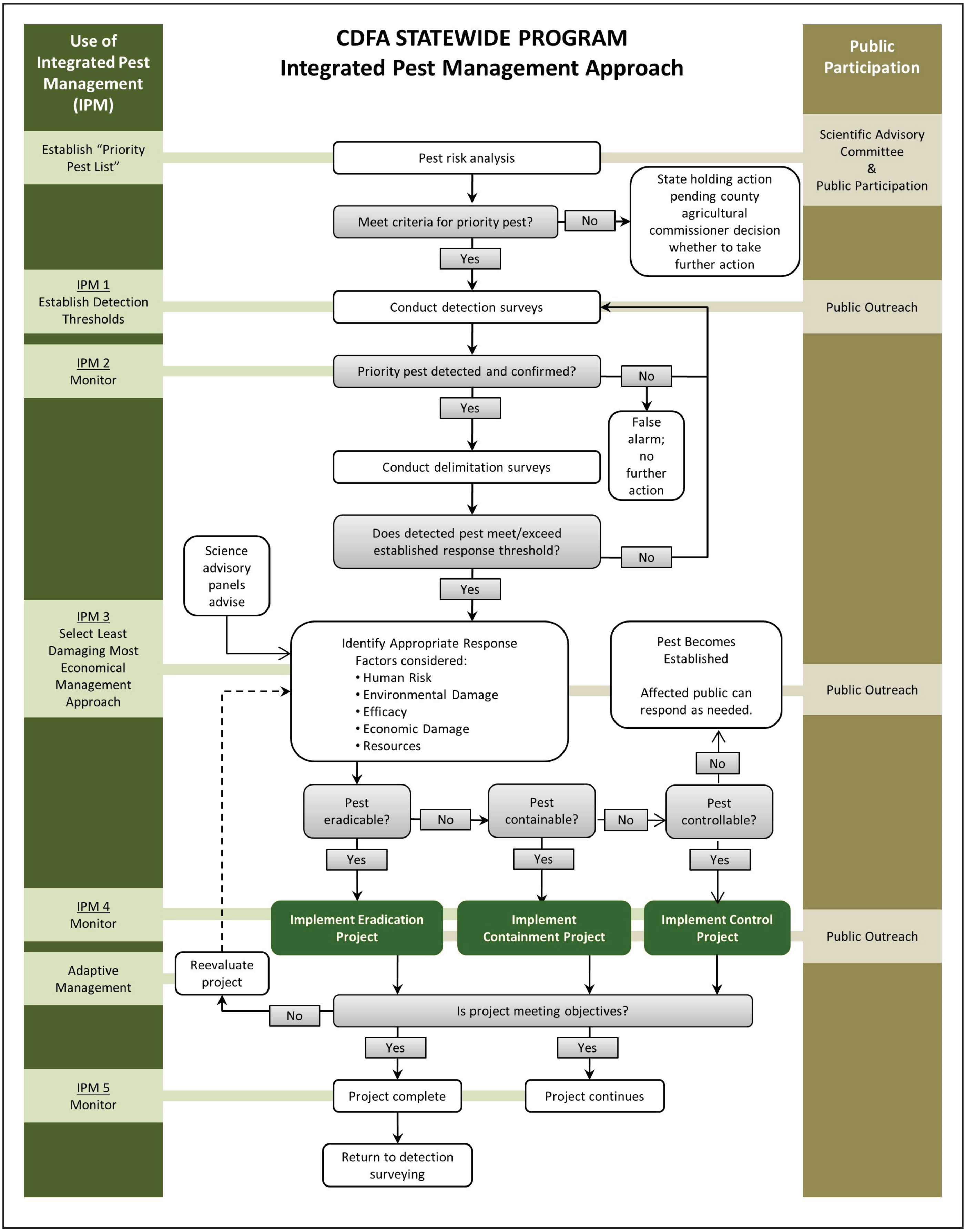

Horizon WATER and ENVIRONMENT

Figure 2-3
Statewide Program
Integrated Pest Management Approach

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2.9 Overview of Pest Management Activities

For the purposes of environmental analysis, Proposed Program activities are described in several broad categories: physical, biological, and chemical management approaches. These broad categories were selected based on the similar mechanisms of their environmental impacts. Proposed Program activities are described in further detail in Chapter 3, Proposed Program Activities.

2.9.1 Physical Management Activities

Physical management activities may include visual observation to identify presence of pests, detection trapping, and field work such as hand picking fruit/flowers to remove host material. Physical management activities may be performed directly by CDFA staff for detection, delimitation, exclusion, and control projects, or by individual growers or commodity shippers in response to a quarantine regulation.

2.9.2 Biological Management Activities

Biological management activities for pest suppression under the Proposed Program would include the use of BCAs and the sterile insect technique.

Biological Control Agents

Biological control is a method where natural enemies of a pest are released into an area where the pest is present. Natural enemies, or BCAs, cause mortality by feeding on or causing disease in pests. Through direct and indirect mortality, the density of the pest population is reduced to a target level. Some natural enemies are obtained in the pest's area of origin and are introduced exotic organisms while others may be native species. Before use, BCAs new to the United States are approved by the USDA Animal and Plant Health Inspection Service (APHIS) through an environmental review process, where the safety and efficacy of each introduction is evaluated before release. Each step in the process requires strong scientific evidence before proceeding to subsequent steps and eventual release. BCAs are used in agricultural, natural, and urban environments in California under the Statewide Program for pest control projects.

The following steps are used to develop new BCAs (Simberloff and Rejmanek 2011; Pitcairn 2011; Frank et al. 2011):

- **Step 1, Target Selection.** Accurate identification is made of the pest species by PPD scientists, to confirm the pest as a target for biological control and identify the pest's area of origin.
- **Step 2, Foreign Exploration in Area of Origin**. Relevant literature is examined and surveys are conducted in the pest's area of origin (usually a foreign country) to determine potential candidates for BCAs. If possible, other organisms closely related to the target pest are examined in the native range to determine whether they will be damaged by the candidate BCA. Candidate BCAs are transported from the area of origin to an appropriate quarantine facility in the United States for study. To transport a BCA (or control organism) into the United States, CDFA or another

agency importing the BCA must obtain a Plant Protection and Quarantine (PPQ) Permit from USDA APHIS. The PPQ Permit must remain valid as long as the permitted organisms are in the permittee's possession.

- **Step 3, Host Specificity Studies and Risk Evaluation**. Following approval from federal and State regulatory officials, BCAs are shipped to a domestic quarantine facility, where they are examined to confirm species identity and to determine whether they are free of parasites and diseases. Next, a series of host specificity studies are completed at the quarantine facility for the candidate BCA. The results of these studies are used to predict field host range and potential risks to non-target species after release of the BCA in the pest's invaded range.
- **Step 4, Approval of BCAs by Government Regulatory Agencies**. Using the results of the host specificity studies, USDA conducts environmental review in compliance with the National Environmental Policy Act (NEPA), the federal Endangered Species Act (ESA), and any other relevant federal regulations. These regulations incorporate standards developed by the North American Plant Protection Organization for the release of phytophagous (feeding on plant) and entomophagous (feeding on insects) BCAs. To use a BCA, USDA requires adoption of a Finding of No Significant Impacts, for NEPA compliance. For review of potential impacts on non-target species subject to the ESA, sometimes a Biological Assessment is prepared and consultation is carried out with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS).
- **Step 5, Implementation**. Permitted BCAs are mass-reared to large numbers and are released at field sites by CDFA scientists. A few BCAs (typically fewer than 1,000) initially are released in the field at nursery sites or in areas with high densities of the target that are located in climatic areas deemed optimal for the BCAs. After populations of the BCAs are established at field nursery sites, samples of the BCAs are collected and moved to populations of the target pest throughout California.
- **Step 6, Monitoring**. At nursery sites, BCAs are monitored in field plots to determine whether the agent establishes, populations begin to increase, spread occurs into nearby infestations, and the new populations support collections for further redistribution. Generally, a BCA is considered established after it has survived at least 2 consecutive years after release. Monitoring also is performed (ideally for several years following release) to examine the impacts of the BCA on the target pest and non-target species. Careful, long-term evaluations provide scientific data that are used to improve existing and future programs.

Various subsets of these steps are used, depending on the nature of the BCA and the locations where it has been used previously. If the BCA proposed for use has never been brought into other areas of the United States, CDFA implements all six steps in the control process. If the proposed BCA previously has been brought into the United States and all or some of the six steps have been carried out previously by another agency, CDFA implements the next required step in the process, either directly or indirectly, by engaging other required State and federal agencies (e.g., NEPA environmental review through USDA).

Sterile Insect Technique

The sterile insect technique mates females of a pest species with a sterile male through the continuous release of sterile males or partially sterile males into the pest population. When the sterile males mate with wild females, no viable offspring are produced. When partially sterile males are introduced, the subsequent generation is born sterile. In both cases, the wild pest population decreases because females progressively lose opportunities for successful reproduction through an abundance of sterile male partners in the environment. Sterilization occurs by the process of irradiation.

2.9.3 Chemical Management Activities

Utilizing the IPM approach would reduce the use of pesticides under the Proposed Program because they would be used only when other less effective treatment methods are determined not to be succeeding, or would not be effective. Chemical management activities would be implemented in accordance with the scenarios described and analyzed in the Human Health Risk Assessment (Appendix B) as showing levels of human health risk below a level of concern, or using other methods determined to be below a level of concern.

Types of Chemicals

For the purposes of this Final PEIR, a pesticide is any substance meeting the definition contained in Section 12753 of the CFAC and may include both natural and synthetic chemical or microbial substances. Under the Proposed Program, CDFA may use, or oversee the use of, a variety of pesticides, including conventional pesticides, microbial pesticides (living microbes that consume pests or excrete natural pest toxins), biopesticides (derived from natural material), and spray adjuvants (additives that improve pesticide performance). Pesticide registration, sale, and application are regulated by CDPR and the U.S. Environmental Protection Agency (EPA). CDFA's Office of Pesticide Consultation and Analysis (OPCA) serves as a consultant to CDPR focusing on potential pesticide regulatory impacts and pest management activities that may mitigate or prevent such impacts on production agriculture. See Section N-5 in Appendix O for further discussion of the pesticide registration process.

Numerous registered pesticides exist for use against the pests of concern under the Proposed Program. This Final PEIR provides analysis for the subset of these pesticides evaluated in the Proposed Program's Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively).

Chemical Pesticides

Chemical pesticides usually are not species-specific but are effective against a broad group of related organisms. Pesticides are classified by the type of organism targeted (e.g., insecticides target insects, fungicides target fungi, and herbicides target plants).

CDFA gives careful consideration to pesticide use and would continue to do so under the Proposed Program. Use of a particular pesticide is considered in the context of the IPM approach (as described in Section 2.8, Pest Prevention and Integrated Pest Management Approach). CDFA has established the following criteria for use:

- Other alternative methods are evaluated as applicable to the response plan.
- The pesticide must be registered by EPA and CDPR.
- The California Office of Environmental Health Hazard Assessment (OEHHA) is included in the evaluation process and is consulted for guidance.
- The risk to humans and non-target organisms must be below established risk thresholds.
- The pesticide must be available for use when and where it is needed.
- The environmental fate and non-target effects must be understood.

Adjuvants

Adjuvants are emulsifiers, spreaders, and other compounds added to improve the efficacy of a pesticide. Adjuvants do not directly kill pests, but they aid in the uptake of the conventional pesticide by the pest. Adjuvants would be used in pesticide spray applications under the Proposed Program (application methods are described in Chapter 3, Proposed Program Activities). California regulates adjuvants as pesticides and those adjuvants that may be used under the Proposed Program were analyzed in the Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively); this class of chemicals is exempt from federal licensing but must be registered in the state.

Biopesticides

Biopesticides are pesticides derived from natural materials such as animals, plants, bacteria, and certain minerals. Biopesticides fall into three major classes: microbial pesticides, plant-incorporated-protectants, and biochemical pesticides. Microbial pesticides consist of a microorganism as the active ingredient, such as a bacterium, fungus, virus, or protozoan. Plant-incorporated protectants are pesticidal substances that plants produce from genetic material which has been added to the plant. Biochemical pesticides are naturally occurring substances that control pests by non-toxic mechanisms.

Microbial Insecticides

Microbial insecticides, a subset of biopesticides, are pathogenic microorganisms that consume pests or excrete substances that act as effective insecticides. Some pathogenic microorganisms are effective insecticides by consuming pests or excreting substances that are effective insecticides. The following two microbial insecticides may be used under the Proposed Program: spinosad and *Bacillus thuringiensis*. These microorganisms are naturally occurring but are bred in a laboratory and must be registered by EPA as pesticides. Use of microbial insecticides is considered a chemical management activity (rather than a biological management activity) because it would result in environmental effects similar to other types of pesticides. Microbes are placed in the pest population at critical times, which depend on the susceptibility of different life stages of the targeted pest. Applications occur as frequently as needed, based on the application method and its efficacy.

Biochemical Pesticides

Biochemical pesticides, another subset of biopesticides, are naturally-occurring substances that control pests by non-toxic mechanisms. Biochemical pesticides include substances such as insect pheromones that are naturally occurring or are synthesized in a laboratory to be equivalent to the naturally occurring pheromone. Pheromones are natural chemicals emitted by an individual of a species that trigger a behavioral or physiological response in other members of the same species. Many organisms emit a pheromone that attracts the opposite sex. For some pest species, biochemical pesticides (also called synthetic pheromones) are effective in detection, control, and eradication projects. Pest control is accomplished by disrupting the chemical communication between the sexes, or by reducing populations by attracting large numbers of males to traps or bait stations, where they are captured and removed from the environment.

Application Methods

Chemicals under the Proposed Program would be applied using various methods, generally categorized as placed inside traps, spot applications, soil applications, fumigation applications, and foliar spray applications. These application methods are described in detail in Chapter 3, Proposed Program Activities. Selection of a chemical application would consider all factors of pesticide safety, including environmental concerns and impacts on living organisms. Aerial spray applications of pesticides in residential and urban areas would *not* be conducted under the Proposed Program.

Pesticide Use outside California

Some state exterior quarantine regulations specify that plant material must be free of a pest before movement into California, and a quarantine certificate is required from the state of origin (outside California) confirming that the plant material has been rendered pest-free using a method that the overseeing body (government agency) in the location of origin has approved for use.

In some cases, CDFA does not prescribe what control method(s) is used, nor does CDFA monitor pre-approved pesticide use. Therefore, a variety of control methods are possible. The owner of the plant material/regulated article selects the pre-approved pesticide or other control method to remove the pest. Pre-approved pesticide use occurs when using the application method and rate registered as provided on the pesticide product's label or as otherwise directed by a State agency (other than California) overseeing the application. In other cases, CDFA has approved the use of certain chemicals at certain rates or using certain application methods for treatment of pests that are targeted by state exterior quarantine regulations. However, the application is still monitored and directed by an agency outside California.

International shipments of goods also may enter California through one of CDFA's border protection stations from an international port elsewhere in the United States. Similarly in this case, CDFA does not prescribe a treatment method but instead sets a performance standard that the shipment must be pest-free. Pesticide use occurring internationally to comply with CDFA's external quarantines would occur in compliance with the laws of the nation of origin.

2.10 Existing Permits and Consultations

2.10.1 CDFA's National Pollutant Discharge Elimination System Permit

CDFA conducts plant pest prevention and management activities in compliance with its Statewide General NPDES Permit for Biological and Residual Pesticide Discharges to Waters of the United States from Spray Applications, General Permit Number No. CAG 990007 (Statewide General NPDES Pesticides Permit), provided in Appendix E. The Statewide General NPDES Pesticides Permit was adopted by the SWRCB with Water Quality Order No. 2011-0004-DWQ. CDFA obtained coverage under this permit by filling a Notice of Intent and Comprehensive Pesticide Application Plan (PAP) on July 29, 2011 with the SWRCB. The Statewide General NPDES Pesticides Permit covers spray application of the insecticides identified in Table 2-1.

In conducting activities under this permit, CDFA complies with monitoring and reporting requirements by publishing an annual water monitoring report. The permit achieves water quality protection through enforcing effluent limitations. The effluent limitations are narrative and achieved by CDFA through implementation of a pesticide application plan that describes appropriate best management practices (BMPs), including compliance with all pesticide label instructions and receiving water limitations. BMPs are implemented specifically to minimize the area and duration of potential impacts caused by the discharge of pesticides (see Appendix E).

Table 2-1. Insecticides Covered by CDFA's Spray Application NPDES Permit

Active Ingredient Covered by NPDES Permit	Example Pesticide Products Containing Active Ingredients
Bacillus thuringiensis kurstaki	DiPel DF Biological Insecticide DiPel Pro DF Biological Insecticide Dry Flowable
Spinosad Factor A&D	Entrust Insect Control
Douglas-fir tussock moth nuclear polyhedrosis virus	TM Biocontrol
Malathion	Fyfanon ULV AG
Naled	Dibrom Concentrate
Spinosad A and D	GF-120 NF Naturalyte Fruit Fly Bait
E-11-Tetradecen-1-yl Acetate and (E,E)-9,11-Tetradecadien-1-yl Acetate	Isomate LBAM Plus
(E,Z)-7,9-Dodecadien-1-yl Acetate	Isomate-EGVM
Pyrethrin	Pyganic Crop Protection EC 5.0 II
Carbaryl	Sevin SL Carbaryl Insecticide
Spinosad Factor A &D	Success Naturalyte Insect Control
Acetamiprid	Tristar 30 SG Insecticide
Dinotefuran	Safari 20G Insecticide
Imidacloprid	Merit 2F Merit 75 WSP Insecticide Merit 75 WSP
Cyfluthrin	Tempo 20 WP Tempo SC Ultra Insecticide Tempo Ultra WP Insecticide

Source: SWRCB 2011

Receiving water limitations require that an application event does not result in an exceedance of water quality standards in the receiving water. To determine compliance with applicable receiving water limitations at a pesticide application site, post-event monitoring of the water is required no more than a week from the time of pesticide applications near surface waters. Post-event monitoring also provides information for several other requirements of general permits, such as measuring and improving the effectiveness of the PAP and BMPs over time.

In compliance with the permit, CDFA also notifies potentially affected government agencies and the public as soon as a pesticide application for a project is scheduled.

CDFA's Statewide General NPDES Pesticides Permit addresses pesticide applications undertaken directly by CDFA or its contractors, but does not extend to regulated entities complying with CDFA's quarantine requirements. Such entities must obtain their own Clean Water Act coverage for pesticide applications that can reach surface waterbodies.

2.10.2 Technical Assistance from the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and California Department of Fish and Wildlife

CDFA designs its pest eradication protocols to meet or exceed recommendations from USFWS and the California Department of Fish and Wildlife (CDFW) concerning special-status species and sensitive natural communities (as defined in Section 6.3, Biological Resources). CDFA also coordinates with NMFS to address control programs for non-native pest outbreaks that may impact species under their jurisdiction (i.e., ocean coastlines or streams that empty into the ocean). Under the existing Statewide Program, no impacts on special-status species or sensitive natural communities have been identified from pest management activities to date.

Under the Proposed Program, CDFA would continue to coordinate with USFWS, NMFS, and CDFW to avoid "take" of threatened and endangered species and to minimize adverse environmental impacts on other special-status species and sensitive natural communities. Prior to making the decision to treat, CDFA would consult the California Natural Diversity Database (CNDDB) for special-status species previously reported inside or in close proximity to the treatment area boundaries, as well as check for the potential for presence of special-status species habitat and/or sensitive natural communities. CDFA would report the results to USFWS, NMFS, and/or CDFW. CDFA, in conjunction with the county agricultural commissioner, would provide USFWS, NMFS, and/or CDFW with maps showing the proposed treatment areas and identifying the treatment activity. CDFA would develop measures to avoid adverse environmental impacts on these resources and would notify USFWS, NMFS, and/or CDFW (depending on the potentially affected species) of pest control activities and the protective measures proposed for use. If any of these wildlife agencies responded to CDFA with a conclusion that the proposed activities would pose potential for "take" of threatened or endangered species, or other special-status species, CDFA would coordinate further with these agencies regarding the appropriate measures to avoid impacts.

The presence of special-status species or sensitive natural communities may require treatment regimen alterations so that take of the species, or adverse modification of sensitive natural communities, would not occur. Treatment plans are designed so that "take" of special-status species would not occur. This may mean that a section of riparian area would be treated only partially (e.g., no insecticides sprayed on trees above a certain height level so that no drift would occur into the associated waterbody) or no treatment would occur at all, however, this would likely lead to full establishment of the invasive pest.

2.11 Program Management Practices

The following MPs would be implemented and monitored by CDFA during applicable activities conducted under the Proposed Program. MPs with the prefix MP-SPRAY are general MPs used for spray applications that are carried out by CDFA staff or a contractor under the Proposed Program; many have already received approval by the SWRCB via the NPDES permit. Similarly, the prefix MP-GROUND refers to MPs specifically used for ground-level foliar spray applications, and the prefix MP-HAZ refers to MPs used to protect human health and the environment from accidental spills of pesticides during a spray application.

MP-SPRAY-1: Conduct a Site Assessment

- Verify site to be treated.
- Take note of site conditions, such as soil texture, slope, water bodies, host plants, irrigation, and storm drains.
- Identify and make plans to avoid streamside management areas and surface water.
- Consider integrated pest management methods designed to minimize the scale and number of pesticide applications. Consider multiple measures such as sterile release, host removal, and bait stations.
- Choose the least persistent and lowest toxicity pesticide that will efficaciously treat the target pest.

MP-SPRAY-2: Properly clean and calibrate all equipment to apply chemicals uniformly and in the correct quantities

- Calibrate spray equipment per label instructions.
- Perform equipment screening tests and tank sampling when appropriate.
- Use dedicated specific equipment for specific products when appropriate.
- Ensure equipment is cleaned properly per the manufacturer's specifications and any pesticide label directions.
- Select the appropriate nozzle to ensure proper coverage.
- Maintain an equipment log to track calibration, cleaning, and repairs.
- Conduct visual inspections of equipment before use. Check all equipment for leaking hoses, connections, and nozzles.
- Monitor the operation of the nozzles during the application.

- Request county agricultural commissioner pesticide use enforcement inspections and monitoring of applications.
- Discontinue use immediately if equipment malfunctions or fails to pass screening tests.

MP-SPRAY-3: Follow pesticide application laws and regulations, and label directions.

- Comply with Pesticide label.
- Require employees who supervise the handling and application of pesticides to maintain a Qualified Applicator License issued by CDPR.
- Be aware of any regulations or internal procedures before application.
- Use appropriate application methods and rates.
- Mix and load chemicals in areas where spills can be contained. Limit mixing and loading in the field.
- Provide annual safety training for all treatment personnel.

MP-SPRAY-4: Apply chemicals only under favorable weather conditions

- Monitor wind conditions. Delay or do not apply foliar sprays if wind speeds are over 10 miles per hour.
- Check weather service prior to application. Delay or do not apply foliar treatments if there is a 40% or higher chance of rain forecast to occur 24 hours before or after the planned application.

MP-SPRAY-5: Follow integrated pest management and drift reduction techniques

- Use buffer zones where applicable to protect sensitive areas, such as bodies of water, critical habitat for threatened and endangered species, and other identified sensitive areas.
- Use low pressure application equipment if applicable.
- Use "bait station" application methods when possible.

MP-SPRAY-6: Clean equipment and dispose of rinse water per label directions

- Rinse equipment according to manufacturer's label instructions.
- Discharge rinse water only in areas that are part of the application site or at a certified waste treatment facility.
- Dispose of surplus chemicals and containers according to label instructions.

MP-SPRAY-7: Follow appropriate product storage procedures

- Ensure proper storage of all pesticides per label instructions.

- Ensure all pesticides removed from their original container are properly sealed for use within a service container.
- Seal all service containers within a tool box.
- Lock tool boxes when unattended.

MP-AERIAL-1: Use appropriate aerial spray treatment procedures

- Do not make direct application to water bodies.
- Use dripless nozzles if available.
- Verify the calibration of the contractor's spray equipment before the start of each treatment campaign.
- Make sure that the aircraft pilot is in radio communication with Proposed Program personnel on the ground, to verify wind speed and direction and location of non-target sites, including water bodies, people, vehicles, and buildings.
- Supervise mixing and loading of the aircraft.

MP-GROUND-1: Follow appropriate ground-rig foliar treatment procedures

- Avoid direct applications to water bodies unless the material is registered for such use.
- Maintain a 30-foot buffer around water bodies per NPDES permit.
- Use dripless nozzles or fan-type nozzles at low psi if applicable.
- When using a blower boom, direct the blower boom to the precise angle needed to treat host plants.
- Ensure the spray boom is equipped with an electric on/off switch to treat the precise target areas where host plants occur.
- Monitor wind conditions. Delay or do not apply foliar sprays if wind speeds are over 10 miles per hour.
- Perform ground-rig foliar treatments at low pressure, to reduce the quantity of fine droplet particles where applicable.
- Allow only staff or private entities under contract that are appropriately trained and licensed to perform ground-rig spot treatments.
- Check weather service prior to application. Delay foliar treatments if there is a 40% or higher chance of rain forecast to occur 24 hours before or after the planned application.

MP-GROUND-2: Follow appropriate low-pressure backpack treatment procedures

- Avoid direct applications to water bodies unless material is registered for such use.
- Maintain a 30-foot buffer from water bodies per NPDES permit.

- Use dripless nozzles where applicable.
- Direct the nozzle at the target to minimize drift.
- Monitor wind conditions. Delay or do not apply foliar sprays if wind speeds are over 10 miles per hour.
- Allow only trained staff to perform backpack spot treatments.
- Monitor weather conditions. Delay foliar treatments if there is a 40% or higher chance of rain forecast to occur in the next 24 hours.

MP-GROUND-3: Train personnel in proper use of pesticides

- Conduct training for personnel in the safe and proper mixing, loading, and application of pesticides, in compliance with both federal and State pesticide regulations and the product label.
- Require employees who supervise the handling and application of pesticides maintain a Qualified Applicator Certificate, issued by CDPR or have a County License for Pesticide Regulation.
- Contractors will be appropriately trained and licensed.

MP-GROUND-4: Enforce runoff and drift prevention

- Carefully monitor and evaluate weather conditions within potential treatment areas to determine the effectiveness of control applications immediately before deciding whether to proceed with a treatment and during the course of a treatment.
  - Monitor weather conditions before and during applications
  - Comply with NPDES Permit.

MP-HAZ-1: Implement a Spill Contingency Plan

- Contain spill immediately to minimize the risk of further pesticide exposure to people, animals, and the environment.
- Be prepared to respond to pesticide spills.
- Provide clean-up of small spills (50 gallons or less) and properly dispose of residual materials. For larger spills notify the Chemical Transportation Emergency Center at 800-424-9300.
- Use established protocols in determining the appropriate action in the event of an accidental crash of a spray rig, tanker, or aircraft.
- Follow instructions for First Aid Measures as listed on the Material Safety Data Sheet.
- Call an ambulance in the event of a spill involving severe personal injury.
- Remove anyone exposed to pesticides to a safe location. If applicable, remove their clothing and wash contaminated skin with soap and water.

- Do not move a seriously injured person unless it is absolutely essential because of the risk of further injury.
- Do not leave injured or incapacitated persons until proper medical assistance arrives.
- Provide a pesticide label and/or material safety data sheet for medical personnel.
- For any spill incident, contact the California State Warning Center/Governor's Office of Emergency Services at 916-845-8911 or warning.center@oes.ca.gov.
- Call the fire department and notify department personnel of the presence of pesticides for a spill involving fire, if a fire hazard exists. Eliminate all sources of ignition (electric motors, gasoline engines, or smoking) to prevent fire or explosion.
- Contact the California Highway Patrol by calling 911 for a spill occurring on a highway.
- Call local police or the county sheriff for a spill occurring off-road.
- Stop the leak and contain the spill of a punctured tank.
- For minor spills of 50 gallons or less:
    - Wear rubber boots, coveralls, rubber gloves, and eye protection.
    - Confine the leak or spill to the smallest area possible by using natural terrain, soil, or absorbent material.
    - Shovel contaminated material into a leak-proof container.
    - Do not hose down the area.
    - Work carefully and safely; do not hurry.
    - Dispose contaminated material in the same manner as for excess pesticides or hazardous wastes.
- For major spills of 50 gallons or more:
    - Follow the steps listed for all above and include the additional number below.
    - If the spill is too big, or uncertainty exists as to the appropriate action, notify the Chemical Transportation Emergency Center at 800-424-9300.

MP-HAZ-2: Use a safety and cleanup materials checklist

- Follow a checklist for safety and cleanup materials to accompany mixing-loading vehicles during treatment activities, which should include the following:
    - For Safety: a first-aid kit; a fire extinguisher (516, type A-B-C), and goggles.
    - For Clean-up: one shovel, large heavy-duty plastic bags, rubber boots, disposable coveralls, water, rubber gloves, a broom and dust pan, liquid detergent, several bags of "kitty litter" or other absorbent materials.

MP-HAZ-3: Implement decontamination

- Decontaminate paved surfaces per site specific protocols and Accidental Release Measures on the Material Safety Data Sheet.
- Shovel contaminated material into a leak-proof metal drum for final disposal.

MP-HAZ-4: Follow appropriate disposal procedures

- Dispose all materials that have been contaminated by spillage or exposed to large volumes of pesticides, including cloth, soil, and wood that cannot be decontaminated, in the same manner as done for excess pesticides.
- Store contaminated absorbent material and materials that cannot be decontaminated in a leak-proof container and dispose the container at a Class I landfill.

2.12 Actions to Benefit Pollinators

CDFA recognizes that healthy pollinator populations are critical to protecting the environmental quality and agricultural resources of the state. CDFA engages in a number of activities to help protect the health of pollinator populations and minimize the potential for CDFA's activities to contribute to their decline. For a detailed description of these activities, see Attachment 1 to Appendix K.

2.13 Uses of the PEIR

This section describes the intended uses of the PEIR, including the decisions to be made by CDFA regarding the Proposed Program. This section also identifies a list of agencies that may use the PEIR in their decision-making.

2.13.1 Use of the PEIR by CDFA

This PEIR provides CEQA coverage for the activities described in this chapter and Chapter 3, Proposed Program Activities. CDFA will use the PEIR in deciding whether to approve, approve with modifications, or deny the Proposed Program. In addition, CDFA will use this PEIR in responding to the Court of Appeal's opinion regarding the PDCP EIR.

The PEIR is also intended to be used for subsequent CEQA evaluation, for both project-level activities and program-level compliance for newly developed management approaches or newly identified types or species of plant pests. Use of the PEIR to facilitate CEQA compliance for individual projects and program components would facilitate rapid response while minimizing risk to human health and environmental resources.

To determine whether activities proposed as part of a future individual project have been sufficiently described in the Proposed Program and adequately addressed in the PEIR, a CEQA Tiering Strategy and checklist have been developed. This CEQA Tiering Strategy is included as Appendix C of this Final PEIR. Future activities would be evaluated for CEQA compliance using the checklist. Activities which may have new impacts not described in the PEIR would be subject to future CEQA evaluation.

2.13.2 Use of the PEIR by Others

Several other public agencies or entities also implement pest prevention and management projects. These public agencies and entities also may be able to use the PEIR for CEQA coverage or a source of information for activities that are covered in the PEIR.

Users of the PEIR potentially include county agricultural commissioners and various government agencies. County agricultural commissioners serve as the primary local enforcement agents for State agricultural laws and regulations. County agricultural commissioners carry out detection, eradication, exclusion, and other related regulatory activities in their respective counties pursuant to CFAC. County agricultural commissioners are responsible for enforcement of laws and regulations pertaining to the use of pesticides in any setting, whether for agricultural, institutional or home use. Other agencies that manage public land in California and conduct plant pest prevention and management activities may rely on CDFA's analyses.

In addition, the following types of entities may conduct plant pest prevention and management activities using CDFA's guidance:

- City and county governments;
- Non-profit organizations;

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- Weed management area groups;
- Volunteer groups; and
- Property owners.

When CDFA partners with another entity to carry out activities, CDFA would require adherence to this PEIR by including requirements in contractual agreements, such as compliance agreements (for quarantines), permits (e.g., for movement of certain materials outside of quarantine areas), contracts (e.g., with CDFA contractors), grants, or other similar means.

Chapter 3
PROPOSED PROGRAM ACTIVITIES

This chapter describes and encompasses all specific, on-the ground activities that may occur under the Proposed Program. For the environmental analysis, the management activities are separated into three categories: physical, biological, and chemical. This chapter is organized as follows:

- Section 3.1 Physical Management Activities
- Section 3.2 Biological Management Activities
- Section 3.3 Chemical Management Activities
- Section 3.4 Current Pest Management Program
- Section 3.5 Magnitude of the Proposed Program
- Section 3.6 Proposed Program Activity Scenarios

Tables 3-1, 3-2, and 3-3 at the end of the chapter show more detailed information on proposed activities.

3.1 Physical Management Activities

Physical management activities that may occur in the different branches under the Proposed Program include inspection (trade compliance and detection surveys), trapping (detection), host removal (fruit/flower and plant), cleaning (compliance), and movement restriction (compliance). Collectively, physical management activities would include a variety of cultural, biological, mechanical and physical controls to maximize the effectiveness of programs and reduce the potential for problems that may result from reliance on one tactic. Reliance on multiple complimentary tactics increases the effectiveness of pest management. Utilizing multiple tactics requires extensive knowledge of the pest complex and the managed ecosystem. Knowledge of the system is site specific and dynamic as the pest has the ability to adapt to adverse environments and control tactics.

3.1.1 Inspection

Inspection involves observing plant materials or other regulated articles (e.g., growing and processing equipment) to determine whether the article is infested with a pest. Inspection is conducted so that infested articles do not enter the state or are transported out of quarantine areas within the state. Inspection may also include visual observation and analysis of plant or soil samples. CDFA staff conduct inspections at border protection stations, parcel shipping locations, commodity processing facilities, and production agriculture fields, or other likely areas where host material of target pest would occur. These activities would continue under the Proposed Program.

3.1.2 Trapping

Trapping involves the use of attractants and lures in combination with collection devices to attract and trap pests. Trapping is used by CDFA for detection, delimitation, and eradication of pest populations. Attractants and lures include food lures (e.g., yeast), visual stimulus (i.e., color), odor attractants, pheromones, parapheromones, and host volatiles (chemicals that mimic volatiles emitted by stressed trees).

To analyze environmental impacts for the Proposed Program, attractants and lures (and preservatives, pesticides, or other compounds used in traps) have been divided into physical and chemical categories. Traps containing compounds determined to have limited or no potential for chemical toxicity are described herein, under Physical Management Activities. These include traps containing or utilizing food lures, visual stimulus, odor attractants, and common household chemicals with relatively low toxicity (e.g., borax). Traps containing compounds determined to have the potential for chemical toxicity are discussed in Section 3.3, Chemical Management Activities. These include traps containing pheromones, parapheromones, host volatiles, and mixtures of pheromones and pesticides.

Specific traps proposed for use under the Proposed Program, along with their respective attractants or lures, are described below. In the future, other types of traps and lures may be used. Traps considered under the Physical Management Activities include:

- **Yellow Panel Trap:** This trap consists of a two-sided, yellow sticky cardboard panel suspended by a wire hanger. Insects are attracted to the yellow color and are caught on the sticky capture surface (stickum). The yellow panel trap is used to trap the Asian citrus psyllid (ACP) and the glassy-winged sharpshooter (GWSS).
- **ChamP® Trap:** Used to trap various species of exotic fruit flies, this is a hollow, yellow panel trap with two perforated sticky sides. When folded, the trap is rectangular in shape (7 inches long, 6 inches wide), resembling a large tea bag. A food attractant (ammonium bicarbonate) is placed in the center of the trap and is dispersed through the elongate holes in the side panels. In addition to the food attractant, insects are attracted to the yellow color.
- **Pherocon® AM Trap:** Used to trap various species of exotic fruit flies and similar to the yellow panel trap, this trap is a two-sided, yellow sticky board. However, the Pherocon® AM trap has odor attractants (i.e., ammonium acetate, protein hydrolysate) incorporated into the stickum. Flies are attracted to the yellow color and the odor attractants, and are caught on the stickum.
- **McPhail Trap:** Used to trap various species of exotic fruit flies, this is a glass trap with a water reservoir containing dissolved attractant compounds (i.e., torula yeast and borax). Pests, attracted by the fermenting yeast, enter from a bottom opening and drown in the solution.

3.1.3 Pest Removal

Pest removal refers to the physical removal of a pest from a given area or a given host plant(s). The Proposed Program includes potential removal of gypsy moth egg masses by hand, and removal of EGVM through immersion of host plants in hot water.

3.1.4 Host Removal

Host removal is the physical removal of host fruit or flowers susceptible to infestation or already infested with a pest. Host removal may also be referred to as fruit stripping. Host fruit and/or flowers are removed by hand. Disposal methods are prescribed by quarantine regulations specific to each pest, but common disposal options include landfill disposal, burial, and composting. Host removal such as fruit & flower removal to alter conditions of survival and modify the pest environment is a common IPM strategy and is often combined with other treatment options.

3.1.5 Cleaning

Cleaning refers to the use of physical or mechanical means to remove a pest from agricultural equipment or from the fruit. Growers or transporters may be required to clean harvesting or processing equipment, using methods approved by CDFA or the county agricultural commissioner (e.g., by high-powered water sprayer) before moving such equipment from quarantine areas to uninfested areas outside the quarantine area.

3.1.6 Restricted Movement

Quarantine regulations restrict the movement of hosts and possible carriers of pests from and within a quarantine area. Movement of hosts and possible carriers, such as plants, fruit or agricultural equipment, may be prohibited unless the regulated articles have been treated by approved methods and/or been determined to have originated from a facility free of the pest. For certain pests, quarantine regulations may prohibit the movement of hosts and possible carriers without exception.

3.2 Biological Management Activities

Biological management activities include the release of biological control agents (BCAs) and sterile insects.

3.2.1 Biological Control Agents

As described in Chapter 2, Proposed Project Description, use of BCAs requires following a series of steps to evaluate the safety and efficacy of a proposed release. After host specificity studies and risk assessments have been conducted and approved, permitted BCAs are reared in large numbers and released at field sites by CDFA scientists.

The specific BCAs proposed for use under the Proposed Program are listed below. Each agent has been permitted for use by the USDA APHIS in compliance with the NEPA, or for pending agents, is in the process of being permitted. CDFA uses USDA-approved laboratories, greenhouses, and growth chambers to rear BCAs. BCAs evaluated in this Final PEIR include:

- ***Tamarixia radiata:*** This parasitoid would be released to manage populations of ACP. *T. radiata* is already being released in large numbers in southern California, and has become established at several locations.
- ***Diaphorencyrtus aligarhensis:*** This parasitoid would be released to manage populations of ACP. *D. aligarhensis* is being tested at the University of California, Riverside for potential release in California; it has been released in Florida.
- ***Psyttalia lounsburyi:*** This parasitoid would be released to manage populations of olive fruit fly. *P. lounsburyi* is considered established in San Luis Obispo and San Mateo counties, and releases are ongoing.
- ***Psyttalia poneraphaga:*** This parasitoid would be released to manage populations of olive fruit fly. *P. poneraphaga* currently is in quarantine and undergoing pre-release studies at the University of California, Berkeley. It has not been released previously in the United States.
- ***Psyllaephagous euphyllurae:*** This parasitoid would be released to manage populations of olive psyllid. *P. euphyllurae* currently is in quarantine at the University of California, Riverside and is undergoing pre-release studies. It has not been released previously in the United States.
- ***Tetrastichus julis:*** This parasitic wasp would be released to manage populations of cereal leaf beetle. *T. julis* has been released and is considered established on cereal leaf beetle in Oregon and Washington. It initially was released in the Midwest and eastern U.S., where it now is common. The cereal leaf beetle has recently invaded northern California. Under the Proposed Program, CDFA would collect *T. Julius* in Oregon and release it in California.
- ***Trissolcus japonicus:*** This parasitic wasp would be released to manage populations of brown marmorated stink bug. The brown marmorated stink bug, a potential pest of stone fruits, grapes, and tomatoes, recently has invaded California. It occurs throughout California, from Los Angeles County north into Oregon. CDFA is working with the USDA Agricultural Research Service, Newark, Delaware, and the University of California, Riverside to develop the use of *T. japonicus*. It has not been released previously in the United States.
- ***Gonatocerus morrilli:*** This parasitic wasp would be released to manage GWSS. *G. morrilli* has been released in the California Central Valley.
- ***Gonatocerus morgani:*** This parasitic wasp would be released to manage GWSS. *G. morgani* has been released in the California Central Valley.
- ***Gonatocerus triguttatus:*** This parasitic wasp would be released to manage GWSS. *G. triguttatus* has been released in the California Central Valley.
- ***Trichogramma* sp.**: This specific to Gypsy moth species of parasitic wasps would be released to manage Gypsy moth. *Trichogramma* species have been released previously in Oregon and Washington. They most likely would migrate to California if Gypsy moth were present.

- ***Dolichogenidea tasmanica:*** This parasitic wasp would be released to manage LBAM. *D. tasmanica* needs evaluation before release as a BCA, and it has not been released previously in the United States.
- ***Trichogramma platneri:*** This parasitic wasp that is native to California would be released to manage LBAM. Further evaluations regarding methods of delivery and mass production are needed before its use as a BCA, but because it is native no other studies are needed before its use as a BCA.

Other BCAs may be used in the future under the Proposed Program, following the process for approval and use described in Chapter 2, Proposed Project Description.

BCAs typically are transported by vehicle in containers (jars) and released manually.

3.2.2 Sterile Insect Technique

The sterile insect technique mates females of a pest species with a sterile male through the continuous release of sterile males or partially sterile males into the pest population. When the sterile males mate with wild females, no viable offspring are produced. When partially sterile males are introduced, the subsequent generation is born sterile. In both cases, the wild pest population decreases because females progressively lose opportunities for successful reproduction through an abundance of sterile male partners in the environment. Sterilization occurs by the process of irradiation. Sterile insects typically are released using light aircraft flying at least 2,000 feet above the ground.

3.3 Chemical Management Activities

This section describes the various chemical management activities that may occur under the Proposed Program, including traps with chemical lures or attractants, chemical treatments, and other activities that include chemicals with the potential for toxicity.

3.3.1 Trapping and Lures

As described in Section 3.1, Physical Management Activities, trapping involves the deployment of attractants or lures in combination with collection devices to attract and trap pests. Attractants and lures described herein include pheromones, parapheromones (i.e., synthetic pheromones), and host volatiles. Certain traps combine attractants or lures with pesticides so that trapped pests do not escape. Male attractant technique (MAT), while not technically trapping, also is described. MAT involves the application of sticky mixtures of pheromone and pesticide to trees and/or utility poles to attract and kill male pests (and thereby reduce pest reproduction). Trapping is used in detection and delimitation surveys and for eradication.

Specific traps and lure application techniques proposed for use under the Proposed Program are described below. In the future, other types of traps and lures may be used. Traps considered under the Chemical Management Activities (that use lures and/or pesticides with the potential for chemical toxicity) include:

- **Boll Weevil Scout™ Trap:** Used to lure and trap the boll weevil, this trap consists of three parts: the trap body, molded screen cone, and plastic collection chamber. Pests enter through the top of the collection chamber. Grandlure, an artificial aggregation pheromone contained in a yellow wafer ("lure tape"), is used as the lure. This pheromone lure attracts male as well as female weevils. Weevils also are attracted by the Saturn yellow color of the trap. A red Hercon® Vaportape™ II insecticide strip is placed with the lure tape in the collection chamber to kill trapped weevils.
- **ChamP™ Trap with Trimedlure:** Used to lure and trap Mediterranean fruit fly (Medfly) in delimitation surveys, this is a hollow, yellow panel trap with two perforated sticky sides. When folded, the trap is rectangular in shape (7 inches long, 6 inches wide), resembling a tea bag. While it is used with a food lure, the ChamP™ trap also is used with Trimedlure, a synthetic sex pheromone. Trimedlure acts primarily as a male attractant, but when a high population or an absence of males exists, females may be drawn to the trap.
- **False Codling Moth Trap:** This is a yellow delta trap with a pheromone lure. The delta trap is a triangular cardboard trap with open ends. The pheromone lure used is a 50:50 mixture of (Z)-8-Dodecen-ol acetate and (E)-8-Dodecen-ol acetate.
- **Gypsy Moth Delta Trap:** Used to lure and trap the gypsy moth and others, this trap has three sides. Two interior surfaces are coated with stickum, and the third has a pheromone strip attached to it. Male moths enter through the triangular opening at either end of the trap and are captured on the sticky surfaces.
- **Japanese Beetle Trap:** This trap consists of four fins attached to a funnel which directs beetles into a screw-on can at the bottom of the trap. The Japanese beetle trap uses three different attractants: a food lure wafer (containing phenethyl propionate, eugenol and geraniol), visual stimulus (i.e., green color), and a pheromone tab. Beetles respond to the attractants, fly into the fins, and fall down the funnel into the beetle can. An "S" hook suspends the entire trap from a metal rod.
- **Khapra Beetle Trap:** This trap consists of a cardboard outer shell covering a square ring of corrugated cardboard. The trap contains a pheromone lure septum stuck to the inside surface of the shell and a plastic tray containing a wheat germ food lure placed in a well in the corrugated cardboard. Adults and larvae stay inside the trap to feed and are collected when the trap is inspected.
- **Lindgren Funnel Trap:** Used in catching several common species of bark and wood-boring beetles and their associates, this trap consists of a vertical arrangement of funnels. It can be used for dry trapping (using a dry collection cup with an insecticide killing strip), wet trapping (using a plastic collection cup containing propylene glycol antifreeze), trapping with tape, or with lures. A Sirex lure (to attract Sirex woodwasp), ethanol, IPS lure, manuka oil, or 95(-) alpha pinene lure (to attract various exotic woodboring beetles) is used as the attractant. These chemicals mimic the volatiles emitted by stressed trees, which attracts woodboring insects. The black color and cylindrical shape of the Lindgren funnel also attract pests by mimicking standing trees.
- **Male Attractant Technique:** MAT involves the application of "bait stations," or mixtures of methyl eugenol and small amounts of pesticide, to trees and/or utility poles. The parapheromone, methyl eugenol, is a powerful male attractant. Bait

stations are applied to street trees or utility poles 8 to 10 feet aboveground, by trained CDFA staff using a specially modified pick-up truck equipped with a spray gun. MAT is used to lure and kill methyl eugenol-responding species (i.e., oriental fruit fly, guava fruit fly, peach fruit fly) of exotic fruit flies.

- **Medfly Jackson Trap:** Used to lure and trap the Mediterranean fruit fly, the delta-shaped Jackson trap is made of plastic-coated cardboard. It has a solid lure plug, contained in a plastic cage, which is suspended from the inside of the trap. A sticky insert on the bottom captures flies. Trimedlure, a synthetic sex pheromone, is used as the attractant. Trimedlure acts primarily as a male attractant, but when a high population level or an absence of males exists, females may enter the trap.
- **Methyl Eugenol or Cuelure Jackson Trap:** Used to trap cue-lure-responding (i.e., melon fly) and methyl eugenol-responding (i.e., oriental fruit fly, guava fruit fly, peach fruit fly) species of exotic fruit flies, this delta-shaped Jackson trap is made of plastic-coated cardboard. The trap has a baited cotton wick with pesticide, suspended from the inside of the trap. A sticky insert on the bottom side captures pests, and fuming action of a pesticide kills the pest by proximity. Either cue-lure or methyl eugenol (both parapheromone attractants) is used as the attractant.
- **Milk Carton Trap:** Used to lure and trap Siberian silk moth, this trap consists of laminated cardboard folded into a rectangle, resembling a milk carton. Moths enter through openings at the top. A pheromone lure attracts male moths, and a pesticide kills them by fumigation.
- **Multilure® Trap:** Used to lure and trap various species of exotic fruit flies, this is a plastic trap consisting of four major components: top (clear plastic), bottom (yellow plastic), hanger with swivel loop, and the lure pack. Flies are captured in the trap when they enter the opening in the bottom and drown in a chemical solution. The lure used in this trap has three components: putrescine, ammonium acetate, and trimethylamine patches. All three attractants are synthetic food lures that primarily attract female flies. The cylindrical shape and yellow color of the trap also contribute to the trap's effectiveness by mimicking the properties of host fruit.
- **Pherocon® IC Trap:** Used to lure and trap European corn borer and others, this is a cardboard trap with a non-sticky top and replaceable sticky bottom. A rubber cap impregnated with a synthetic sex pheromone attracts male moths onto the sticky capture surface.
- **Pherocon® IIC Trap:** Used to lure and trap the European pine shoot moth and other pests, this is a tent-like cardboard trap with all inside surfaces coated with stickum. A rubber cap impregnated with a synthetic sex pheromone attracts male moths onto the sticky surfaces.
- **Red Delta Trap:** Used to lure and trap the European grapevine moth and pink bollworm, this is a triangular cardboard trap with open ends. A synthetic sex pheromone, dispensed in a half inch long rubber septum is used as the attractant. The interior surfaces of the trap are coated with stickum.

3.3.2 Foliar Spray Applications

Foliar sprays are applied directly to the foliage (i.e., leaves) of plants, shrubs, or trees. Foliar treatments are useful for immediate reduction of an adult population to eliminate dispersal. Foliar sprays are applied using the following equipment or application methods:

- **Backpack Sprayer:** The backpack sprayer consists of a backpack tank and a handheld wand with a nozzle at the end. Liquid pesticide is carried in the tank and dispensed through the wand onto the foliage of host plants. The backpack tank is manually pressurized and the wand emits spray at low pressure.
- **Tank Sprayer:** The tank sprayer (also referred to as the Hudson sprayer) consists of a handheld tank and a wand with a nozzle at the end. Liquid pesticide is carried in the tank and is dispensed through the wand onto the foliage of host plants. The tank is pressurized manually, and the sprayer operates at low pressure. The tank sprayer is similar to the backpack sprayer, except that it is carried in the applicator's hands rather than on the back, and the tank tends to have less capacity.
- **Backpack Motorized Sprayer:** The backpack motorized sprayer is the same as the backpack sprayer, except that it has a motorized pump to pressurize the liquid pesticide in the backpack tank.
- **Mechanically Pressurized Sprayer:** This is a custom liquid pesticide sprayer, installed in a vehicle. Pesticide is stored in a tank and dispensed with a hand trigger, attached to the end of a long hose. The tank is pressurized with a motorized pump.
- **Ground Boom Sprayer:** This is a type of application equipment with a chemical mixing tank and a system of evenly spaced spray nozzles. The sprayer can be attached to, or extend from, a truck, tractor, or ATV, or it can be handheld. The nozzles are directed towards the ground or target vegetation and allow the applicator to control the application rate.
- **Airblast Sprayer:** The airblast sprayer consists of a tank of pesticide solution and a large fan, which is fixed to one end. Specific to agricultural settings, the airblast sprayer is towed behind a tractor, between or adjacent to rows of plants or crops, and the fan forcibly blows fine droplets of pesticide mist onto adjacent foliage. Airblast sprayers are used in the treatment of bulk citrus and small, medium, and large nurseries.
- **Aerial Applications:** Aerial applications are allowed only for quarantine projects as a treatment option by commercial growers in agricultural or nursery settings, per federal treatment protocols. Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review. Aerial application involves spraying pesticides onto host plant foliage from an aircraft. The aircraft used are specially designed for pesticide application and operate at a low altitude to minimize the potential for drift. The aerial application method provides a rapid, uniform application over a relatively large area.

3.3.3 Soil Applications

Soil applications are used to eradicate pests, such as pupae developing in the soil and adults emerging from the soil, as well as to provide long-term protection against re-infestation.

Systemic pesticides (e.g., with active ingredient imidacloprid) often are used in soil applications, although other types of pesticide (e.g., diazinon) are used as well. Systemic pesticides (often neonicotinoids), applied to the soil are absorbed through the roots and distributed throughout the rest of the plant by its vascular system. Soil applications can be divided into drench, soil injection and tablet insertion applications.

Drench

Drench applications involve spraying or dispensing liquid pesticide onto the soil beneath plants until the soil is saturated. Drench applications are made using the following equipment or application methods:

- **Mechanically Pressurized Sprayer:** This is the same equipment as described above under Foliar Spray Applications, except that in drench applications, it dispenses liquid pesticide directly on the soil surface at the base of a tree, shrub, or plant.
- **Tank Sprayer:** This is the same equipment as described above under Foliar Spray Applications, except that in drench applications, it dispenses liquid pesticide directly on the soil surface at the base of a tree, shrub, or plant.
- **Chemigation:** Chemigation involves the application of liquid pesticide to the soil surface through irrigation water, using existing irrigation equipment. Typically, the pesticide is introduced into the flow of the irrigation water through drip line or microsprinkler irrigation systems. Chemigation applications are used in agriculture or nursery settings.

Soil Injection

Soil injection applications involve injecting pesticides into the soil beneath host plants using soil probes. Probes are inserted a few inches below the surface of the soil, and liquid pesticide is released. Soil probes are manually pressurized and contain no motorized components.

Tablet Insertion

Tablet insertion is another way of applying pesticides to soil. Pesticide tablets are inserted by hand or using hand tools into small holes, a few inches deep, and then are covered with soil.

3.3.4 Fumigation

Fumigation is commonly used to treat post-harvest commodities to fulfill an interior quarantine requirement. Fumigation is the act of releasing and dispersing a chemical so that it reaches the target pest in a gaseous state. The material potentially containing the pest is placed in an enclosed container, such as a sea van (i.e., a metal shipping container) or another type of fumigation chamber, into which pesticide gas is released.

Chemicals applied as aerosols, smokes, mists, and fogs are suspensions of particulate matter in air and are not considered fumigants; they would not be used under the Proposed

Program. Similarly, soil fumigation applications would not be used under the Proposed Program.

3.3.5 Mating Disruption

Mating disruption involves the release of sex pheromones to confuse the chemical mating signals released by female pests. Pheromone dispensers release pheromones into the air to create an environment saturated with the pest sex pheromone. This impairs the ability of male pests to find females and reduces reproduction.

One type of pheromone dispenser is similar in size and appearance to a common pipe cleaner or twist tie. The pheromone solution is within the hollow tube of the dispenser and is not directly put on the crop. The dispenser slowly releases tiny amounts of pheromone into the atmosphere. The pheromone migrates slowly by diffusion from the inside of the tube to the surface where it volatilizes in microgram amounts.

3.3.6 Disinfection

Disinfection involves the application of steam, alcohol, bleach, or Lysol® onto farm equipment to eliminate pathogens. Disinfection may be required of growers intending to move equipment outside of a quarantine area.

3.4 Current Pest Management Program

This section provides pest-specific narrative descriptions of activities proposed for inclusion in the Proposed Program. Management activities are described as they have been defined at the time of this Final PEIR. In the future, management activities for specific pests may change (e.g., different chemical products may be approved for use). Similarly, quarantines and eradication projects for each pest are described as they were conducted in 2013. The location and extent of quarantines and eradication projects for a given pest is expected to change in the future as pests are eradicated from an area or new pests are detected in others. Information on existing state exterior and interior quarantines and restricted movement regulations was obtained from CDFA's Plant Quarantine Manual (CDFA 2014). Information on eradication projects was obtained through the pest treatment notification pages on CDFA's website. For information on life history and potential environmental and economic effects of each pest, see Appendix F. CDFA Plant Diagnostic Laboratory scientists will make all official identifications of suspect pests before activities commence in any program.

3.4.1 Asian Citrus Psyllid and Huanglongbing

Protocols for the ACP program are region specific and may vary according to site specific issues. To detect ACP, traps would be deployed at high-risk locations around the state. Yellow panel traps would be placed at packing houses that receive citrus fruit from counties known to be infested with ACP. Traps would also be placed around airports and markets that receive commodities from trade areas infested with ACP. Traps would be deployed at a rate of 15 traps per square mile in citrus trees or other citrus-related hosts in non-commercial areas within a 3-mile buffer of any commercial citrus. In urban residential areas, traps would be deployed at a rate of five traps per square mile (or equivalent density). If buffer and urban areas overlap, the higher density of 15 traps per square mile would be used.

To detect Huanglongbing (HLB, the bacterium spread by ACP), commercial citrus groves are inspected and sampled. The Statewide Survey for Exotic Pests of Citrus involves inspection of 25 percent of the commercial citrus acreage in California each year (rotating on a 4-year cycle so that each grove is surveyed every fourth year). Any tree tissues displaying symptomatic signs of HLB would be collected and sent to a lab for analysis. Nurseries would be surveyed if they meet any of the following criteria: (a) maintain citrus plants and the ornamental orange jasmine (*Murraya paniculata*), (b) are adjacent to commercial citrus groves, (c) bring in plant material from infested areas such as Asia, Brazil, and Mexico, (d) bring in plant material from Florida nurseries that have been in violation for sending material with quarantine pests, and (e) have been in violation of quarantine rules.

If ACP or HLB is detected in specified numbers or life stages and eradication is determined to be feasible, an eradication project may be initiated. The first steps in an ACP eradication project typically would be visual surveys and delimitation trapping. Host plants would be surveyed within a 1,312 to 2,635-foot (400-800 meter) radius around each detection site. Up to 100 properties per square mile may be inspected. If high or scattered populations of ACP are found, a transect survey may be implemented to determine the extent of infestation. In addition, yellow panel traps would be placed throughout the project area to delimit the infestation. Traps would be placed at a density of up to 100 traps in the core square mile and 50 traps per square mile in the 8 square miles surrounding the core area. Additional traps may be added to further delimit the infestation and determine the efficacy of treatments.

After the area has been surveyed and the extent of the infestation has been determined, the next step typically would be chemical treatment. Eradication treatment options for ACP would include:

- **Soil application:** In one option, Merit 2F® (active ingredient: imidacloprid) would be applied as a soil drench, using a mechanically pressurized system with hose and nozzle. In another option, CoreTect Tree and Shrub Tablets Insecticide® (active ingredient: imidacloprid) would be applied by tablet insertion.
- **Foliar spray:** Tempo SC Ultra Insecticide® (active ingredient: cyfluthrin) would be applied, using a backpack sprayer or mechanically pressurized system with hose & nozzle.
- **Pesticide spot treatment:** Roundup Original® (active ingredient: glyphosate) would be applied to the cut stumps of HLB-infected trees, using a tank sprayer (also called the Hudson Sprayer). In these treatments, infected citrus trees first would be cut and then pesticide would be applied directly to the cut stump. Applications would be made individually to known infected trees.

Trapping would continue for the duration of the project, to monitor post-treatment ACP populations.

An interior quarantine may be established in some areas. Quarantine regulations restrict the movement of hosts and possible carriers of pests from and within quarantine areas so as to prevent the spread of the infestation. Hosts and possible carriers of ACP include: (1) nursery stock, plants, and plant parts of a number of different types of fruit (e.g., orange, grapefruit, lemon); (2) appliances used in the growing, harvesting, processing and hauling of the host plants and plant parts (e.g., tractors, trailers, planting equipment). These articles would be prohibited movement from the quarantine area except if cleaned and/or treated in a manner to eliminate all live life stages of ACP, to the satisfaction of CDFA or the county agricultural commissioner. All host nursery stock sold or distributed within the quarantine area would be required to be treated in a manner approved by CDFA and to bear a label stating that it may not be moved outside the quarantine area.

Treatment options for ACP quarantine compliance include:

- **Soil application:** One of the following combinations of chemicals would be applied to the soil of host plants as a soil drench using a backpack sprayer, mechanically pressurized sprayer or irrigation equipment: Admire Pro® (active ingredient: imidacloprid), Alias 2F® (active ingredient: imidacloprid), Flagship 25WG® (active ingredient: thiamethoxam), Marathon II Greenhouse and Nursery Insecticide® (active ingredient: imidacloprid), Safari 20 SG® (active ingredient: dinotefuran), Widow® (active ingredient: imidacloprid), or Nuprid 4.6F Pro® (active ingredient: imidacloprid) combined with Baythroid XL® (active ingredient: cyfluthrin),
- **Foliar spray:** One of the following chemicals would be applied to the leaves of host plants: Danitol 2.4 EC Spray® (active ingredient: fenpropathrin), Kontos® (active ingredient: spirotetramat), Movento® (active ingredient: spirotetramat), Sevin SL® (active ingredient: carbaryl), Tempo SC Ultra Insecticide® (active ingredient: cyfluthrin), or Tombstone® (active ingredient: cyfluthrin) (not all combinations are possible and certain combinations only apply to certain application methods; see Tables 3-1, 3-2 and 3-3 for specific treatments).
- **Fumigation:** Meth-O-Gas Q® (active ingredient: methyl bromide would be applied to post-harvest crops (primarily curry leaves) inside a sea van or fumigation chamber covered by a tarp.

Certain regulated entities within ACP quarantine areas would be required to use one of these treatments if they intend to sell or move articles identified as ACP hosts.

A State Interior Quarantine is in effect against ACP covering Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, and Ventura counties, as well as portions of Fresno, Kern and Tulare counties. In addition, treatment projects were being conducted in Fresno, Kern and Tulare counties. In Imperial, Los Angeles, Orange, Riverside, San Bernardino, Santa Barbara, San Diego, and Ventura counties, control and population reduction of ACP is in progress.

In addition to detection, eradication, and exclusion, control activities also may be undertaken to combat ACP as part of the Proposed Program. One BCA previously was released to control ACP and several others are under development. The first BCA, *Tamarixia radiata,* has become established, following its release in southern California to combat ACP. This parasite has been somewhat successful in controlling ACP in Florida, and CDFA now is working actively with the citrus industry to pursue options for incorporating it into treatment programs statewide. Another parasite, *Diaphorencyrtus aligarhensis,* released in Florida, is being tested at the University of California, Riverside, to examine its suitability for potential future releases into California. The purpose of these BCAs would be for reduction of ACP populations, not eradication. Their use will be directed at citrus grown in urban areas, in an effort to reduce the regional abundance of ACP and limit movement of ACP from urban areas into commercial production.

3.4.2 Asian Longhorned Beetle

To detect Asian longhorned beetle (ALB), trapping would be conducted. ALB is one of the species surveyed in the Statewide Survey for Exotic Woodboring Pests in California, administered under the Cooperative Agricultural Pest Survey (CAPS) program. This survey uses attractant-baited Lindgren funnel traps to capture woodboring beetles and wasps. In the survey, traps are deployed at 80 locations statewide, with up to four traps at each location (for a total of 320 traps). Traps are individually baited with one of the following lures or lure combinations: ultra-high release (UHR) ethanol, UHR ethanol and alpha-pinene, exotic lps lure, and manuka oil. The traps are inspected and collections are made at 2-week intervals. Propylene glycol is used to collect and preserve the specimens. The survey is conducted from July through October in southern California, from June through September in central and northern parts of the state, and from December through March in the desert area of southeastern California.

If ALB infestation is detected, host removal may be conducted to prevent the spread of the infestation. All infested host material may be removed within a minimum 0.5-mile radius of the detection. The 0.5-mile radius is based on ALB flight ability and the estimated distance of natural spread per year. Infested host material removal would occur within 3 days of detection when beetles are active. The roots of the host plant are removed to a minimum of 9 inches below ground surface. Following removal, the host material is chipped or burned (USDA 2010). The extent to which the above-described host removal would be conducted is unknown, and it is not considered a reasonably foreseeable action under the Proposed Program; therefore, it has not been analyzed in this Final PEIR. In addition, to the extent that ALB infestations may occur in forested areas, the California Department of Forestry and Fire Protection would be the primary state agency responding to those infestations.

To prevent the entry of ALB into the state, CDFA inspects firewood entering the state at Border Protection Stations and enforces the federal domestic quarantine to prohibit the entry of host firewood from infested areas.

3.4.3 Boll Weevil

To prevent boll weevils from entering California, movement of hosts and possible carriers into the state from infested areas is restricted. As described in the state exterior quarantine regulations, hosts and possible carriers of boll weevils include: (1) all parts of plants, including seeds and pods of Okra (*Hibiscus esculentus*), and kenaf (*Hibiscus cannabinus*); (2) all parts of cotton and wild cotton plants of the genera *Gossypium* and *Thurberia;* (3) used bagging, used cotton picker sacks, and used wrappers for any products from cotton plants; and (4) used cotton harvesting equipment, ginning and oil mill equipment, and other cotton processing machinery. These articles are prohibited from movement into California unless they have been treated or processed by approved methods.

As of 2013, all states and districts of the U.S. except Arizona and North Carolina were under state exterior quarantine for boll weevil. Regulated material from the specified states and districts requires a compliance certificate to be allowed into California.

To detect boll weevils within California, trapping is conducted. Boll weevil scout traps baited with Grandlure are used in boll weevil detection trapping surveys. These traps are placed on 4-foot stakes at the edge of commercial cotton fields.

3.4.4 Brown Marmorated Stink Bug

CDFA has rated brown marmorated stink bug (BMSB) as a "B"-rated pest: nursery stock found infested must be cleaned before it can be sold, and border stations can require treatment or reject shipments that are infested. However, CDFA has not enacted any additional quarantine regulations, nor are they conducting surveys or other treatments for BMSB in natural environments (Bethke 2013).

Since 2013, CDFA has been collaborating with the USDA Agricultural Research Service and University of California, Riverside to develop the use of BCAs collected in China to attack brown marmorated stink bug eggs, in particular *Trissolcus japonicus*.

3.4.5 Burrowing and Reniform Nematodes

To prevent burrowing and reniform nematodes from entering California, movement of hosts and possible carriers into the state is restricted. Hosts and possible carriers of burrowing and reniform nematodes include: all earth (sand and soil) and potting media, plants and parts with roots (including aerial roots), parts of plants produced below ground surface and all plant cuttings for propagation. These articles are prohibited movement into California from areas under quarantine unless accompanied by a certificate indicating they have been inspected, grown or handled in approved methods.

A state exterior quarantine is in effect against burrowing and reniform nematodes, covering Alabama, Arkansas, Florida, Georgia, Hawaii, Louisiana, Mississippi, North Carolina, South Carolina, and Texas, as well as the Commonwealth of Puerto Rico. Regulated material from the specified states and districts requires a compliance certificate to be allowed into California.

3.4.6 Cedar-Apple Rust

To prevent the Cedar-apple rust (CAR) fungus from entering California, movement of hosts and possible carriers into the state is restricted. Hosts and possible carriers of the CAR fungus include: (1) viable cedar-apple galls; and (2) living plants, trees, cuttings, branches, and leaves of all species, hybrids, and botanical and horticultural varieties of juniper (*Juniperus* spp.), apple, and crab apple (*Malus spp.*). These articles are prohibited movement into California from areas under quarantine unless accompanied by an official certificate of the state of origin's Department of Agriculture, verifying that plant material meets growing and handling requirements. Non-susceptible juniper plants are enterable when labeled with scientific name, and dormant, bare-root apple plants are enterable.

A state exterior quarantine is in effect against CAR covering Alaska and all states and districts east of and including Montana, South Dakota, Nebraska, Kansas, Oklahoma and Texas. Regulated material from the specified states and districts requires a compliance certificate to be allowed into California.

3.4.7 Cereal Leaf Beetle

To detect cereal leaf beetle (CLB), sweep net surveys are conducted when funding is available. Sweep nets are field insect nets. In a sweep net survey, the sweep net is swept quickly back and forth over the tips of grass or brush to collect beetles.

To control populations of CLB established in California, CDFA intends to collect *Tetrastichus julis*, the BCA released against the cereal leaf beetle in Oregon and release it in California in collaboration with the University of California, Oregon State University, Oregon State Department of Agriculture and affected local agencies.

3.4.8 Chestnut Bark and Oak Wilt Diseases

To prevent entry of chestnut bark and oak wilt diseases into California, movement of hosts and possible carriers is restricted. Hosts or possible carriers of chestnut bark or oak wilt disease include: all species and varieties of chestnut (*Castanea* spp.), chinquapin (*Castanopsis* spp.), oak (*Quercus* spp.), and tanbark oak (*Lithocarpus densiflora*) trees, plants, and parts thereof including grafts, cuttings, scions, nuts (except acorns), leaf mold, firewood, and unpeeled logs. Movement of these articles into California from areas under quarantine is prohibited unless they have been treated by approved methods, such as the application of U.S. Environmental Protection Agency-registered pesticides or use of heat treatment.

A state exterior quarantine is in effect against chestnut bark and oak wilt diseases covering all states except for Arizona. Regulated material from all other states and districts requires a compliance certificate to be allowed into California.

3.4.9 Citrus Tristeza Virus

To prevent the spread of citrus tristeza virus (CTV), a state interior quarantine is in effect covering Orange and Ventura counties, and portions of Los Angeles, Riverside, San Bernardino, San Diego, and Santa Barbara counties. Three distinct treatment areas have been established statewide based on prevalence of the virus and whether suppression is feasible. The three areas are defined as: (1) quarantine area (virus is prevalent, no significant efforts to control or suppress); (2) suppressive area (virus detected, pest control district established, active control and suppression program); (3) regulated area (virus may occur but not generally infected, efforts to control or suppress may occur via moving or cutting permits).

Hosts and possible carriers of CTV include: (1) all plants and propagative parts (except seed), including all subspecies, variety, or ornamental form, of the genera Citrus (true citrus), Fortunella (kumquat), Poncirus (trifoliate orange); (2) all plants and propagative parts (except seed), include any subspecies variety or ornamental form of the genera Aeglopsis (dwarf powder-flask fruit), and Afraegle (African powder-flask fruit), Atalantia, Citropsis, Clausena, Clymenia, Eremocitrus, Hesperethusa, Merrillia, Microcitrus, Pleiospermium, Severinia, Swinglea, and of any hybrid having at least one ancestor of Citrus, Fortunella, or Poncirus. Movement of these articles from the quarantine areas is prohibited without a county agricultural commissioner-issued permit. Propagative parts of trees must be maintained in approved, insect-resistant structures.

3.4.10 Colorado Potato Beetle

To prevent entry of Colorado potato beetle into California, movement of hosts and possible carriers is restricted. Hosts and possible carriers include: (1) plants of tomato (*Lycopersicon esculentum*), pepper (*Capsicum frutescens*), eggplant (*Solanum melongena*), Irish potato (*Solanum tuberosum*); (2) Irish potato tubers; and (3) soil in association with or attached to all such tubers or plants. Movement of these articles into California from areas under quarantine is prohibited unless they have been officially certified by an authorized Department of Agriculture representative at origin, establishing the fact that all articles and commodities contained in the lot or shipment were grown in and shipped from a locality free from Colorado potato beetle, or if they meet certain exemption criteria.

In 2013, a state exterior quarantine was put into effect against the Colorado potato beetle, covering all states, districts, and territories of the U.S. except Alaska, Hawaii, and Nevada. The state exterior quarantine is designed to prevent the entry of Colorado potato beetle into California.

3.4.11 Cornstalk and Sugarcane Borers

To prevent entry of cornstalk and sugarcane borers into California, movement of hosts and possible carriers is restricted. Hosts and possible carriers of cornstalk and sugarcane borers include: (1) corn or maize stalks or corncobs, including corn on the cob (fresh or dry); and (2) sugarcane stalks, cuttings, rooted plants or parts thereof, except clean seed. These articles are prohibited movement into California unless accompanied by a certificate verifying they have been treated or processed by approved methods.

In 2013, a state exterior quarantine was put into effect against cornstalk and sugarcane borers, covering Alabama, Arizona, Arkansas, Delaware, Florida, Georgia, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Mississippi, Missouri, Nebraska, New Jersey, New Mexico, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia. Regulated material from the specified states requires a compliance certificate to be allowed into California.

3.4.12 Date Palm Disease

To prevent the spread of the fungus *Fusarium oxysporum* and date palm disease into commercial date producing areas, movement of hosts and possible carriers is restricted. Hosts and possible carriers of date palm disease and *F. oxysporum* include: plants and parts for propagation, including seed of the palm genus *Phoenix,* as well as saws, knives, or other tools used for trimming or pruning palms of the genus *Phoenix*. Movement of plants and propagative parts of the palm genus *Phoenix* from the interior quarantine area into Imperial County and portions of Inyo and Riverside counties is prohibited. Trimming and pruning tools may only be moved if they have been sterilized by approved methods.

A state interior quarantine is in effect against *F. oxysporum* and date palm disease, covering all of California except the protected areas of Imperial County and portions of Inyo and Riverside counties.

3.4.13 European Corn Borer

To prevent entry of the European corn borer into California, movement of hosts and possible carriers from infested states or areas is restricted. Hosts and possible carriers of the European corn borer include: (1) all plants and parts of corn, broom corn, sorghum, and sudangrass; and (2) beans in the pod and pepper fruits, and plants of aster, chrysanthemum, geranium, hollyhock, dahlia, and gladiolus. Movement of these articles into California from quarantine areas is prohibited unless they have been treated or processed in an approved manner.

A state exterior quarantine is in effect against the European corn borer, covering all states, districts, and territories of the U.S. Regulated material from all the states, districts, and territories requires a compliance certificate to be allowed into California.

To detect the European corn borer, traps are deployed throughout the state. Pherocon 1C traps and a synthetic sex pheromone (97 percent [Z]-11-tetradecenyl acetate and 3 percent [E]-11-tetradecenyl acetate) are used in the surveys. Traps are deployed before April 1 and are removed after September 30. One trap is deployed per high-hazard location (i.e., mills or feed lots receiving grain from European corn borer infested areas). For larger facilities, two or more traps are deployed. Extra traps sometimes are used in high density urban areas. (CDFA 2010a).

3.4.14 European Grapevine Moth

To detect European grapevine moth (EGVM), traps are deployed throughout the state. Traps baited with a synthetic sex pheromone are used in the surveys. In urban residential areas, traps are deployed at a rate of five traps per square mile. Traps in these areas are hung from the branches of a host or near a host, approximately two-thirds up the tree and two-thirds of the way out from the trunk. In commercial host crop areas (i.e., vineyards), 16 to 25 traps are deployed per square mile. Traps in these areas are hung from vine support wires, metal poles, or vine branches. In southern California, traps are placed by February 1 and removed by November 30. In all other parts of the state, traps are placed by March 1 and removed by October 31. Detection traps are inspected every 2 weeks.

If EGVM is detected in numbers or life stages above specified thresholds and eradication is determined to be feasible, an eradication project may be initiated. Eradication approaches and treatment options for EGVM include:

- **Host removal.** Grape flowers and fruit are removed from all properties within 1,640 feet (500 meters) of an EGVM find. Periodic visits by EGVM project staff sometimes are made to verify that vines remain flowerless and fruitless and to remove any later developing flowers or fruit.

- **Mating disruption**. Pheromone dispensers are filled with the synthetic EGVM pheromone, Isomate EGVM® (active ingredient: (E,Z)-7,9-Dodecadien-1-YL Acetate), and tied to grapevines at discrete locations. Approximately 200 dispensers are applied per acre. Dispensers are only applied once and then removed at the end of treatment.
- **Foliar spray**. DiPel DF Biological Insecticide® (active ingredient: *Bacillus thuringiensis*) is applied using a backpack sprayer or mechanically pressurized sprayer.

Before and during eradication projects, trapping is conducted to delimit the infestation and monitor post-treatment EGVM populations. Red delta traps baited with EGVM-specific sex pheromone are used in delimitation trapping. Traps are placed at a density of one to four traps per 25 acres (25 to 100 per square mile) in the surrounding 36 square miles (3-mile radius) of the EGVM detection.

To contain an infestation and stop the movement of the pest, a quarantine may be established if EGVM is detected in numbers or life stages above specified thresholds, eradication is determined not to be feasible, or in areas where eradication is currently underway. Interior quarantine regulations restrict the movement of hosts and possible carriers of specific pests. Hosts and possible carriers of EGVM include: (1) all nursery stock, plants, plant parts, and plant parts capable of propagation of a number of hosts, including grape, kiwi, pomegranate, olive and others; and (2) all appliances used in growing, harvesting, or processing of host plants. Movement of these articles within and from the quarantine area is prohibited unless they have been treated by approved methods or otherwise determined to be free of EGVM.

Approved treatments for nursery stock include:

- **Foliar spray**. Intrepid 2F® (active ingredient: methoxyfenozide), Conserve SC Turf and Ornamental® (active ingredient: spinosad), or DuPont Acelepryn® (active ingredient: chlorantraniliprole) may be applied to the foliage of host plants in nurseries using a backpack sprayer, mechanically pressurized sprayer, or a groundboom.
- **Pest removal.** Dormant grapevines may be treated with a hot water dip for at least 5 minutes, at 127° Fahrenheit.

Green waste resulting from processing of EGVM-regulated articles that originate within the quarantine area may be handled or treated in a number of ways, including composted on site or double-bagged and disposed at a waste disposal facility under compliance with the Proposed Program.

In 2013, an eradication project was conducted in Napa County. An interior quarantine is effect against EGVM, covering portions of Napa, Solano, and Sonoma counties.

3.4.15 European Pine Shoot Moth

To prevent the introduction of European pine shoot moth (EPSM) into California, movement of hosts and possible carriers is restricted. Host and possible carriers of EPSM include: all species and varieties of pine (*Pinus* spp.) trees (with or without roots) and any branches or twigs of pine bearing terminal buds, needles, or shoots. Movement of these articles into California from quarantine areas is prohibited unless the articles have been treated with approved methods or originate in noninfested areas of quarantined states.

A state exterior quarantine is in effect against EPSM, covering Connecticut, Delaware, Idaho, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, New Jersey, New York, Ohio, Oregon, Pennsylvania, Rhode Island, Washington, West Virginia, and Wisconsin. Regulated material from the specified states and districts requires a compliance certificate to be allowed into California.

To detect EPSM, trapping is conducted. Pherocon IIC traps containing EPSM sex pheromone are deployed at sites determined to be at risk of introduction. These sites generally are nurseries where living trees may be introduced from infested areas of the U.S. One trap is deployed per site, or per 4 acres. Traps are placed 5 to 7 feet above the ground on the outer periphery of foliage in host trees, and they are inspected once every 2 weeks.

3.4.16 Exotic Fruit Flies

A state exterior quarantine is in effect for the Caribbean fruit fly, covering Puerto Rico and Florida south of and including Hernando, Sumter, Lake, and Volusia counties, and for the cherry fruit fly, covering Idaho, Montana, New Mexico, Oregon, Utah, Washington, and portions of Colorado. Regulated material from the specified states and districts requires a compliance certificate to be allowed into California.

To detect exotic fruit flies in California, traps are deployed year-round throughout the state. ChamP™, McPhail, Pherocon® AM, and/or Jackson traps are used in detection trapping surveys. The trap density varies, depending on the type of trap, target species of exotic fruit fly, and the setting (e.g., rural, urban), but ranges from one trap per 6 square miles (generally in rural areas) to five traps per square mile (generally in urban areas). Traps are placed in the upper half to one-third of the tree canopy, about 2 feet from the ends of branches. Detection traps are generally inspected every 2 to 4 weeks. During the 2010 trapping season, over 85,000 exotic fruit fly traps were in place for detection monitoring (CDFA 2010b).

If exotic fruit flies are detected in numbers or life stages above specified thresholds and eradication is determined to be feasible, an eradication project may be initiated. Eradication approaches and treatment options for exotic fruit flies include:

- **Host removal (fruit stripping):** All host fruit from a larval detection site and host fruit from properties within 328 feet (100 meters) of a detection site is removed, double-bagged and buried in a landfill, in accordance with regulatory protocols.
- **Male attractant technique (MAT):** Used for *Bactrocera* flies. Methyl eugenol is mixed with dibrom concentrate (active ingredient: naled) and Min-U-Gel 400® (adjuvant) and applied as "bait stations" using a specially modified closed-system

pickup truck equipped with a spray gun. Bait stations are applied at a rate of 600 per square mile within the eradication project area, and reapplied every 14 days for one to two lifecycles of the fly (typically 2 to 6 months, dependent on temperature) dependent on severity of the infestation.

- **Mass trapping:** Use is similar to mating confusion as increasing number of traps also reduces mating potential of population. This is not used as a stand-alone tactic but in compatible combination with other tactics. Jackson traps containing methyl eugenol or cue-lure (active ingredient: 4-[p-Acetoxyphenyl]-2-butanone) mixed with Dibrom 8 Emulsive® (active ingredient: naled) are hung in host trees 6 to 10 feet high, at a rate of 600 to 1,000 per square mile.
- **Foliar bait treatments:** GF-120 NF Naturalyte® Fruit Fly Bait (active ingredient: spinosad), Foliar bait ground treatments are protein baits sprayed with an organic formulation of the pesticide spinosad, repeated every 7 to 14 days for one life cycle of the fly (typically 2 to 3 months dependent on temperature). Application is made using a backpack sprayer. The chemical is applied at a rate of 1 to 3 fluid ounces per tree (inside the canopy).
- **Sterile Insect Technique:** Sterile flies are released by aircraft within a 9-square-mile area around each detection site. Releases are repeated every 3 to 4 days for two life cycles of the fly (typically 4 to 6 months, dependent on temperature).

Before and during eradication projects, trapping is conducted to delimit the exotic fruit fly population. Pherocon® AM, ChamP™ (with Trimedlure), Jackson (with Trimedlure), Jackson (with methyl eugenol and dibrom), Jackson (with cue-lure and dibrom), McPhail, and Multilure® traps are used in delimitation surveys. Approximately 50 or more traps are placed in host trees in a 1-square-mile area surrounding the initial find within 24 hours of the find. Traps also are placed in the 5-mile radius around the find at decreasing density moving away from the core area. The type(s) of traps used and the trap density scheme in a delimitation survey depends on the exotic fruit fly species.

An interior quarantine may be established to limit the spread of the infestation. State interior quarantine regulations restrict the movement of hosts and possible carriers of pests from within areas under quarantine. Regulated entities within quarantine areas must treat their crops, nursery plants, or other articles deemed to be a host or possible carrier of the pest by approved methods before moving or selling them within or outside the quarantine area.

Treatment options for exotic fruit fly quarantine compliance include:

- **Soil application:** Diazinon AG500® (active ingredient: diazinon) is applied as a soil drench to host plants using a tank (or Hudson) sprayer.
- **Foliar spray:** Malathion 8 Aquamal® (active ingredient: malathion) or GF-120 Naturalyte® (active ingredient: spinosad) is applied to crops before harvest using a backpack sprayer, tank sprayer, mechanically pressurized system, groundboom, or an aircraft. Malathion 8 Aquamal® is used to treat avocados, citrus, stone fruit, pome fruit, fig, grape, walnuts, bushberries, caneberries, fruiting vegetables, pecans, macadamia nuts, and cucurbits. GF-120 Naturalyte® is used to treat fruit trees, other types of trees, fruit crops, and ornamentals.

- **Fumigation:** Meth-O-Gas Q® (active ingredient: methyl bromide) is applied to harvested crops in a sea van or fumigation chamber covered with a tarp in a gaseous state. Fumigation is used on avocadoes, tomatoes, peppers, citrus, grapes, and tuna (cactus fruit).

For pre-harvest treatments (i.e., foliar spray), a minimum of four applications must be made during the pre-harvest treatment period in order for the crops to be eligible for movement within or outside the quarantined area. The pre-harvest treatment period is a minimum of 30 days but can be longer, depending on the life cycle degree-day calculations.

A state interior quarantine is in effect for the cherry fruit fly, covering Siskiyou County and portions of Humboldt, Shasta, and Trinity counties. In addition, eradication projects are being conducted to combat the guava fruit fly, Oriental fruit fly, and peach fruit fly in Santa Clara, Los Angeles, Alameda, Orange, Solano, and San Bernardino counties. To date in California, introductions have occurred in Alameda, Fresno, Kern, Los Angeles, Orange, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Joaquin, San Mateo, Santa Clara, Santa Cruz, Solano, and Stanislaus counties.

In addition to exclusion, detection and eradication-related activities, CDFA also conducts suppression and control activities to manage exotic fruit flies. Control activities include release of sterile insects and BCAs to combat several species of exotic fruit fly. The sterile insect technique is used in the Southern California Preventative Release Program to control and eradicate Medfly and Mexican Fruit fly. In the Medfly program, sterile males are released in a preventative mode year-round, 7 days per week over the Los Angeles basin by private aircraft under contract to USDA. A minimum of 62,500 sterile flies are released per square mile per week. If a Medfly is discovered, then this number is increased to 250,000 sterile flies per square mile per week. Releases continue for at least two life cycles beyond the last fly detected. (CDFA 2008a)

The duration of a fruit fly life cycle depends on soil and air temperature. Life cycle projections are calculated by a life-cycle formula which utilizes degree-days. Degree-days represent the amount of heat required for an organism to develop from one point to another in its life cycle. The length of time of an exotic fruit fly species' life cycle thus depends on the average temperature over time in a particular area of infestation. (CDFA 2001)

In combating the Mexican fruit fly (Mexfly), sterile male and female flies are released by private aircraft under contract to USDA. For new introductions, at least 500,000 sterile female and male Mexfly are released per square mile per week. Releases continue each week for two life cycles beyond the last fly detected. (CDFA 2008b)

BCAs are released to manage the olive fly. To date, the parasitic BCA, *Psyttalia lounsburyi,* has been established in San Luis Obispo and San Mateo counties and continues to be released. The BCA, *Psyttalia ponerophaga,* obtained in Pakistan, is under development by the University of California, Berkeley.

3.4.17 False Codling Moth

To detect false codling moth (FCM), traps are deployed at high-risk locations around the state. Cardboard delta traps with two sticky sides and a pheromone lure, consisting of a mixture of (Z)-8-dodecenyl acetate and (E)-8-dodecenyl acetate, are used in detection trapping surveys. Traps are set in host trees at a height of approximately 5 feet or higher, as well as on stakes in row crops. Overall, approximately 1,000 traps containing FCM lures are deployed statewide in up to 30 counties.

3.4.18 Glassy-Winged Sharpshooter

To detect GWSS, detection surveys are conducted in urban and residential areas and nurseries, generally between May and October. Detection surveys include placing yellow panel traps and visually inspecting host plants. Yellow panel traps are placed at varying densities on preferred hosts, including citrus and stone fruit trees in the spring, and citrus and ornamental trees in the fall. The traps are placed on the outer canopy of the host trees in a highly visible position and are inspected at least once every 2 or 3 weeks. They are relocated every 6 weeks to another host at least 300 feet away during the trapping season.

If GWSS is detected in an area not already determined to be infested, a delimitation survey is triggered. Because yellow panel traps generally are not sufficient to detect low-level GWSS infestations, visual survey methods also are used for delimitation. All properties within 0.25 mile of the initial find are surveyed. Additional find locations then are used as epicenters to expand survey boundaries by additional 0.25-mile increments.

If detection and delimitation surveys indicate GWSS is present in numbers or life stages above specified thresholds and eradication is determined to be feasible, an eradication project may be initiated. Eradication treatment options for GWSS include:

- **Soil application:** In one option, CoreTect Tree and Shrub Tablets Insecticide® (active ingredient: imidacloprid) is applied by soil insertion. Tablets are inserted by hand into small holes dug at the base of host (primarily citrus) plants. In another option, Merit 75 WSP® (active ingredient: imidacloprid) is applied as a soil drench, using a mechanically pressurized system.
- **Foliar spray:** Merit 75 WSP®, sometimes with No Foam B® (adjuvant), Tempo SC Ultra® (active ingredient: cyfluthrin), Tempo Ultra WP® (active ingredient: cyfluthrin), Sevin SL® (active ingredient: carbaryl) or Tristar 30 SG® (active ingredient: acetamiprid) is applied to the foliage of host plants using a backpack sprayer or mechanically pressurized system.

If GWSS is detected in numbers or life stages above specified thresholds and eradication is determined not to be feasible, movement of hosts and possible carriers of GWSS may be restricted. Shipments of bulk citrus from infested areas to non-infested areas are required to meet the following standards:

1. The bulk citrus have originated from a grove that has been harvested, handled or treated in a manner approved by the CDFA to eliminate vectors;, or

2. The bulk citrus originated from a non-infested grove as determined by surveys, including trapping and visual inspections approved by CDFA to detect the presence of vectors, and the citrus is monitored during harvest; or
3. The bulk citrus has completed a post-harvest treatment, approved by CDFA to eliminate all live vectors.

Shipments of bulk grapes and plant species deemed potential hosts for GWSS are subjected to similar regulations.

So that the above standards are met, growers (intending to ship bulk citrus or grapes from infested areas) are required to: (1) notify the county agricultural commissioner (of the county in which the vineyard is located) a minimum of 72 hours before the initiation of harvest; (2) assure that a certificate is attached to every shipment and is provided to the receiver; and (3) maintain harvest and shipment records for 2 years. Receivers are required to: (1) conduct a trapping and detection program as specified by the agricultural commissioner (of the county in which the receiver is located) to determine if the vector is present at receiver's facility; (2) collect the certificates, for each shipment and maintain them as part of the shipment documentation; (3) dispose all material other than grapes in a manner that eliminates vector survival risk (disposal methods include steam, crush, cold treat, and solarization), and (4) maintain trapping, vector detection, and shipment records for 2 years.

So that plants meet regulatory standards, nurseries are required to: (1) train employees to inspect for and recognize suspect vectors; (2) conduct a trapping and detection program as specified by the agricultural commissioner (of the county in which the nursery is located) to determine if the vector is present at the nursery facility; (3) if the vector is present, conduct an ongoing monitoring program that includes a vector free shipment staging area and inspection of plants for vectors; (4) conduct treatments, as necessary, to ensure that each shipment is free of the vectors, and (5) maintain treatment, vector trapping, detection, and monitoring records for 2 years.

Treatment options for GWSS quarantine compliance include:

- **Soil application:** In one option, Admire Pro® or Alias 4F® (both with active ingredient imidacloprid) is applied by soil injection. In another option, CoreTect Tree and Shrub Tablets Insecticide® (active ingredient: imidacloprid) is applied by tablet insertion.
- **Foliar spray:** One of the following chemicals is applied to the foliage of host plants using a backpack sprayer, mechanically pressurized system, groundboom, airblast, or aircraft (depending on the chemical and setting): Assail 30 SG® (active ingredient: acetamiprid), Assail 70 WP® (active ingredient: acetamiprid), Astro® (active ingredient: permethrin), Baythroid XL® (active ingredient: cyfluthrin), Danitol 2.4 EC Spray® (active ingredient: fenpropathrin), Decathlon® 20 WP (active ingredient: cyfluthrin), Discus® (active ingredient: cyfluthrin/imidacloprid), Dursban™ 50W (active ingredient: chlorpyrifos), Lorsban® 4E (active ingredient: chlorpyrifos), Mavrik Aquaflow® (active ingredient: tau-fluvalinate), Orthene® 97 (active ingredient: acephate), PyGanic Crop Protection EC 1.4® (active ingredient: pyrethrins), Quali-Pro Imidacloprid 2F® (active ingredient: imidacloprid),

Renounce 20 WP® (active ingredient: cyfluthrin), Sevin SL® (active ingredient: carbaryl), Talstar S Select® (active ingredient: bifenthrin), Tame 2.4 EC Spray® (active ingredient: fenpropathrin), Triact 70® (active ingredient: neem oil), Tristar® 30 SG (active ingredient: acetamiprid), and Tristar® 8.5 SL (active ingredient: acetamiprid).

In addition to eradication and exclusion activities, BCAs are released to manage GWSS populations in citrus production systems and urban environments where the use of chemical treatments is limited. These BCAs include *Gonatocerus morrilli, Gonatocerus morgani,* and *Gonatocerus triguttatus.* CDFA initiated two facilities to mass produce BCAs for release in urban, organic, and untreated environments, wherever GWSS is to be produced and released largely in urban and riparian areas in the Central Valley. To date, over 2.43 million BCAs have been released by CDFA.

3.4.19 Gypsy Moth

Trapping to detect the gypsy moth involves deploying traps at deep water ports and transportation corridors and hubs with high risk of being entry points for invasions. Targeted ports include: Eureka, San Francisco, Oakland, Benicia, Pittsburgh, West Sacramento, Stockton, Port Hueneme, Long Beach, Los Angeles, and San Diego. In the survey, traps are placed in a 1-mile radius around each location, at a density of 35 traps per square mile (25 of which are for the Asian gypsy moth). Additional traps are placed at a density of 5 traps per square mile (for each moth species) along waterways and railways serving as transportation corridors and in the vicinity of major transportation hubs receiving foreign containers. All traps are separated by at least 30 meters to avoid interference between the lures. Traps are inspected at 2-week intervals.

Detection trapping also is conducted at other locations in the state. Gypsy moth delta traps baited with a synthetic sex pheromone contained in a laminated plastic strip have been placed in rural and urban residential parts of the state with more than 300 homes per square mile; two traps per square mile have been deployed in California’s 58 counties.

If a gypsy moth is trapped, a delimitation survey is triggered and trap densities are increased within 48 hours to 25 traps per square mile (for European gypsy moth) over the 4 square miles surrounding the find. For the Asian gypsy moth, 49 traps are placed in the core square mile and 25 traps per square mile are placed in the 80 square miles surrounding the find (5-mile radius).

If detection and delimitation trapping indicate gypsy moth is present in numbers of life stages above specified thresholds and eradication is determined to be feasible, then an eradication project may be initiated. Eradication approaches and treatment options for gypsy moth include:

- **Pest removal:** Gypsy moth egg masses may be removed and destroyed by hand if visible and within reach. This is not a standalone management tool.
- **Foliar spray:** DiPel Pro DF Biological Insecticide Dry Flowable® (active ingredient: *Bacillus thuringiensis,* subspecies *kurstaki*, strain ABTS-351) and/or DiPel DF

Biological Insecticide® (active ingredient: *Bacillus thuringiensis*) is prepared in a nurse tank.

Delimitation trapping is continued during and after eradication project activities to monitor post-treatment gypsy moth populations.

If gypsy moth is detected in numbers or life stages above specified thresholds and eradication is determined not to be feasible, or in areas where eradication is underway, an internal quarantine may be established. Quarantine regulations restrict the movement of hosts and possible carriers of a pest. Hosts and possible carriers of gypsy moth include: (1) trees, shrubs with persistent woody stems, and parts of such trees and shrubs except seeds, fruits, and cones; (2) timber and building materials including lumber, planks, poles, logs, firewood, fencing, and building blocks; (3) mobile homes, recreational vehicles, trailers, boats, and associated equipment; (4) outdoor household articles including furniture, garden tools, and garden machinery; and (5) garden prunings. These commodities and articles are prohibited movement from within the quarantine area unless they are certified as having originated in an area free of gypsy moth or as having been cleaned or treated in an approved manner.

Although no biological management approaches are available to combat the gypsy moth in 2013, the native *Trichogramma species* (egg parasites) may be looked at under the Proposed Program as a potential tactic to manage the gypsy moth should it every become established. This species has been used effectively in Oregon and Washington against the gypsy moth.

3.4.20 Japanese Beetle

To prevent the entrance of the Japanese beetle into California, movement of host commodities and possible carriers is restricted. Hosts and possible carriers of Japanese beetle include: (1) soil, humus, compost, and manure (except when commercially packaged); (2) all plants with roots, grass sod, plant crowns or roots for propagation, and (3) bulbs, corms, tubers, and rhizomes. Movement of these articles into California from quarantine areas is prohibited unless accompanied by an official certificate verifying that the articles were treated for Japanese beetle by approved methods, or that the regulated articles originated from an area or greenhouse free of Japanese beetle, or were produced outside the Japanese beetle flight season.

A state exterior quarantine is in effect against the Japanese beetle covering Alabama, Arkansas, Colorado, Connecticut, Delaware, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, West Virginia, Wisconsin, and the District of Columbia.

One strategy in detection of the Japanese beetle is the Aircraft Inspection Program. Aircraft arriving from airports in Japanese beetle-infested states are inspected on arrival. If live and/or and dead beetles are detected, they are collected and included in National Japanese Beetle program information. Inspection surveys are conducted during the summer, when adult Japanese beetles are active. CDFA inspectors may intercept hundreds of these beetles annually on aircraft originating from airports in infested states. (CDFA 2012)

Statewide Detection trapping is also conducted to intercept the Japanese beetle. In detection trapping surveys, Japanese beetle traps are deployed in urban and rural residential areas (300 or more homes per square mile) at a rate of two traps per square mile. Traps are baited with Dual Lure® (active ingredients: Phenyl-ethyl propionate, eugenol, geraniol, and a sex pheromone) and are placed on metal poles on lawns at heights of 11 to 22 inches aboveground.

If a Japanese beetle is found in a trap, a delimitation survey is triggered and trap densities are increased in the 49 square miles surrounding the find. A total of 50 traps are placed in the core square mile, and then 25 traps per square mile are placed in the surrounding 8 square miles (1-mile buffer). In the 2- and 3-mile buffer, the trap density is five traps per square mile.

If detection and delimitation trapping indicates that Japanese beetle is present in numbers or life stages above specified thresholds and eradication is determined to be feasible, an eradication project may be initiated. Treatments used in Japanese beetle eradication projects include:

- **Soil application:** Merit 2F Insecticide (active ingredient: imidacloprid) is applied as a soil drench using a backpack sprayer or mechanically pressurized system.
- **Foliar spray:** Sevin SL Carbaryl Insecticide® (active ingredient: carbaryl) or Tempo SC Ultra Insecticide® (active ingredient: cyfluthrin) is prepared in a tank and is applied using a backpack sprayer or mechanically pressurized system.

Foliar sprays are applied to all Japanese beetle host plants in a 656-foot (200-meter) radius around each detection site.

3.4.21 Karnal Bunt

To prevent entry of Karnal bunt into California, samples of wheat, durum wheat, rye, and triticale are inspected at CDFA's border stations under the CAPS program.

3.4.22 Khapra Beetle

To detect the khapra beetle, trapping and visual surveys are conducted. In the khapra beetle survey, traps are placed in facilities that receive grain shipments from parts of the world where the beetle is known to be established, as well as grain storage facilities that receive foreign bulk shipments from ports in California and ports in other states (CDFA 2013). In high-hazard facilities with adequate food, warm shelter, and/or high introductory risk, traps are placed about 50 feet apart. Examples of high-hazard facilities include large food mills, wholesale bakeries, wholesale spice centers, seed companies, burlap bag cleaning establishments, carpet mills, and import stores. Traps may be placed on ledges or behind electrical conduits near host material, in tunnels under mills or storage tanks, and near where used sacks are kept. Traps are inspected and replaced twice a year.

Bulk grain and grain storage facilities also are visually inspected for khapra beetle. In bulk storage, khapra beetle larvae tend to congregate on the surface of the grain and on or near the walls. Inspection of bulk grain is facilitated by the use of a two-pan set of grain dockage sieves. A small portion of grain is scooped into the set of pans and is shaken slightly so that the chaff and small insects fall through the sieve into the solid bottom pan. (CDFA 2010a).

3.4.23 Lethal Yellowing of Palm

To prevent the introduction of lethal yellowing of palm into California, movement of hosts and possible carriers is restricted. Hosts and possible carriers of lethal yellowing of palm include susceptible palm trees, screw pine, and many species of palms, grasses, and sedges that may host *Haplaxius crudus* (the vector of lethal yellowing of palm) and all parts capable of propagation (except seed). Movement of these articles into California from areas under quarantine is prohibited. Grasses and sedges are enterable with a certificate indicating they have been treated by approved methods.

In 2013, a state exterior quarantine was in effect against *Haplaxius crudus*, covering portions of Florida and Texas.

3.4.24 Light Brown Apple Moth

If light brown apple moth (LBAM) is detected in numbers or life stages above specified thresholds and eradication is determined not to be feasible, a quarantine may be established to limit the spread of the infestation. Quarantine regulations restrict the movement of hosts and possible carriers within and from quarantine areas. Hosts and possible carriers of LBAM include: (1) all nursery stock; (2) all green waste residues from any plants; (3) all fresh garlands, wreaths, cut flowers, and greens produced within the area under quarantine; (4) all harvested fruits and vegetables produced within the area under quarantine, except certain commercially produced crops (e.g., asparagus, cabbage, leeks); (5) any other harvested plant parts that by scientific investigation are shown to be capable of sustaining LBAM in any stage of development; and (6) all appliances used in the growing, harvesting, processing, and hauling of host plants and plant parts, and any green waste residues, such as tractors, trailers, and planting and pruning equipment. Movement of these articles is prohibited unless they have been treated or cleaned by approved methods or determined to have originated from a facility free of LBAM.

The treatment for LBAM quarantine compliance is as follows:

- **Foliar spray:** One of the following chemicals is applied using a backpack sprayer, mechanically pressurized sprayer, or groundboom: Conserve SC Turf and Ornamental® (active ingredient: spinosad), DiPel DF® (active ingredient: bacillus thuringiensis), DiPel Pro DF® (active ingredient: bacillus thuringiensis), DuPont Acelepryn® (active ingredient: chlorantraniliprole), Entrust Naturalyte Insect Control® (active ingredient: spinosad), Intrepid 2F® (active ingredient: methoxyfenozide), or Scimitar GC® (active ingredient: lambda-cyhalothrin). Certain chemicals are appropriate for certain types of crops and settings. All chemicals must be used with approved petroleum-based paraffinic spray oil.

A state internal quarantine is effect against LBAM covering all or portions of Alameda, Contra Costa, Los Angeles, Marin, Monterey, Napa, Orange, San Benito, San Diego, San Francisco, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Solano, and Sonoma counties. Eradication projects are being conducted in San Diego and Santa Barbara counties.

No biological management approaches were available to combat LBAM in 2013. However, in the future, the biological control agents *Dolichogenidea tasmanica*, a larval parasite from Australia, and *Trichogramma platneri,* a native egg parasite, may be considered for release under the Proposed Program to manage LBAM.

3.4.25 Nun Moth

The nun moth is one of the species surveyed in the Regional Asian Forest-Defoliating Moth Survey at High-Risk Seaports and Transportation Corridors and Hubs. In this survey, traps are placed at deep water port and transportation corridor locations at high risk of being entry points for invasions. Five traps with nun moth pheromone lures are placed per square mile.

3.4.26 Nut Tree Pests

Nut tree pests include two species of nut tree case-bearers (moths), Acrobasis juglandis and A. nuxvorella, and pecan phylloxera (Phylloxera devastatrix), a small insect resembling an aphid. To prevent the entry of nut tree pests into California, a state exterior quarantine is in effect. Trees and all parts capable of propagation of *Carya* spp. (pecan, hickory) and *Juglans* spp. (walnut, butternut) are restricted or prohibited from all states and districts of the United States. Restrictions and prohibitions on the shipment hosts vary, depending on type of host and state of origin.

3.4.27 Olive Psyllid

CDFA has obtained the parasite, *Psyllaephagus euphyllurae,* for study as a potential BCA for the olive psyllid. It is currently being tested at the University of California, Riverside, to determine its suitability for release into California.

3.4.28 Ozonium Root Rot

To prevent entry of ozonium root rot into California, the movement of hosts and possible carriers is restricted. Hosts and possible carriers of ozonium root rot include: all soil, nursery stock, and plants with roots, except house plants grown in the home and not for sale, smooth root vegetables (i.e., potatoes, sweet potatoes, carrots, onion, turnips, and beets), and certain sugar beets, cactus plants, and aquatic plants. Movement of these articles into California from areas under quarantine is prohibited unless they have been grown in a manner approved by CDFA to assure freedom from ozonium root rot.

A state exterior quarantine is in effect against ozonium root rot covering Arizona, Oklahoma, Texas, and portions of Arkansas, California, Louisiana, Nevada, New Mexico, , and Utah.

To prevent the spread of ozonium root rot in California, movement of hosts and possible carriers is similarly restricted. Regulated articles and restrictions in interior quarantine regulations generally are similar to those in the exterior quarantine regulations described above.

In 2013, a State Interior Quarantine was put into effect against ozonium root rot, covering all of Imperial County and portions of Riverside and San Diego counties.

3.4.29 Peach Yellows, Little Peach, and Red Suture Disease

Diseases of peach include peach yellows, little peach, and red suture disease. To prevent the entry of these peach diseases into California, a state exterior quarantine is in effect and covers the entire states of Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, West Virginia, and the District of Columbia. Trees and all parts capable of propagation, except seed (fruit pits) of all species of the genus *Prunus* (except several species of cherry) are declared hosts and possible carriers of the diseases; they are prohibited entry into the state unless specific conditions are met, including that a survey for the diseases and symptomless hosts is performed in an approved manner before shipment.

3.4.30 Peach Mosaic Disease

To prevent the entrance of peach mosaic disease into California, movement of hosts and possible carriers is restricted. Hosts and possible carriers of peach mosaic disease include: trees and parts capable of propagation (i.e., buds, scions, and rootstock), except seed (fruit pits), of the species, varieties, and hybrids of almond, apricot, peach, plum, prune, and nectarine, as well as Manchu cherry (*Prunus tormentosa*) and western sand cherry (*P. besseyi*). Movement of these articles into California from quarantine areas is prohibited unless a special permit is issued, specifying mandatory provisions and conditions of entry.

Arizona, New Mexico, parts of Colorado, Oklahoma, and Texas are considered infested with peach mosaic disease. Shipments of hosts and possible carriers of peach mosaic disease from these areas are subject to exterior quarantine regulations.

A state interior quarantine is in effect against peach mosaic disease covering all of San Diego County and portions of Los Angeles, Riverside and San Bernardino counties.

3.4.31 Peach Rosette Disease

To prevent the entry of peach rosette disease into California, a state exterior quarantine is in effect and covers the entire states of Alabama, Arkansas, Georgia, Mississippi, Oklahoma, South Carolina, Tennessee, and West Virginia. Trees and all parts capable of propagation, except seed (fruit pits) of all species of the genus *Prunus* (except several species of cherry) are declared hosts and possible carriers of the disease and prohibited entry into the state unless specific conditions are met. These conditions include that the plants or plant parts are not a symptomless carrier of the disease or grafted onto a symptomless carrier, that a survey for the diseases and symptomless hosts was performed in an approved manner before shipment, or that dormant plants or plant parts originated from outside the quarantine area and remained dormant while in the quarantine area.

3.4.32 Persimmon Root Borer

To prevent the entry of persimmon root borer into California, the movement of hosts and possible carriers is restricted. Hosts and possible carriers of persimmon root borer includes: all species and varieties of persimmon (*Diospyros* spp.) trees, parts capable of propagation (including rootstocks) and green (unseasoned) wood. Movement of these articles into California from quarantine areas is prohibited.

A state exterior quarantine is in effect against the persimmon root borer, covering all states, districts, and territories of the U.S.

3.4.33 Pink Bollworm

To detect pink bollworm moths, trapping is conducted. A cardboard delta trap is used that is sticky on all three inside surfaces with a synthetic pheromone lure that attracts male pink bollworm moths. The traps are placed over the first cotton plant at the end of a row or the first plant at the edge of the field. They are suspended over the cotton plant to allow the trap to be serviced without the cotton foliage being touched.

Quarantine regulations restrict the movement of hosts and possible carriers of a pest from and within the quarantine area. Hosts and possible carriers of pink bollworm include: okra, kenaf, cotton and wild cotton plant parts of the genera *Gossypium* and *Thurberia*, seed cotton, cotton lint, cotton linters, cotton waste, gin trash, cottonseed, cottonseed hulls, used bagging for cotton pickers, and used cotton harvesting equipment. Movement of these articles from the quarantine area is prohibited unless they have been treated by approved methods.

A state interior quarantine is in effect against the pink bollworm, covering the entire State of California. The generally infested area is defined as Inyo County and all that part of California south of and including Los Angeles and San Bernardino counties. The lightly infested area is defined as Fresno, Kern, Kings, Madera, Merced, San Benito, and Tulare counties.

The use of SIT in the Pink Bollworm program is triggered by a native moth detection. Sometimes the program will begin with a proactive SIT aerial treatment in response to a find in Arizona, near the border. Although SIT has been used in the recent past and may be used again in the future, in 2014, the estimate of acreage to be treated by SIT is zero. Insects are released via aircraft.

Pink bollworms are mass-reared and irradiated at the Pink Bollworm Rearing Facility in Phoenix, Arizona, and then shipped to California for aerial release in agricultural areas. Currently, the potential for treatment exists in the cotton growing areas of Merced, Tulare, Kings, Fresno, Madera, Imperial, Riverside, and San Bernardino counties. In response to a find, the sterile PBW moths will be released twice per week for one life cycle. The life cycle is dependent on degree days but may be up to 50 days in optimum temperatures.

Planting and crop destruction dates are sometimes used to establish a "host-free period" during the year to control pink bollworm populations. The planting and harvest dates can be chosen to favor crop development and discourage pests. This is achieved through plowdown regulations, which dictate planting and crop destruction dates so as to establish a "host-free" period during the year. These plowdown events are sometimes called host removal because hosts are not available for a pest to complete its life-cycle. However, this is not a new activity because plowdown normally would occur. This strategy simply dictates the specific timing of the plowdown activity. Plowdown regulations for pink bollworm require that cotton stalks be completely shredded and cotton plant roots be completely dislodged.

3.4.34 Plum Curculio and Blueberry Maggot

To prevent entry of plum curculio and blueberry maggot into California, the movement of hosts and possible carriers is restricted. Hosts and possible carriers of plum curculio and blueberry maggot include: fresh fruit of a number of different plants, including apple, blueberry, huckleberry, plum, cherry, and pear. Movement of these articles into California from quarantine areas is prohibited unless they meet one of several conditions specified in regulations.

In 2013, a state exterior quarantine was put into effect against plum curculio and blueberry maggot, covering all states and districts east of and including North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas, as well as portions of Utah.

3.4.35 Plum Pox Potyvirus

To detect plum pox potyvirus, stone fruit orchards are visually inspected in up to 13 counties each year in the Stone Fruit Commodity-based Survey. Any symptomatic plant tissues observed during the survey are collected and sent to CDFA's Plant Pest Diagnostics Plant Pathology Laboratory for analysis.

3.4.36 Polyphagous Shot Hole Borer

In 2013, no activities were conducted to manage the polyphagous shot hole borer. While CDFA anticipates conducting a management program against this pest in the future, no activities related to the polyphagous shot hole borer are evaluated in this PEIR.

3.4.37 Potato Cyst Nematode and Golden Nematode

To detect potato cyst nematode (PCN), potato production fields in California are sampled each year. In the potato cyst nematode survey, 10 percent of the potato fields within selected counties are randomly selected for sampling. Soil samples taken from potato fields are submitted to CDFA's Plant Pest Diagnostics Plant Pathology Laboratory for analysis. If PCN were to be detected in California, APHIS would work with CDFA and potato growers to develop reasonable and appropriate regulatory actions that would include establishing quarantine boundaries and eradication. Quarantine actions taken in Idaho and New York most likely would serve as the model to stop spread of PCN.

In 2013, PCN was detected in Idaho and also was known to be present on the island of Newfoundland in Canada. The golden nematode was present in the State of New York only. Both species are under federal quarantine and neither is known to be present in California.

3.4.38 Red Bay Ambrosia Beetle

The red bay ambrosia beetle is one of the species surveyed in the Statewide Survey for Exotic Woodboring Pests. The survey uses attractant-baited Lindgren funnel traps to capture adult beetles and other pests. Traps are deployed at 80 locations statewide, with up to four traps at each location (for a total of 320 traps). Traps are individually baited with one of the following lures or lure combinations: UHR ethanol, UHR ethanol and alpha pinene (active ingredient: alpha pinene), Exotic lps lure, and manuka oil. Traps are inspected and collections are made at 2-week intervals. The survey is conducted from July through October in southern California, from June through September in central and northern parts of the state, and from December through March in the desert area of southeastern California.

3.4.39 Red Palm Weevil and South American Palm Weevil

To detect red palm weevil (RPW) and South American palm weevil (SAPW), pheromone lure traps are deployed throughout California. Approximately 1,000 traps are placed near date groves, palm production nurseries, resorts/golf courses (locations where large specimen palms were planted), ports, green waste facilities in proximity to the U.S./Mexico border, and delimitation response areas. In delimitation response areas, traps are deployed (tied to the trunks of palms) at a density of 50 traps in the core square mile and 25 per square mile in the two surrounding bands of square miles, for an effective radius of 2.5 miles from each detection site. Ferrolure (active ingredient: 4-methylnonan-5-ol plus 4-methylnonan-5-one), Ryncholure®, or Weevil Magnet® (active ingredient: ethyl acetate) may be used as the primary chemical attractant, but a mixture of all three products may be used in traps.

If detection and delimitation trapping indicate RPW or SAPW is present in numbers or life stages above specified thresholds, an eradication project may be initiated. Host removal management activities undertaken in RPW or SAPW eradication projects are as follows:

- **Host removal:** USDA RPW Manual advised that palms are destroyed at the first sign of larval infestation, by cutting down palms and shredding them into small pieces. Infested palms are burned to prevent larvae from hatching and re-infesting an area. Because burning the top of the palm alone does not kill stages in the middle of the trunk, trees that are heavily infested are uprooted and split open to expose different stages of the RPW and then burned. (USDA 2011) This type of host removal is rarely used and would not be a reasonably foreseeable action under the Proposed Program. Therefore, the impacts of such actions are not analyzed in this Final PEIR.

3.4.40 Siberian Silk Moth

To detect the Siberian silk moth, trapping is conducted. Milk carton traps with SSM Sex Pheromone are placed in the lower canopy of conifers, out of normal reach of people.

3.4.41 Sirex Woodwasp

To detect the Sirex woodwasp, trapping is conducted. Lindgren funnel traps with a Sirex lure (active ingredient: 70:30 blend of alpha and beta pinenes) are hung on 6-foot metal poles, 4 to 6 feet above the ground near hosts (usually hardwoods). A new bait packet is placed in the trap every month. Traps are deployed in both residential and production agriculture settings.

3.4.42 Sudden Oak Death

To prevent the spread of Sudden Oak Death (the disease caused by *Phytophthora ramorum*) in California, movement of hosts and possible carriers of the *Phytophthora ramorum* pathogen is restricted. Hosts and possible carriers of Sudden Oak Death include: (1) plants and plant parts of potential host species (e.g., coast live oak, bigleaf maple, madrone, and many other species); (2) nursery stock of potential host and associated species; (3) unprocessed wood and wood products, such as mulch, firewood, and dry or preserved wreaths; (4) any other product, article or means of conveyance that is determined by CDFA to pose a risk of spreading the disease. These articles are prohibited movement from the regulated area unless accompanied by a certificate certifying that they have been grown, produced, manufactured, stored, or handled in a manner approved by CDFA to prevent infestation by the pest.

If *Phytophthora ramorum* is discovered in a nursery, infected nursery stock is quarantined and destroyed according to the USDA's Official Regulatory Protocol Nurseries Containing Plants Infected with *Phytophthora ramorum.* All *Phytophthora ramorum* plants and plant material, including leaf litter, are collected and either incinerated or double-bagged and deep buried in an approved site. Container mix and soil that is infected with *Phytophthora ramorum* is heated such that the temperature in the center of the load reaches at least 180 degrees F for 30 minutes (USDA 2013). This type of host removal is rarely used and would not be a reasonably foreseeable action under the Proposed Program. Therefore, the impacts of such actions are not analyzed in this Final PEIR.

Equipment or tools which may have come in contact with the disease, such as shovels, shoes, or tires, are disinfected with a dilute bleach solution (10 percent), full strength Lysol, an isopropyl alcohol solution (70 percent), or other similar disinfectant. Equipment is either sprayed with the disinfectant, or dipped into a container of the disinfectant.

Federal and state quarantines are in effect for Sudden Oak Death, covering Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma, and Trinity counties.

3.4.43 Sweet Potato Weevil

To prevent entry of sweet potato weevil (SPW) into California, movement of hosts and possible carriers is restricted. Hosts and possible carriers of SPW include: sweet potato plants, vines, cuttings, draws, and slips, or so-called yams (*Ipomoea batatas*) and morning-glory plants (*Ipomoea* and *Convolvulus* spp.). These articles generally are prohibited movement into California from states or areas under quarantine. Sweet potato tubers that have been treated in accordance with regulations or have been certified as originating from a non-infested area within the quarantine area are allowed entry. A state exterior quarantine is in effect for SPW, covering Alabama, Arkansas, Florida, Georgia, Hawaii, Louisiana, Mississippi, South Carolina, Tennessee, and Texas.

To prevent the spread of SPW in California, movement of hosts and possible carriers is restricted. Under State Interior Quarantine regulations, hosts and possible carriers of SPW include: (1) all potential hosts listed in state exterior quarantine regulations (see above) and *Calystigia* sp.; and (2) all appliances used in the growing, harvesting, processing, storage, and movement of hosts including, but not limited to field bins, trucks, tractors, harvesting equipment, and any other thing which the Department determines to be capable of spreading any stage of Sweet potato weevil. These articles are prohibited movement from and within quarantine areas unless accompanied by a quarantine certificate, affirming that the articles originated from a site/facility which is apparently free from sweet potato weevil, or if the article satisfies other exemption criteria. In 2013, a State Interior Quarantine was put into effect for SPW, covering a portion of San Diego County.

3.4.44 Walnut and Pecan Pests

Walnut and pecan pests include walnut husk flies (*Rhagoletis suavis*, *Rhagoletis juglandis*, and *Rhagoletis boycei*); nut tree casebearers (*Acrobasis* spp.); butternut curculio (*Conotrachelus juglandis*); black walnut curculio (*Conotrachelus retentus*); pecan weevil (*Curculio caryae*); and hickory shuckworm (*Laspeyresia caryana*). To prevent entry of walnut and pecan pests into California, movement of host commodities and possible carriers is restricted. Hosts and carriers of walnut and pecan pests include: (a) unhusked nuts of walnuts and butternuts (*Juglans* spp.), and any such husks or hulls or fragments thereof moved as such; and (b) boxes, sacks, and other containers, equipment, appliances, machinery, and vehicles used in connection with harvesting, hulling, dehydrating, shelling, transporting, or storing of any unhusked nuts of walnut and butternut or hulls of walnut, butternut, pecan, and hickory. These articles are prohibited movement into California unless accompanied by a certificate verifying treatment by approved methods at their point of origin.

In 2013, a state exterior quarantine was put into effect against walnut husk flies, nut tree casebearers, and curculios, covering all states and districts of the U.S. except for Arizona. A state exterior quarantine has been put into effect against the pecan weevil and hickory shuckworm, covering Alabama, Arkansas, Florida, Georgia, Kansas, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia.

3.5 Magnitude of the Proposed Program

Various metrics may be used to characterize the magnitude of past CDFA pest management programs and Proposed Program activities, and several are presented in this section. Up to approximately 150,000 traps are expected to be deployed on an annual basis as a part of the Proposed Program; up to approximately 50 eradication projects are expected to be executed per year. Priority pests are expected to be intercepted at border protection stations approximately 1,000 times per year. Approximately 100,000 acres may be subject to a State Interior Quarantine requirement for a variety of different pests in any given year, in a number of California counties.

3.6 Proposed Program Activity Scenarios

This section lists the Proposed Program activities and their various attributes in tabular format. This is intended to be a comprehensive reference for all of the various activities which may be undertaken under the Proposed Program. Table 3-1, beginning on page 3-37, lists Proposed Program activities sorted by pest name. Table 3-2, beginning on page 3-50, lists the same Proposed Program activities sorted by management category. Table 3-3, beginning on page 3-63, lists these Proposed Program activities sorted by pest project type. For chemical management activities which were evaluated in the Ecological Risk Assessment (Appendix A), a code associated with the scenario is presented in the far-right column. Under the Proposed Program, authorized chemical management scenarios would only include those that were either: (1) not evaluated in the risk assessment because of a qualitative determination that substantial levels of risk were not reasonably foreseeable, or (2) those that the risk assessment concluded do not have potential for levels of risk exceeding a level of concern.

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Table 3-1

Proposed Program Activities – Sorted by Pest Name

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Biological	Biological Control Agent Release	Manual	Control	Residential, Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Physical	Inspection	Visual/Field Sampling Equipment	Detection	Residential, Production Agriculture, Citrus Nurseries	n/a	n/a
Asian Citrus Psyllid	Physical	Trapping	Yellow Panel Trap	Detection	Residential, Citrus Nurseries, Airports, Markets, Fruit Processing Facilities	n/a	n/a
Asian Citrus Psyllid	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential	CoreTect Tree & Shrub Tablets Insecticide	PD/EP-E-01
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Asian Citrus Psyllid	Chemical	Pesticide Spot Application	Tank Sprayer	Eradication	Residential	RoundUp Original	PD/EP-E-05
Asian Citrus Psyllid	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra Insecticide	ACP-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-01-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-01-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-01-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-01-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-01-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-02-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-02-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-02-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-02-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-02-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-03-09

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-03-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-03-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-03-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-03-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-04-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-04-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-04-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-04-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-04-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-05-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-05-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-05-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-05-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-05-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-06-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-06-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Kontos	ACP-06-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-06-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-06-23

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tempo SC Ultra	ACP-06-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-06-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Baythroid XL	ACP-07-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-07-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Kontos	ACP-07-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Movento	ACP-07-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Sevin SL	ACP-07-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tempo SC Ultra	ACP-07-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tombstone	ACP-07-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Baythroid XL	ACP-12-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Danitol 2.4 EC Spray	ACP-12-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Movento	ACP-12-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Sevin SL	ACP-12-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Tombstone	ACP-12-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-14-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-14-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-14-17

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-14-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-14-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-15-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-15-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-15-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-15-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-15-27
Asian Citrus Psyllid	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	ACP-16
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-31-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-31-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Movento	ACP-31-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-31-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-31-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-32-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-32-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Movento	ACP-32-18

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-32-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-32-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-19-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-19-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-19-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-19-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-19-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-20-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-20-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-20-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-20-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-20-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-21-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-21-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-21-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-21-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-21-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-22-09

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-22-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-22-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-22-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-22-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-28-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-28-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-28-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-28-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-28-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-29-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-29-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Kontos	ACP-29-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-29-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-29-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tempo SC Ultra	ACP-29-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-29-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Baythroid XL	ACP-30-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Danitol 2.4 EC Spray	ACP-30-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Kontos	ACP-30-13

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Movento	ACP-30-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Sevin SL	ACP-30-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tempo SC Ultra	ACP-30-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tombstone	ACP-30-26
Asian Citrus Psyllid	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Boll Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Production Agriculture	Grandlure	IPC-Tr-01
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Residential	Grandlure	IPC-Tr-02
Burrowing and Reniform Nematodes	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cedar-Apple Rust	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cereal Leaf Beetle	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Cereal Leaf Beetle	Physical	Trapping	Sweep Net	Detection	Production Agriculture	n/a	n/a
Cereal Leaf Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Chestnut Bark and Oak Wilt Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Citrus Tristeza Virus	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Colorado Potato Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cornstalk and Sugarcane Borers	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Date Palm Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
European Corn Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Eradication	Residential	n/a	n/a

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	Residential	Isomate EGVM	n/a
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	All Nurseries	Isomate EGVM	n/a
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	DiPel Pro DF	PD/EP-E-02
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-02
European Grapevine Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-03
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	DuPont Acelepryn	EGVM-04
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Intrepid 2F	EGVM-01
European Grapevine Moth	Chemical	Trapping	Red Delta Trap	Detection	Production Agriculture, Residential	n/a	n/a
European Grapevine Moth	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Pest Removal	Hot Water Treatment	Interior Quarantine	All Nurseries	n/a	n/a
European Grapevine Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
European Pine Shoot Moth	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
European Pine Shoot Moth	Chemical	Trapping	Pherocon IIC Trap	Detection	Nurseries	n/a	n/a
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Production Agriculture	SSM Sex Pheromone	PD/EP-DTr-09
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Residential	SSM Sex Pheromone	PD/EP-DTr-10
Exotic Moths – Various Species	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Control	Residential	DiPel Pro DF	PD/EP-E-02

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Production Agriculture	Sirex Lure	PD/EP-DTr-05
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Residential	Sirex Lure	PD/EP-DTr-06
Exotic Fruit Flies	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Biological	Sterile Insect Technique	Aircraft	Control	Residential, Production Agriculture	n/a	n/a
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Agricultural and Residential	FT-Methyl Eugenol	PD/EP-DTr-01
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-02
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Production Agriculture	FT-Methyl Eugenol	PD/EP-DTr-03
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-04
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-01
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-02
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-03
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-04
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Residential	Dibrom Concentrate	PD/EP-Etr-05
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Production Agriculture	Dibrom Concentrate	PD/EP-Etr-06
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	GF-120-Naturalyte Fruit Fly Bait	FF-03
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	Malathion 8 Aquamul	FF-06
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Production Agriculture	STATIC Spinosad ME	PD/EP-Etr-07
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Rural	STATIC Spinosad ME	PD/EP-Etr-08
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Interior Quarantine	Rural	GF-120-Naturalyte Fruit Fly Bait	PD/EP-E-03
Exotic Fruit Flies	Physical	Fruit Stripping	Manual	Eradication	Residential, Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Eradication	Residential	n/a	n/a
Exotic Fruit Flies	Physical	Trapping	McPhail Trap	Eradication	Residential, Production Agriculture	Torula Yeast + Borax	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Exotic Fruit Flies	Chemical	Soil Application - Drench	Tank Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Diazinon AG500	FF-02
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-04
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-05
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-07
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-08
Exotic Fruit Flies	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	FF-01
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Detection	Production Agriculture/Residential	n/a	n/a
Glassy-Winged Sharpshooter	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture/Residential	n/a	n/a
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential (Citrus)	CoreTect Tree & Shrub Tablets Insecticide	PDCP-19
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Merit 75 WSP	PDCP-34
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 75 WSP	PDCP-35
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Sevin SL	PDCP-44
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra	PDCP-52
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo Ultra WP	PDCP-53
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tristar 30 SG	PDCP-59
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Admire Pro	PDCP-01

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Alias 4F	PDCP-02
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-03
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-04
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-05
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-06
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 70 WP	PDCP-07
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Assail 70 WP	PDCP-08
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-09
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-10
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-11
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-12
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-13
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-14
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-15
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-16
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-17
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Interior Quarantine	Small, Medium, and most Large Nurseries	CoreTect Tree & Shrub Tablets Insecticide	PDCP-18

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Danitol 2.4 EC Spray	PDCP-20
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-21
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-22
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Discus	PDCP-25
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-26
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-27
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-28
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-29
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-30
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-31
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-32
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-33
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-36
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-37
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	PyGanic Crop Protection EC 1.4	PDCP-40
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-41
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-42

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-63
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Renounce 20 WP	PDCP-43
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-45
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-46
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-47
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-48
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-49
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-50
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-51
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-54
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-55
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 30 SG	PDCP-56
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-57
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-58
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-60
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-61
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 8.5 SL	PDCP-62

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Physical	Foliage Removal	Manual	Interior Quarantine	Small, Medium, and most Large Nurseries	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Interior Quarantine	All Nurseries	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Gypsy Moth	Physical	Pest Removal	Manual	Eradication	Residential	n/a	n/a
Gypsy Moth	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture and Natural Areas	n/a	n/a
Gypsy Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Gypsy Moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-07
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-08
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-11
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-12
Japanese Beetle	Physical	Inspection	Visual	Detection	Airports	n/a	n/a
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Sevin SL	PD/EP-E-06
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra	PD/EP-E-07
Japanese Beetle	Chemical	Soil Application – Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Japanese Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Karnal bunt	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Lethal Yellowing of Palm	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Light Brown Apple Moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture and Residential	n/a	n/a
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Conserve SC Turf and Ornamental	LBAM-01
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	DiPel DF	LBAM-02

Table 3-1. Proposed Program Activities - Sorted by Pest Name

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DiPel Pro DF	LBAM-03
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DuPont Acelepryn	LBAM-04
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	Entrust Naturalyte Insect Control	LBAM-05
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Field Crop (LBAM)	Intrepid 2F	LBAM-06
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Scimitar GC	LBAM-07
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	All Nurseries	n/a	n/a
Light Brown Apple Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Olive Psyllid	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Persimmon Root Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Pink Bollworm	Biological	Sterile Insect Technique	Aircraft	Control	Production Agriculture	n/a	n/a
Pink Bollworm	Physical	Host Removal	Plow	Control	Production Agriculture	n/a	n/a
Pink Bollworm	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Plum Curculio and Blueberry Maggot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Plum Pox Potyvirus	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Potato Cyst Nematode	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Walnut and Pecan Pests	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a

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Table 3-2

Proposed Program Activities – Sorted by Management Category

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Biological	Biological Control Agent Release	Manual	Control	Residential, Production Agriculture	n/a	n/a
Brown Marmorated Stink Bug	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Cereal Leaf Beetle	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Glassy Winged Sharp Shooter	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Gypsy moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture and Residential	n/a	n/a
Olive Psyllid	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Biological	Sterile Insect Technique	Aircraft	Control	Production Agriculture	n/a	n/a
Pink Bollworm	Biological	Sterile Insect Technique	Aircraft	Control	Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra Insecticide	ACP-25
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	DiPel Pro DF	PD/EP-E-02
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Interior Quarantine	Rural	GF-120-Naturalyte Fruit Fly Bait	PD/EP-E-03
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-05
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-07
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Merit 75 WSP	PDCP-34
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tempo Ultra WP	PDCP-53
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-03
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-04

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-05
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-06
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 70 WP	PDCP-07
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-09
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-10
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-12
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-13
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-14
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-15
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-16
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-17
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Danitol 2.4 EC Spray	PDCP-20
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-21
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-22
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Discus	PDCP-25
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-26
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-27
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-28
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-29

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-30
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-31
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-32
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-33
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-36
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-37
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	PyGanic Crop Protection EC 1.4	PDCP-40
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-41
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-42
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-02
European Grapevine Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-03
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	DuPont Acelepryn	EGVM-04
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Intrepid 2F	EGVM-01
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	GF-120-Naturalyte Fruit Fly Bait	FF-03
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	Malathion 8 Aquamul	FF-06
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-04
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-08
Exotic Moths – Various Species	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Control	Residential	DiPel Pro DF	PD/EP-E-02

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Sevin SL	PDCP-44
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tempo SC Ultra	PDCP-52
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tristar 30 SG	PDCP-59
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Assail 70 WP	PDCP-08
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-11
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Renounce 20 WP	PDCP-43
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-45
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-46
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-47
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-48
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-49
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-50
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-51
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-54
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-55
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 30 SG	PDCP-56
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-57
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-58

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-60
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-61
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 8.5 SL	PDCP-62
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Sevin SL	PD/EP-E-06
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra	PD/EP-E-07
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Conserve SC Turf and Ornamental	LBAM-01
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	DiPel DF	LBAM-02
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DiPel Pro DF	LBAM-03
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DuPont Acelepryn	LBAM-04
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	Entrust Naturalyte Insect Control	LBAM-05
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Field Crop (LBAM)	Intrepid 2F	LBAM-06
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Scimitar GC	LBAM-07
Asian Citrus Psyllid	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	ACP-16
Exotic Fruit Flies	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	FF-01
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	Residential	Isomate EGVM	n/a
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	All Nurseries	Isomate EGVM	n/a
Asian Citrus Psyllid	Chemical	Pesticide Spot Application	Tank Sprayer	Eradication	Residential	RoundUp Original	PD/EP-E-05
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-01-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-01-10

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-01-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-01-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-01-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-02-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-02-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-02-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-02-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-02-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-03-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-03-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-03-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-03-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-03-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-04-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-04-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-04-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-04-24

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-04-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-05-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-05-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-05-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-05-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-05-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-06-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-06-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Kontos	ACP-06-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-06-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-06-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tempo SC Ultra	ACP-06-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-06-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Baythroid XL	ACP-07-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-07-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Kontos	ACP-07-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Movento	ACP-07-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Sevin SL	ACP-07-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tempo SC Ultra	ACP-07-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tombstone	ACP-07-26

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Baythroid XL	ACP-12-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Danitol 2.4 EC Spray	ACP-12-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Movento	ACP-12-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Sevin SL	ACP-12-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Tombstone	ACP-12-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-14-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-14-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-14-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-14-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-14-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-15-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-15-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-15-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-15-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-15-27

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-31-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-31-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Movento	ACP-31-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-31-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-31-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-32-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-32-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Movento	ACP-32-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-32-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-32-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-19-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-19-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-19-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-19-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-19-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-20-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-20-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-20-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-20-24

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-20-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-21-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-21-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-21-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-21-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-21-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-22-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-22-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-22-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-22-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-22-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-28-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-28-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-28-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-28-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-28-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-29-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-29-11

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Kontos	ACP-29-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-29-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-29-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tempo SC Ultra	ACP-29-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-29-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Baythroid XL	ACP-30-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Danitol 2.4 EC Spray	ACP-30-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Kontos	ACP-30-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Movento	ACP-30-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Sevin SL	ACP-30-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tempo SC Ultra	ACP-30-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tombstone	ACP-30-26
Exotic Fruit Flies	Chemical	Soil Application - Drench	Tank Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Diazinon AG500	FF-02
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Merit 75 WSP	PDCP-35
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-63
Japanese Beetle	Chemical	Soil Application – Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Admire Pro	PDCP-01
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Alias 4F	PDCP-02
Asian Citrus Psyllid	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential	CoreTect Tree & Shrub Tablets Insecticide	PD/EP-E-01
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential (Citrus)	CoreTect Tree & Shrub Tablets Insecticide	PDCP-19

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Interior Quarantine	Small, Medium, and most Large Nurseries	CoreTect Tree & Shrub Tablets Insecticide	PDCP-18
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Production Agriculture	Grandlure	IPC-Tr-01
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Residential	Grandlure	IPC-Tr-02
European Grapevine Moth	Chemical	Trapping	Red Delta Trap	Detection	Production Agriculture, Residential	n/a	n/a
European Pine Shoot Moth	Chemical	Trapping	Pherocon IIC Trap	Detection	Nurseries	n/a	n/a
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Production Agriculture	SSM Sex Pheromone	PD/EP-DTr-09
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Residential	SSM Sex Pheromone	PD/EP-DTr-10
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Production Agriculture	Sirex Lure	PD/EP-DTr-05
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Residential	Sirex Lure	PD/EP-DTr-06
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Agricultural and Residential	FT-Methyl Eugenol	PD/EP-DTr-01
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-02
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Production Agriculture	FT-Methyl Eugenol	PD/EP-DTr-03
Fruit Fly	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-04
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-01
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-02
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-03
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-04
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Residential	Dibrom Concentrate	PD/EP-Etr-05
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Production Agriculture	Dibrom Concentrate	PD/EP-Etr-06
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Production Agriculture	STATIC Spinosad ME	PD/EP-Etr-07
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Rural	STATIC Spinosad ME	PD/EP-Etr-08
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-07
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-08
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-11

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-12
Asian Citrus Psyllid	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Fruit Stripping	Manual	Eradication	Residential, Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Eradication	Residential	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Eradication	Residential	n/a	n/a
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Host Removal	Landscaping Equipment	Interior Quarantine	Shipping Container	n/a	n/a
Gypsy Moth	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture and Natural Areas	n/a	n/a
Pink Bollworm	Physical	Host Removal	Plow	Control	Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Physical	Inspection	Visual/Field Sampling Equipment	Detection	Residential, Production Agriculture, Citrus Nurseries	n/a	n/a
Japanese Beetle	Physical	Inspection	Visual	Detection	Airports	n/a	n/a
Karnal bunt	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	All Nurseries	n/a	n/a
Plum Pox Potyvirus	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Potato Cyst Nematode	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Pest Removal	Hot Water Treatment	Interior Quarantine	All Nurseries	n/a	n/a
Gypsy Moth	Physical	Pest Removal	Manual	Eradication	Residential	n/a	n/a
Asian Citrus Psyllid	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Boll Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Burrowing and Reniform Nematodes	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cedar-Apple Rust	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cereal Leaf Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Chestnut Bark and Oak Wilt Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Citrus Tristeza Virus	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Colorado Potato Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cornstalk and Sugarcane Borers	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Date Palm Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
European Corn Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
European Grapevine Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
European Pine Shoot Moth	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Gypsy Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Japanese Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Lethal Yellowing of Palm	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Light Brown Apple Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Persimmon Root Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Pink Bollworm	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Plum Curculio and Blueberry Maggot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Walnut and Pecan Pests	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a

Table 3-2. Proposed Program Activities - Sorted by Management Category

Pest	Management Category	Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Assessment Scenario Code
Asian Citrus Psyllid	Physical	Trapping	Yellow Panel Trap	Detection	Residential, Citrus Nurseries, Airports, Markets, Fruit Processing Facilities	n/a	n/a
Cereal Leaf Beetle	Physical	Trapping	Sweep Net	Detection	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Trapping	McPhail Trap	Eradication	Residential, Production Agriculture	Torula Yeast + Borax	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Detection	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Interior Quarantine	All Nurseries	n/a	n/a

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Table 3-3

Proposed Program Activities – Sorted by Pest Project Type

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Biological	Biological Control Agent Release	Manual	Control	Residential, Production Agriculture	n/a	n/a
Brown Marmorated Stink Bug	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Cereal Leaf Beetle	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Glassy Winged Sharp Shooter	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Gypsy Moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture and Residential	n/a	n/a
Olive Psyllid	Biological	Biological Control Agent Release	Manual	Control	Production Agriculture	n/a	n/a
Exotic Moths – Various Species	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Control	Residential	DiPel Pro DF	PD/EP-E-02
Exotic Fruit Flies	Biological	Sterile Insect Technique	Aircraft	Control	Production Agriculture	n/a	n/a
Pink Bollworm	Biological	Sterile Insect Technique	Aircraft	Control	Production Agriculture	n/a	n/a
Pink Bollworm	Physical	Host Removal	Plow	Control	Production Agriculture	n/a	n/a
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Production Agriculture	Grandlure	IPC-Tr-01
Boll Weevil	Chemical	Trapping	Boll Weevil Scout Trap	Detection	Residential	Grandlure	IPC-Tr-02
European Grapevine Moth	Chemical	Trapping	Red Delta Trap	Detection	Production Agriculture, Residential	n/a	n/a
European Pine Shoot Moth	Chemical	Trapping	Pherocon IIC Trap	Detection	Nurseries	n/a	n/a
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Production Agriculture	SSM Sex Pheromone	PD/EP-DTr-09
Exotic Moths - Various Species	Chemical	Trapping	Milk Carton Trap	Detection	Residential	SSM Sex Pheromone	PD/EP-DTr-10
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Production Agriculture	Sirex Lure	PD/EP-DTr-05

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Exotic Wood Boring Beetles and Wasps	Chemical	Trapping	Lindgren Funnel Trap	Detection	Residential	Sirex Lure	PD/EP-DTr-06
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Agricultural and Residential	FT-Methyl Eugenol	PD/EP-DTr-01
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-02
Exotic Fruit Flies	Chemical	Trapping	Jackson Trap	Detection	Production Agriculture	FT-Methyl Eugenol	PD/EP-DTr-03
Fruit Fly	Chemical	Trapping	Jackson Trap	Detection	Residential	FT-Methyl Eugenol	PD/EP-DTr-04
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-07
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-08
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Production Agriculture	Dual Lure	PD/EP-DTr-11
Japanese Beetle	Chemical	Trapping	Japanese Beetle Trap	Detection	Residential	Dual Lure	PD/EP-DTr-12
Asian Citrus Psyllid	Physical	Inspection	Visual/Field Sampling Equipment	Detection	Residential, Production Agriculture, Citrus Nurseries	n/a	n/a
Japanese Beetle	Physical	Inspection	Visual	Detection	Airports	n/a	n/a
Karnal bunt	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Plum Pox Potyvirus	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Potato Cyst Nematode	Physical	Inspection	Field Sampling Equipment	Detection	Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Physical	Trapping	Yellow Panel Trap	Detection	Residential, Citrus Nurseries, Airports, Markets, Fruit Processing Facilities	n/a	n/a
Cereal Leaf Beetle	Physical	Trapping	Sweep Net	Detection	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Detection	Production Agriculture	n/a	n/a
Asian Citrus Psyllid	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra Insecticide	ACP-25
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	DiPel Pro DF	PD/EP-E-02
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Merit 75 WSP	PDCP-34
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tempo Ultra WP	PDCP-53
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	GF-120-Naturalyte Fruit Fly Bait	FF-03

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Fruit)	Malathion 8 Aquamul	FF-06
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Sevin SL	PDCP-44
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tempo SC Ultra	PDCP-52
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Tristar 30 SG	PDCP-59
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Sevin SL	PD/EP-E-06
Japanese Beetle	Chemical	Foliar Spray	Backpack Sprayer or Mechanically Pressurized Sprayer	Eradication	Residential	Tempo SC Ultra	PD/EP-E-07
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	Residential	Isomate EGVM	n/a
European Grapevine Moth	Chemical	Mating Disruption	Pheromone Dispenser	Eradication	All Nurseries	Isomate EGVM	n/a
Asian Citrus Psyllid	Chemical	Pesticide Spot Application	Tank Sprayer	Eradication	Residential	RoundUp Original	PD/EP-E-05
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Eradication	Residential (Citrus)	Merit 75 WSP	PDCP-35
Japanese Beetle	Chemical	Soil Application – Drench	Mechanically Pressurized Sprayer	Eradication	Residential	Merit 2F	PD/EP-E-04
Asian Citrus Psyllid	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential	CoreTect Tree & Shrub Tablets Insecticide	PD/EP-E-01
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Eradication	Residential (Citrus)	CoreTect Tree & Shrub Tablets Insecticide	PDCP-19
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-01
Exotic Fruit Flies	Chemical	Trapping	Methyl Eugenol Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-02
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Production Agriculture	Dibrom 8 Emulsive	PD/EP-Etr-03
Exotic Fruit Flies	Chemical	Trapping	Cuelure Jackson Trap	Eradication	Residential	Dibrom 8 Emulsive	PD/EP-Etr-04
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Residential	Dibrom Concentrate	PD/EP-Etr-05
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Eradication	Production Agriculture	Dibrom Concentrate	PD/EP-Etr-06
Exotic Fruit Flies	Physical	Fruit Stripping	Manual	Eradication	Residential, Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Eradication	Residential	n/a	n/a

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Eradication	Residential	n/a	n/a
Gypsy Moth	Physical	Pest Removal	Manual	Eradication	Residential	n/a	n/a
Exotic Fruit Flies	Physical	Trapping	McPhail Trap	Eradication	Residential, Production Agriculture	Torula Yeast + Borax	n/a
Boll Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Burrowing and Reniform Nematodes	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cedar-Apple Rust	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cereal Leaf Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Chestnut Bark and Oak Wilt Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Colorado Potato Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Cornstalk and Sugarcane Borers	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
European Corn Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
European Pine Shoot Moth	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Japanese Beetle	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Lethal Yellowing of Palm	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Persimmon Root Borer	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Plum Curculio and Blueberry Maggot	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Walnut and Pecan Pests	Physical	Restricted Movement	Regulatory	Exterior Quarantine	Border Crossing Stations	n/a	n/a
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-05
Exotic Fruit Flies	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-07

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-03
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 30 SG	PDCP-04
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-05
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 30 SG	PDCP-06
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Assail 70 WP	PDCP-07
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-09
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Assail 70 WP	PDCP-10
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-12
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-13
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-14
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-15
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Bulk Citrus	Baythroid XL	PDCP-16
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Baythroid XL	PDCP-17
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Danitol 2.4 EC Spray	PDCP-20
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-21
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Decathlon 20 WP	PDCP-22
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Discus	PDCP-25
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-26
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Discus	PDCP-27
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-28

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Dursban 50W	PDCP-29
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-30
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Lorsban 4E	PDCP-31
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-32
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Mavrik Aquaflow	PDCP-33
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-36
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Orthene 97	PDCP-37
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	PyGanic Crop Protection EC 1.4	PDCP-40
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-41
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-42
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-02
European Grapevine Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	All Nurseries	Conserve SC Turf and Ornamental	EGVM-03
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	DuPont Acelepryn	EGVM-04
European Grapevine Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	All Nurseries	Intrepid 2F	EGVM-01
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	GF-120-Naturalyte Fruit Fly Bait	FF-04
Exotic Fruit Flies	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Production Agriculture	Malathion 8 Aquamul	FF-08
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Assail 70 WP	PDCP-08
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Astro	PDCP-11

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Bulk Citrus	Renounce 20 WP	PDCP-43
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Airblast Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-45
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-46
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Sevin SL	PDCP-47
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-48
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Talstar S Select	PDCP-49
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-50
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tame 2.4 EC Spray	PDCP-51
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-54
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Triact 70	PDCP-55
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 30 SG	PDCP-56
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-57
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 30 SG	PDCP-58
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-60
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Tristar 8.5 SL	PDCP-61
Glassy-Winged Sharpshooter	Chemical	Foliar Spray	Aircraft	Interior Quarantine	Large Production Nurseries	Tristar 8.5 SL	PDCP-62
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Conserve SC Turf and Ornamental	LBAM-01
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	DiPel DF	LBAM-02

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DiPel Pro DF	LBAM-03
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	DuPont Acelepryn	LBAM-04
Light Brown Apple Moth	Chemical	Foliar Spray	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Field Crop (LBAM)	Entrust Naturalyte Insect Control	LBAM-05
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Field Crop (LBAM)	Intrepid 2F	LBAM-06
Light Brown Apple Moth	Chemical	Foliar Spray	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Scimitar GC	LBAM-07
Asian Citrus Psyllid	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	ACP-16
Exotic Fruit Flies	Chemical	Fumigation	Sea Van/Fumigation Chamber	Interior Quarantine	Sea Van/Fumigation Chamber	Meth-O-Gas Q	FF-01
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-01-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-01-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-01-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-01-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-01-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-02-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-02-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-02-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-02-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-02-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Baythroid XL	ACP-03-09

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-03-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Movento	ACP-03-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Sevin SL	ACP-03-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Admire Pro, Tombstone	ACP-03-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Baythroid XL	ACP-04-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Danitol 2.4 EC Spray	ACP-04-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Movento	ACP-04-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Sevin SL	ACP-04-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Admire Pro, Tombstone	ACP-04-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-05-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-05-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-05-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-05-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-05-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Baythroid XL	ACP-06-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-06-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Kontos	ACP-06-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Movento	ACP-06-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Sevin SL	ACP-06-23

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tempo SC Ultra	ACP-06-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Alias 2F, Tombstone	ACP-06-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Baythroid XL	ACP-07-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Danitol 2.4 EC Spray	ACP-07-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Kontos	ACP-07-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Movento	ACP-07-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Sevin SL	ACP-07-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tempo SC Ultra	ACP-07-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Alias 2F, Tombstone	ACP-07-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Baythroid XL	ACP-12-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Danitol 2.4 EC Spray	ACP-12-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Movento	ACP-12-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Sevin SL	ACP-12-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Flagship 25WG, Tombstone	ACP-12-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-14-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-14-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-14-17

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-14-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-14-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Baythroid XL	ACP-15-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Danitol 2.4 EC Spray	ACP-15-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Movento	ACP-15-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Sevin SL	ACP-15-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Marathon II Greenhouse & Nursery Insecticide, Tombstone	ACP-15-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-31-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-31-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Movento	ACP-31-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-31-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-31-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Baythroid XL	ACP-32-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Danitol 2.4 EC Spray	ACP-32-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Movento	ACP-32-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Sevin SL	ACP-32-24

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Nuprid 4.6F Pro, Tombstone	ACP-32-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-19-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-19-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-19-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-19-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-19-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Baythroid XL	ACP-20-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-20-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Movento	ACP-20-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Sevin SL	ACP-20-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Safari 20 SG, Tombstone	ACP-20-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-21-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-21-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-21-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-21-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-21-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Baythroid XL	ACP-22-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Danitol 2.4 EC Spray	ACP-22-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Movento	ACP-22-17

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Sevin SL	ACP-22-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Small, Medium, and most Large Nurseries	Safari 20 SG, Tombstone	ACP-22-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-28-08
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-28-10
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-28-18
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-28-24
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-28-27
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Baythroid XL	ACP-29-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Danitol 2.4 EC Spray	ACP-29-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Kontos	ACP-29-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Movento	ACP-29-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Sevin SL	ACP-29-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tempo SC Ultra	ACP-29-25
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Irrigation Equipment	Interior Quarantine	Large Production Nurseries	Widow, Tombstone	ACP-29-26
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Baythroid XL	ACP-30-09
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Danitol 2.4 EC Spray	ACP-30-11
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Kontos	ACP-30-13
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Movento	ACP-30-17
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Sevin SL	ACP-30-23
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tempo SC Ultra	ACP-30-25

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Asian Citrus Psyllid	Chemical	Soil Application - Drench	Backpack Sprayer, Mechanically Pressurized Sprayer, or Groundboom	Interior Quarantine	Small, Medium, and most Large Nurseries	Widow, Tombstone	ACP-30-26
Exotic Fruit Flies	Chemical	Soil Application - Drench	Tank Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Diazinon AG500	FF-02
Glassy-Winged Sharpshooter	Chemical	Soil Application - Drench	Mechanically Pressurized Sprayer	Interior Quarantine	Small, Medium, and most Large Nurseries	Quali-Pro Imidacloprid 2F	PDCP-63
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Admire Pro	PDCP-01
Glassy-Winged Sharpshooter	Chemical	Soil Application - Injection	Soil Probe	Interior Quarantine	Large Production Nurseries	Alias 4F	PDCP-02
Glassy-Winged Sharpshooter	Chemical	Soil Application - Tablet Insertion	Manual	Interior Quarantine	Small, Medium, and most Large Nurseries	CoreTect Tree & Shrub Tablets Insecticide	PDCP-18
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Production Agriculture	STATIC Spinosad ME	PD/EP-Etr-07
Exotic Fruit Flies	Chemical	Trapping	Male Attractant Technique	Interior Quarantine	Rural	STATIC Spinosad ME	PD/EP-Etr-08
Asian Citrus Psyllid	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Cleaning	Power Washer	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Host Removal	Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Host Removal	Landscaping Equipment	Interior Quarantine	Shipping Container	n/a	n/a
Gypsy Moth	Physical	Host Removal	Landscaping Equipment/Heavy Truck	Interior Quarantine	Production Agriculture and Natural Areas	n/a	n/a
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	Production Agriculture	n/a	n/a
Light Brown Apple Moth	Physical	Inspection	Visual	Interior Quarantine	All Nurseries	n/a	n/a
European Grapevine Moth	Physical	Pest Removal	Hot Water Treatment	Interior Quarantine	All Nurseries	n/a	n/a
Asian Citrus Psyllid	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Citrus Tristeza Virus	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Date Palm Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
European Grapevine Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Exotic Fruit Flies	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Gypsy Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a

Table 3-3. Proposed Program Activities - Sorted by Pest Project Type

Target Pest	Management Category	Management Activity	Application Equipment/Method	Pest Project Type	Setting	Chemical Product	Risk Analysis Scenario Code
Light Brown Apple Moth	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Ozonium Root Rot	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Peach Mosaic Disease	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Pink Bollworm	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Sweet Potato Weevil	Physical	Restricted Movement	Regulatory	Interior Quarantine	Production Agriculture	n/a	n/a
Glassy-Winged Sharpshooter	Physical	Trapping	Yellow Panel Trap	Interior Quarantine	All Nurseries	n/a	n/a

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Chapter 4
PRIOR CEQA COVERAGE

4.1 Introduction

In compliance with CEQA requirements for future Statewide Program activities (as described in Chapter 2, Proposed Program Description, and Chapter 3, Proposed Program Activities), this PEIR presents reasonably foreseeable pest prevention and management activities, and updates compliance requirements for existing pest prevention and management programs as needed. This PEIR is built on and reflects existing CEQA documents for Statewide Program activities that are ongoing. It also updates and integrates the various activities into a comprehensive program, and it provides a consolidated set of updated management practices (MPs) and mitigation measures using the most current technology and scientific information. If CDFA approves the Proposed Program, these MPs and mitigation measures would serve as a comprehensive framework for Proposed Program activities, replacing those identified in the previous CEQA documents. Mitigation measures from the previous CEQA documents are listed in Table 4-1 (included at the end of this chapter) for reference.

CDFA previously certified the following CEQA documents, prepared for the existing Statewide Program:

- Japanese Beetle Environmental Impact Report (EIR) (May 1974) (CDFA 1974);
- Gypsy Moth EIR (January 1992) (CDFA 1992);
- Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR (March 1993) (CDFA 1993);
- Exotic Fruit Fly Eradication Program using Aerial Application of Malathion and Bait EIR (April 1994) (CDFA 1994);
- Pierce's Disease Control Program EIR (CDFA 2002, CDFA 2003); and
- Light Brown Apple Moth Eradication Program EIR (March 2010) (CDFA 2009, CDFA 2010).

These CEQA documents evaluated numerous pest prevention and management activities conducted by CDFA for some of the pests covered under the Proposed Program. These documents are incorporated herein by reference except for those portions of the documents found inadequate by courts. These documents are summarized below.

4.2 Prior CEQA Coverage for CDFA Activities

4.2.1 Japanese Beetle EIR

Adult Japanese beetles (*Popillia japonica* Newman) feed on over 300 plants in 79 plant families including many agricultural crops. Usually one generation hatches per year, with up to 60 beetles in a hatching. Adults emerge from May to September and feed on foliage, flowers, and fruit. An EIR for pest control activities on the Japanese beetle was completed in May 1974. Three main treatment methods were described and evaluated:

1. Ground application of a broad-spectrum, granular chlordane insecticide (Chlordane 25G) to all irrigated grass sod, such as lawns, permanent pastures, and flower beds, for larval control using power driven equipment and/or hand application equipment.
2. Foliar applications of the insecticide carbaryl (Sevin®) using truck-mounted, hydraulic spray equipment.
3. When excessive mite populations occur, a miticide (Kelthane) added to the carbaryl spray mix.

The environmental impacts resulting from use of these treatment methods were evaluated in the 1974 EIR. This PEIR evaluates additional physical and chemical management approaches to Japanese beetle eradication and control. Applications of Chlordane 25G and Kelthane are not included in the Proposed Program or evaluated in this PEIR because they are no longer used. This PEIR evaluates inspection, restricted movement, pheromone lure trapping, pesticide soil drench, and pesticide foliar application related to Japanese beetle detection and management.

4.2.2 Gypsy Moth EIR

The gypsy moth (*Lymantria dispar*) is a large, white flightless female and a smaller, gray-flighted male moth with a larval stage that is destructive to plants. It is a pest of hardwood forest and shade trees, and can defoliate millions of acres of forest when populations are high. Control efforts for the gypsy moth have been ongoing since 1977 in California. In 1992, an EIR was prepared by CDFA to evaluate the potential effects of eradication of the gypsy moth.

The following treatment methods for gypsy moth eradication were evaluated in the 1992 EIR:

- Mass trapping, which involves the use of high numbers of traps at a density of three to nine per acre to capture adult males before they are able to locate females and mate, using the Gypsy moth pheromone Disparlure®.

- Mating disruption, or the release of a synthetic pheromone at a high enough concentration to obscure the pheromone emitted by female moths (the mating disruption techniques use the Gypsy moth pheromone Disparlure®, which is applied through a laminated polymeric tape, manually attached to trees or flakes infused with moth pheromone).
- Physical and mechanical techniques, including the use of physical barriers or the destruction of egg masses by hand (this can be labor intensive, costly, and ineffective except in limited situations).
- Sterile insect techniques, where large numbers of sterile moths are released to mate with native females (this produces infertile eggs).
- Microbial insecticides, either *Bacillus thuringiensis kurstaki* (Btk; applied on the ground or aerially) or nuclear polyhedrosis virus (Gypchek®) (ground applications).
- Chemical pesticides, which include Carbaryl (Sevin®), as a ground application and diflubenzuron (Dimlin®), as an aerial or ground application.
- Biological control, or the use of parasites to reduce gypsy moth populations (this works best for low-level infestations, but generally is ineffective in preventing populations from building to higher densities).
- Tree banding, or the use of sticky or slippery bands fastened around a tree to prevent larval movement on the tree.
- Host elimination, or removal of all suitable host vegetation in an infested area (this is destructive and is not a total eradication technique).

The 1992 EIR found two significant and unavoidable impacts from the eradication of the gypsy moth. These were the inconvenience, noise, and disruption caused to residents within the treatment area, and the mortality of non-target insect species. Mitigation measures were adopted for both of these impacts. These mitigation measures are listed in Table 4-1.

Gypsy moth mass trapping, mating disruption, sterile insect technique, use of Carbaryl insecticide, aerial spraying, and biological control techniques are not considered further in this PEIR because these activities are no longer conducted. Egg mass removal and ground-based pesticide (with the microbial insecticide Btk) foliar applications related to gypsy moth management are considered and updated in this PEIR.

4.2.3 Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR

Exotic fruit fly pests include the Caribbean, Mediterranean, melon, Mexican, Oriental, and peach fruit flies. These and other fruit fly species are major agricultural pests in California and the rest of the world. In April 1993, CDFA prepared a Final PEIR for eradicating infestations of exotic fruit flies in California, using male annihilation and allied methods. The 1993 PEIR also evaluated the potential effects of not eradicating infestations of exotic fruit flies.

The treatment methods used for exotic fruit fly eradication that were evaluated in the 1993 PEIR include physical, cultural, chemical, and biological treatment methods, specifically:

- Physical methods:
  - Host removal, involving permanent removal of host plants by hand;
  - Fruit stripping, or stripping of all fruit from host trees by hand;
- Cultural methods:
  - The collection and destruction of fallen or damaged fruit and the use of trap crops, or plants purposely grown to attract the fruit fly, then sprayed to kill fruit flies present (these methods are not currently used because they have been found ineffective in controlling fruit flies.);
- Chemical methods:
  - Male annihilation, using small amounts of an attractant (methyl-eugenol, Cuelure®, or trimedlure) to lure male flies to bait stations and a pesticide Naled (trade name Dibrom®) mixed with the bait to kill male fruit flies after ingestion (the lure mixture includes a thickening agent, Minugel®, that is applied to utility poles, street trees and other unpainted surfaces, such as fences, using hand-held pressurized tree marking guns);
  - Ground bait spray, a ground-based foliar application of malathion bait sprays using backpack spray equipment;
  - Soil drench of infected trees with Diazinon using hydraulic spray equipment;
- Biological treatment methods:
  - Sterile insect technique, involving the mass rearing of fruit flies (the flies are irradiated in the pupal stage and released as sterile adults into areas where fruit fly populations are established. Mating between sterile flies and established populations results in infertile eggs, which reduces the population of infesting fruit flies).

The methods for the eradication of fruit fly infestations were found to have two transitory environmental impacts, limited to the area treated for fruit flies. The first was the temporary disturbance of residents of the eradication areas, including property access barriers and human exposure to pesticide residues. The second impact was the temporary loss of non-target arthropods in treatment areas, which could result in temporary changes in arthropod communities, until re-colonization of non-target species occurs over time. Mitigation measures were adopted for both of these impacts. These mitigation measures are listed in Table 4-1. The exposure of residents in eradication areas to pesticide residues was evaluated and found to have less-than-significant health impacts.

All of the activities described above with the exception of cultural methods, but including fruit fly pheromone lure and trapping, inspection, host removal (destruction of fruit and nursery stock), fruit stripping, parapheromone use, pesticide use, sterile insect techniques, biological control agents, and restricted movement, were considered and have been updated in this PEIR.

4.2.4 Exotic Fruit Fly Eradication Program using Aerial Application of Malathion and Bait EIR

In 1994, CDFA prepared a PEIR for the exotic fruit fly eradication program using the aerial application of malathion and bait. Currently, CDFA does not use the methods outlined in the 1994 EIR for residential fruit fly eradication projects. Instead, CDFA has opted to use the methods outlined above in Section 4.2.3, Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR for residential fruit fly eradication projects, as these are less controversial and more effective.

All treatment options in the 1994 PEIR involved the aerial application of pesticides, specifically the application of malathion mixed with a protein bait. The aerial coverage was intended for use when infestations were too large to treat by ground applications within a biologically meaningful time frame, sufficient numbers of high quality sterile flies were not available, or other eradication methods failed. Aerial applications were expected to occur through a mixture of 2.8 ounces or less of malathion applied with 9.6 fluid ounces of bait applied per acre. Rotary and fixed-wing aircraft were to be used to apply the malathion and bait mixture.

The environmental impacts identified in the 1994 EIR are similar to those described above in Section 4.2.3, Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR, namely the temporary disturbance of residents in treatment areas and along aircraft flight paths, and the temporary loss of non-target organisms. As part of the aerial spraying, residents were expected to be exposed to pesticide residue. The health effects of exposure were evaluated in the 1994 EIR by CDFA and the California Department of Health Services (now known as the California Department of Public Health), and were found to be less than significant. Non-target insects and other arthropods were to be killed by application of malathion. The EIR found that populations would likely recolonize after pesticide residue decreased to nontoxic levels. Malathion also was possibly going to be directly introduced through aerial spraying into ponds or streams. Aquatic organisms were determined to be potentially harmed by hazardous concentrations of malathion in unprotected shallow water areas with low flows or volumes of water. Mitigation measures were developed for both of these impacts. These mitigation measures are listed in Table 4-1.

For fruit fly treatments, aerial and ground applications of malathion along with protein bait applied in a non-residential, agricultural setting are considered in this PEIR as they relate to quarantine activities. Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review.

4.2.5 Pierce's Disease Control Program EIR

In 2003, CDFA certified the PDCP EIR. The intent of the 2003 EIR was to assess the potential impacts associated with implementation of the PDCP directly by CDFA (as the lead agency) and indirectly (under CDFA's guidance) by county agricultural commissioners or other local public entities.

The 2003 PEIR analyzed the potential environmental impacts of the PDCP. The five central elements of the PDCP included: public outreach, a statewide survey, containment of the spread, local management/rapid response, and research. Through these elements, the PDCP sought to raise awareness regarding Pierce's disease, notify the public of PDCP activities, find and monitor glassy-winged sharpshooter (GWSS) infestations and populations, prevent and slow the spread of Pierce's disease, quickly treat new infestations, and continue a collaborative research program, including more than 60 research projects created under the regulatory program. The 2003 EIR impact analysis focused on five resource topics: Agriculture and Land Use (combined), Biological Resources, Hazards, and Water Quality. In addition to the selected approach, the 2003 EIR considered a No Project alternative and three project alternatives, in compliance with CEQA's requirements related to evaluation of alternatives. The 2003 EIR determined that all potential environmental impacts of the PDCP would be less than significant and would not require mitigation.

Legal Challenge to the 2003 PDCP EIR

CDFA's inclusion of aspects of the PDCP in this PEIR stems from a legal challenge to the 2003 EIR (*Californians for Alternatives to Toxics et al. v. California Department of Food and Agriculture* [San Francisco County Super. Ct., 2004, No. CPF03503249; First District Court of Appeal, 2005, Case No. A107088]). The *Californians for Alternatives to Toxics* complaint contended that the 2003 PEIR did not independently evaluate the impacts of the PDCP's proposed statewide use of multiple pesticides. The trial court disagreed, and the petitioners subsequently appealed the decision to the California Court of Appeal for the First District.

In December 2005, the Court of Appeal issued an opinion in the case (see Appendix G). The court's opinion focused in particular on the adequacy of the 2003 EIR's evaluation of the environmental impacts for the application of pesticides. The petitioners argued that the 2003 EIR did not evaluate the impacts of the PDCP's proposed use of multiple pesticides, but instead impermissibly relied on the CDPR registration process to conclude that no significant adverse impacts would occur.

The Court of Appeal found that the 2003 EIR improperly relied on CDPR's pesticide regulatory scheme as a substitute for performing an independent evaluation of the environmental impacts of using pesticides under the PDCP. The court determined that the containment and rapid response elements of the 2003 EIR were inadequate. The containment element was intended to prevent or slow the spread of Pierce's disease by regulating the movement of commodities that may harbor GWSS. The rapid response element focused on immediate action to minimize the spread of newly discovered GWSS infestations by conducting a delimitation survey, consulting with wildlife agencies to avoid jeopardy to threatened and endangered species, and treatment of infested properties. Both the containment and rapid response elements would use pesticides that were registered for leafhopper control.

The December 2005 Court Decision required additional or revised description or analysis of the following, with the goal of providing an independent analysis of the environmental impacts from the application of pesticides under the PDCP, to comply with CEQA:

- disclosure of all registered pesticides suitable for GWSS control in the program description;

- inclusion of baseline data on existing pesticide use in the cumulative impacts discussion;
- inclusion of information on the full pesticide formulations, if the product contains toxic inert ingredients, and full formula testing information as available;
- evaluation of the effects of pesticides on non-target organisms and organic farming; and
- execution of a thorough risk assessment of all pesticides to be used in the PDCP's rapid response and containment programs.

The December 2005 Court Decision generally left the scope and nature of the environmental review to be completed under CEQA to CDFA's discretion, which would be reviewed and approved by the Superior Court. Each of the revised topics is discussed in the following section.

PDCP Activities Re-evaluated in this Final PEIR

CDFA has prepared this PEIR in compliance with the requirements of the December 2005 Court Decision for the 2003 EIR. Specifically, pesticide use for the PDCP and all other individual programs under the scope of the Proposed Program has been evaluated following the requirements mandated by the Court Decision. Pesticide use that was included in the 2003 EIR has been refined, in accordance with the pesticide use scenarios that are described in Chapter 3, Proposed Program Activities, and is re-evaluated in this PEIR.

Each of the revised topics from the preceding section are addressed in this PEIR, as shown in Table 4-1.

Table 4-1. Resolution to Deficiencies Identified in the 2003 PDCP EIR

Identified Deficiency in the 2003 PDCP EIR	Deficiency Resolution in this PEIR
The 2003 EIR did not disclose all registered pesticides suitable for GWSS control in the Program Description.	The Ecological Risk Assessment and Human Health Risk Assessment prepared for this PEIR (Appendices A and B, respectively), which evaluates risks associated with pesticides used in the PDCP rapid response and containment programs, provides the registered pesticides that would be authorized by CDFA for GWSS control under the Proposed Program, and includes ingredient lists and full pesticide formulations as available.
The 2003 EIR baseline description using the following information was inadequate: total pounds of pesticide active ingredients reported used in 2000 and sold in 1999, as well as pounds used in the emergency program statewide and per county. The baseline description did not disclose environmental impacts from existing pesticide use in California. CDFA did note that all	Baseline data on existing pesticide use is presented and discussed in Section 5.4.2, Pesticide Use in Residential, Commercial, Natural, and Agricultural Environments in California. This discussion establishes a cumulative baseline on which to evaluate cumulative impacts from pesticide use. Specifically, the cumulative baseline description provides: an overview of what is

Identified Deficiency in the 2003 PDCP EIR	Deficiency Resolution in this PEIR
pesticides applied by growers and licensed pesticide applicators are reported to county agricultural commissioners, and provided a Web site for accessing those reports. But the 2003 EIR did not, as a baseline on existing pesticide use, show where those applications occur, what pesticides are involved, and amounts. Furthermore, the information on treatments under the emergency program is not sufficiently detailed to show agricultural versus nonagricultural treatments or specific locations or number of treatments per location. The cumulative impacts analysis could not be completed properly because of insufficient baseline data.	considered cumulative pesticide use for the Statewide Program; what pesticide chemicals are used; the location of cumulative pesticide use; descriptions of past, present, and future pesticide use activities related to the Statewide Program; and the current quantity of cumulative pesticide use, including an estimate of the Statewide Program's incremental contribution. Information on past and present cumulative pesticide use primarily includes details on the annual quantity of active ingredients used, sorted by California counties, the plants and/or commodities treated, and general use categories (i.e., production agriculture, post-harvest fumigation, structural pest control, landscape maintenance, and all others). The primary data source available is the California Department of Pesticide Regulation's (CDPR) pesticide use reporting database. This cumulative impact analysis presented in Chapter 5, Cumulative Scenario uses information from pesticide use reports from prior years.
Although the names and concentrations of the active ingredients used in pesticides were listed in the 2003 EIR, the inert ingredients were not listed with the same level of detail. The 2003 EIR included a general description of inert ingredients (known as adjuvants and surfactants) that are added to pesticide products to enhance or aid performance or coverage. Full formulations of pesticide products frequently are confidential and protected as trade secrets. The 2003 EIR did not include an analysis or listing of the toxicity effects from full formulations of pesticide products, including inert ingredients such as adjuvants and surfactants.	The Ecological Risk Assessment and Human Health Risk Assessment prepared for this PEIR (Appendices A and B, respectively) lists and describes the inert ingredients of toxicological concern to the extent that this information is publicly available. Certain additives are considered proprietary and are legally protected from public disclosure. The Office of Environmental Health Hazard Assessment and CDPR have access to this information, and CDFA consulted with these agencies as part of the risk assessment. The Human Health and Ecological Risk Assessment also evaluates the human health and ecological risk of the full formulations of pesticide products, using publicly available information.
The 2003 EIR provided a deficient analysis of the effects of pesticides on non-target organisms. As described in the 2003 EIR, pesticide use may result in temporary reductions of beneficial insects, which could require increased pesticide use. The 2003 EIR mislabels this as an economic impact rather than an environmental one. The 2003 EIR also explains that the application of pesticides could result in a temporary withdrawal of organic certification for growers, also	The effects of pesticides on non-target organisms and on organic farming are evaluated in Section 6.3, Biological Resources. Section 6.1, Agricultural Resources and Economics, presents an analysis of the effects of pesticide use on beneficial insects and how this affects agricultural production, and also gives an evaluation of the impacts of the use of pesticides on organic certification. Section 6.1 includes information on the acreages of organic cropland, the distribution

Identified Deficiency in the 2003 PDCP EIR	Deficiency Resolution in this PEIR
mislabeling this as a purely economic impact rather than an environmental impact. Baseline data on the acreage or number of organic farms also was not provided.	of organic farming acreage, and the most common organic crops.
The 2005 Court of Appeal decision centered on the use of CDPR's conclusions to support environmental impacts in the 2003 EIR rather than providing an independent risk assessment of the pesticides that could be used in the PDCP's rapid response and containment programs.	The Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively) prepared for this PEIR evaluates the risks associated with pesticides used in the PDCP's rapid response and containment programs. The risk assessment provides the registered pesticides authorized by CDFA for GWSS control, an ingredients list, and full pesticide formulations as available, and presents a thorough evaluation of the risk of pesticides used in the PDCP's rapid response and containment programs.

PDCP Activities Found by the Court to Have Been Adequately Evaluated in the 2003 PDCP EIR

All other portions of the 2003 PDCP EIR were found to be adequately evaluated under CEQA. The December 2005 Court Decision found that the 2003 EIR considered a reasonable range of alternatives, and did not enjoin the activities under the PDCP. The description of the five elements of the PDCP—public outreach, a statewide survey, containment of the spread, local management/rapid response, and research—were not specifically evaluated and were not found to be inadequate in the December 2005 Court Decision.

Although a description of the range of activities under the PDCP is not required, these activities are described to the extent that this information is helpful in disclosing the scope of the Proposed Program. Accordingly, Chapter 2, Proposed Program Description re-introduces the PDCP and describes the PDCP in the greater context and organization of the Proposed Program, and generally describes the use of management approaches, including those available to the PDCP. Chapter 3, Proposed Program Activities provides a detailed description of the PDCP's specific future use of management approaches for detection, eradication, and control activities.

The adequacy of the evaluation of biological control agents was not discussed in the December 2005 Court Decision. The 2003 EIR described biological control agents in the Program Description and evaluated the use of non-native biological control agents in the Biological Resources section. The biological control agents that were evaluated were natural enemies of GWSS, specifically non-native parasitoids of GWSS eggs. Of the seven species of wasps currently approved for use by USDA for biological control, four species (i.e., *Gonatocerus ashmeadi, Gonatocerus fasciatus, Gonatocerus morrilli,* and *Gonatocerus triguttatus*) were described in the 2003 EIR. The three species currently used by CDFA for biological control (*Gonatocerus morrilli, Gonatocerus morgani, Gonatocerus triguttatus*) were evaluated in this Final PEIR as detailed in this Final PEIR's Section 3.2, Biological Management Activities.

In addition, this PEIR updates and evaluates non-chemical trapping, inspection, foliage removal, restricted movement, pesticide soil injection, pesticide tablet soil insertion, pesticide soil drench, pesticide ground application with backpack, ground boom sprayer or airblast, and pesticide aerial applications[1] related to Pierce's disease prevention and management.

4.2.6 Light Brown Apple Moth Eradication Program EIR

In 2010, CDFA certified a PEIR for the LBAM (*Epiphyas postvittana*) Eradication Program. In April 2010, two lawsuits were filed, challenging the adequacy of the PEIR under CEQA. The cases were consolidated for purposes of argument only. CDFA prevailed in the Sacramento County Superior Court, and the petitioners appealed the Superior Court's decision. As of the date of publication of this PEIR, a final decision on the adequacy of the LBAM Eradication PEIR has not been reached by the Third District Court of Appeal. The LBAM Eradication Program has not been enjoined by any court. The LBAM Eradication PEIR identified that the LBAM Eradication Program would continue until 2015, at which point LBAM was anticipated to be eradicated from California. Therefore, CEQA compliance for the LBAM Eradication Program will expire in 2015 (with the exception of quarantine activities; see below).

The program area includes all portions of California in which climatic conditions are suitable to LBAM, which includes all areas with elevations below 5,000 feet. This includes all 58 California counties with the exception of large portions of Alpine, Inyo, and Mono counties. The implementation strategy involves rapid detection of moth populations, followed by containment, suppression, and eradication through the release of sterile LBAM.

LBAM are detected using pheromone-baited sticky traps, following a trapping plan cooperatively implemented by CDFA and the U.S. Department of Agriculture (USDA). In areas where traps have not been set previously, detection trapping is extended as needed at a density of five traps per square mile. If LBAM is detected, delimitation trapping arrays are put into place at 100 traps per square mile in the core square mile and 25 traps per square mile in the adjacent 8 square miles. Additional detection inside any delimitation area or within a 3-mile radius in the time span of one life cycle triggers an eradication project (CDFA 2009). In an eradication project, traps are placed at nine traps per square mile and are baited with a pheromone lure, which is a mixture of (E)-11-tetradecenyl acetate (96 percent) and (9E, 11E)-9, 11-tetradecadienyl acetate (4 percent) (CDFA 2010).

Alternatives evaluated and analyzed in the 2010 PEIR included the use of biological control agents, mating disruption with pheromones, male moth attractants, and insecticides approved for use in organic systems by the National Organic Program. The biological control agents (BCAs) used are two species of stingless parasite wasps (*Trichogramma platerni* [presently released and established] and *Dolichogenidea tasmanica* [initial release

[1] Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review.

reasonably foreseeable and not yet established]), which are (for *T. platerni*) or would be (for *D. tasmanica*) released at 1,000,000 per square mile.

This PEIR does not re-evaluate the activities evaluated in the 2010 PEIR; these activities are conducted pursuant to the CEQA authorization granted by the 2010 PEIR. This PEIR instead evaluates quarantine-related activities which were not evaluated in the 2010 EIR, including inspection, host removal (destruction of fruit and nursery stock), the potential release of a BCA, and pesticide ground applications with backpack or tank sprayer related specifically to LBAM detection and control.

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Table 4-2. Prior CDFA CEQA Documents and Associated Adopted Mitigation Measures

Mitigation Measures from Prior CDFA CEQA Documents
1974 Japanese Beetle EIR
None
1992 Gypsy Moth EIR
A. Inconvenience, noise, and disruption of the treatment areas. This will be mitigated by: 1) Establishing project quarantines on the movement of host materials from an infested area. This will minimize the size of the area involved and number of people affected. 2) Using the method of pesticide application that least affects people. Aerial spraying will be done only if ground application is infeasible. 3) Treating the infestation using methods which provide the best probability of eradication. Successful eradication makes retreatment unnecessary. 4) Notifying residents prior to treatment. Aerial treatment requires written notification at least 72 hours before the first pesticide application. In a declared emergency, the time between notification and treatment may be shortened to 24 hours. 5) If host elimination is used, properties could be replanted with hosts after eradication is declared or with non-hosts at any time. B. Mortality of non-target arthropod species This will be mitigated by: 1) Establishing quarantines on the movement of host materials from an infested area. This minimizes the size of the treatment area by eliminating artificial spread of the pest. 2) Using narrow spectrum pesticides. Carbaryl, a broad spectrum pesticide, will be used only under limited circumstances such as on food crops and inanimate objects. Using diflubenzuron and *B.t.* enables the eradication of all gypsy moth larval stages while minimizing the impacts on non-target species. 3) When pesticides are applied, measures will be taken to minimize their impacts. These include use of ground sprays where feasible, use of buffer zones where necessary, tarping, and optimal timing of application. Optimal timing increases the efficacy of the treatment so fewer applications are needed. 4) When an eradication area includes the habitat of a threatened/endangered species, the avoidance measures identified in Appendix C will be implemented. These impact avoidance measures were developed in consultation with the California Department of Fish and Game (CDFG), the Trustee Agency for threatened/endangered species. A copy of the Memorandum of Understanding between CDFG and CDFA is provided in Appendix C of the 1992 Gypsy Moth EIR. Avoidance Measures from Appendix C of the 1992 Gypsy Moth EIR: • Shrews: No diflubenzuron will be used over these insectivores due to potential food chain disruption – limited foraging range.

Mitigation Measures from Prior CDFA CEQA Documents

- Bats: All tactics acceptable as they forage over areas far greater than our largest treatment area of ½ square mile.
- Rabbits, Hares, Sheep, Squirrels, Snails, Slugs: No effects from any spray materials.
- Water Birds, Beavers, Venomous Lizards, Boas, Colubrids, Fish, Clams: No diflubenzuron over water.
- Rats, Mice, and Voles: No effects from any spray material on most – no diflubenzuron will be used over red tree vole until food source is determined; no diflubenzuron over water.
- Carnivores: No effects from any spray materials; no diflubenzuron will be used over water.
- Vultures and Raptors: No aerial sprays will be applied near nesting birds.
- Plovers: No diflubenzuron over water; no diflubenzuron near the mountain plover due to possible disruption of the food chain.
- Murrelets: No aerial sprays near nests.
- Cuckoos, Gnatcatcher, Flycatcher, Shrikes, Vireos: No diflubenzuron or *B.t.* over the birds due to potential food chain disruptions.
- Owls: No diflubenzuron near elf owl due to potential food chain disruption; no aerial sprays near nesting birds.
- Sparrows, etc.: No diflubenzuron over the birds due to potential food chain disruption, no diflubenzuron or *B.t.* over shrikes on San Clemente Island.
- Turtles, Frogs, and Toads: No diflubenzuron over water; no diflubenzuron due to potential food chain disruptions.
- Geckos, Inguids, Lizards, Salamanders: No diflubenzuron due to potential food chain disruptions.
- All Insect/Arthropods: No diflubenzuron will be used near the habitat of threatened/endangered insect/arthropod species.
- Aquatic Arthropods: No diflubenzuron will be used in watershed.
- Butterflies and Moths: No diflubenzuron or *B.t.* will be used over vulnerable populations.
- Plants: No diflubenzuron will be used over threatened/endangered flowering plants – it is possible that the diflubenzuron sprays could reduce the numbers of natural pollinators in the year after treatment sufficiently to interfere with seed set.

Mitigation Measures from Prior CDFA CEQA Documents
1993 Exotic Fruit Fly Eradication Program Utilizing Male Annihilation and Allied Methods EIR
6.3.1 Temporary Disturbance of Residents of Eradication Areas Mitigation consists of: 1) Establishing quarantines to contain the infestation and minimize the size of the treatment area. 2) Only applying pesticides from the ground. 3) Treating the infestation using methods which provide the pest probability of quick eradication. 4) Notifying residents of properties to be treated as described in Section 5.2.5.3. 6.3.2 Temporary Loss of Nontarget Arthropods in Treatment Areas Mitigation consists of: 1) Establishing quarantines to contain the infestation and minimize the size of the treatment area. 2) Using fruit fly-specific lures when possible. 3) Applying spot treatments of bait sprays and soil drenches for minimal environmental disruption. 4) Protecting aquatic environments by use of ground sprays, buffer zones, tarping, or suspension of treatment during rainy periods. 5) Implementing measures identified in Appendix C when an eradication area includes the habitat of threatened and endangered species. 6) Use of nonchemical methods when feasible. Avoidance Measures for Threatened and Endangered Species from Appendix C of 1993 Fruit Fly EIR: • Vespertilionid Bats: For diazinon spray treatments, no water puddles to be left after treatment when species are present. • New World Vultures: No diazinon, malathion, or male annihilation using baits or traps when species are present. • Grasshoppers, Katydids, and Crickets: No diazinon or malathion sprays when species are present. • Valley Elderberry Longhorn Beetle: No diazinon sprays when species are present, and no malathion applied to elderberry when adult beetles are present. • Franklin's Bumblebee: No diazinon sprays when species are present, and no malathion applied to flowering plants when adults are present. • Shrews, Rabbits, Hares, Mountain Beavers, Kangaroo Rats, Pocket Mice, Kangaroo Mice, Mice, Rats, Voles, Jumping Mice, Foxes, Wolves, Coyotes, Weasels and Relatives, Cats and Relatives, Sea Lions, Fur Seals, Sheep and Relatives, Pelicans, Ibises, Spoonbills, Egrets, Albatrosses, Ducks, Geese, Swans, Hawks, Kites, Harriers, Eagles, Falcons, Rails, Coots, Gallinules, Cranes, Plovers and Relatives, Curlews, Swallows, Murrelets, Cuckoos and Relatives, Typical Owls, Thrushes, Gnatcatchers, Kinglets, Flycatchers, Shrikes, Woodpeckers, Vireos, Grouses, Ptarmigans, Sparrows, Buntings, Warblers, and Relatives, Turtles, Tortoises, Geckos, Iguanids, Night Lizards, Whiptails and Relatives, Alligator Lizards, Legless Lizards, Venomous Lizards, Boas, Colubrids, Mole Salamanders, Lungless Salamanders, True Toads, True Frogs, Lampreys, Trout, Salmon, Minnows, Carps, Sunfishes, Suckers, Killifishes, Sticklebacks, Gobies, Sculpins, Smelts, Clams, Mussels, Snails, Slugs, Spiders and their Allies, Shrimps, Crabs, Crayfishes, and their Allies, Dragonflies, Damselflies, Stoneflies, True Bugs, Flies, Gnats, Midges, Caddisflies, Butterflies, Moths, Beetles, Ants, Bees, Wasps, Lacewings, and Scorpionflies: No diazinon sprays when species are present.

Mitigation Measures from Prior CDFA CEQA Documents
1994 Exotic Fruit Fly Eradication Program Using Aerial Application of Malathion and Bait EIR

6.3.1 Temporary Disturbance of Residents of Treatment Areas and Along Aircraft Flight Paths

Mitigation consists of:

1) Augmenting the aerial application of malathion and bait with other methods (ground application of malathion and bait, fruit stripping, diazinon soil drenches, male annihilation, sterile insect release) when feasible to reduce the number of aerial applications;
2) Using fixed-wing aircraft when feasible to reduce noise;
3) Making applications at night to reduce human exposure, deposition on vehicles, and drift;
4) Establishing quarantines to contain the infestation and minimize the size of the treatment area; and
5) Notifying residents before treatments to enable them to prepare for treatments and decide what measures, if any, they wish to take to reduce exposure.

6.3.2 Temporary Loss of Nontarget Organisms

Mitigation consists of:

1) Establishing quarantines to contain the infestation and minimize the size of the treatment area;
2) Reducing drift by postponing or discontinuing aerial treatments when surface winds exceed 10 miles per hour;
3) Protecting aquatic environments by use of ground sprays, buffer zones, and postponing or discontinuing aerial treatments when there is a 50% or greater chance of significant rain within 24 hours after treatment (as recommended by the California Department of Fish and Game to prevent water contamination from runoff; see Appendix E);
4) Advising residents to cover fish ponds and other aquatic environments during treatment;
5) Implementing measures presented in Appendix C when a treatment area includes the habitat of threatened or endangered species;
6) Monitoring treatment areas to assure that protocols are met; and
7) Releasing commercially available natural enemies to accelerate the repopulation of treated areas when necessary and feasible.

Avoidance Measures for Threatened and Endangered Species from Appendix C of 1993 Fruit Fly EIR:

- Shrews, Mountain Beavers, Squirrels and Relatives, Kangaroo Rats, Pocket Mice, Kangaroo Mice, Mice, Rats, Voles, Jumping Mice, Southern Sea Otter, Southwestern Otter, Sea Lions, Fur Seals, Pelicans, Ibises, Spoonbills, Egrets, Albatrosses, Ducks, Geese, Swans, Rails, Coots, Gallinules, Cranes, Plovers and Relatives, Gulls, Terns, Curlews, Alameda Song Sparrow, San Pablo Song Sparrow, Turtles, Tortoises, Giant Garter Snake, San Francisco Garter Snake, Mole Salamanders, Lungless Salamanders, True Toads, True Frogs, Lampreys, Trout, Salmon, Minnows, Carps, Sunfishes, Suckers, Killifishes, Sticklebacks, Gobies, Sculpins, Smelt, Clams, Mussels, Snails, Slugs, Grubb's Cave Pseudoscorpion, Carlow's Cave Pseudoscorpion, Albu's Cave Pseudoscorpion, Edgewood Blind Harvestman, Lacey's Cave Pseudoscorpion, Doloff Cave Spider, Empire Cave Pseudoscorpion, Monterey Dunes Scorpion, Music Hall Cave Pseudoscorpion, Santa Cruz Teleman Spider, Shrimps, Crabs, Crayfishes, and their Allies, Dragonflies, Damselflies, Stoneflies, True Bugs, Caddisflies, Lange's Metalmark Butterfly, Sonoma Arctic Skipper Butterfly, Oso Flaco Patch Butterfly, Yontocket Satyr Butterfly, Andrew's Marble Butterfly, El Segundo Blue Butterfly, Cornstock's Blue Butterfly, Smith's Blue Butterfly, Longston's Blue Butterfly, Bay Checkerspot Butterfly, Wright's Checkerspot Butterfly,

Mitigation Measures from Prior CDFA CEQA Documents

Mono Checkerspot Butterfly, Kern Primrose Sphinx Moth, Dun Skipper Butterfly, Palos Verdes Blue Butterfly, MacNeill Sooty Wing Skipper Butterfly, Mission Blue Butterfly, Morro Bay Blue Butterfly, Pheres Blue Butterfly, Pt. Reyes Blue Butterfly, San Bruno Elfin Butterfly, San Gabriel Mountains Elfin Butterfly, Marin Elfin Butterfly, Lotis Blue Butterfly, Hermes Copper Butterfly, Thorne's Hairstreak Butterfly, Saltmarsh Skipper Butterfly, Bohart's Blue Butterfly, San Emigdio Blue Butterfly, San Gabriel Mountain Blue Butterfly, Mardon Skipper Butterfly, Wandering Skipper Butterfly, Laguna Mountains Skipper Butterfly, Santa Mountains Hairstreak Butterfly, Death Valley Agabus Diving Beetle, Wawona Riffle Beetle, Leech's Chaetharthria Water Scavenger Beetle, Brownish Dubiraphian Riffle Beetle, Giuliani's Dubiraphian Riffle Beetle, Ricksecker's Water Scavenger Beetle, Wooly Hydroporus Diving Beetle, Leeche's Skyline Diving Beetle, Simple Hydroporus Diving Beetle, Curved-Foot Hygrotus Diving Beetle, Travertine Band-Thigh Diving Beetle, Pinnacles Optioservus Riffle Beetle, Wing-Shoulder Minute Moss Beetle, Wilbur Springs Minute Moss Beetle, Valley Oak Ant, Ancient Ant: No diazinon sprays and no aerial malathion bait sprays when species are present.

- Vespertilionid Bats, Free-tailed Bats: No water puddles to be left after diazinon treatment, and one daytime aerial malathion spray is acceptable when species are present.
- Rabbits, Hares, Foxes, Wolves, Coyotes, Wolverine, Channel Islands Spotted Skunk, Yuma Mountain Lion, Sheep and Relatives, Swallows, Woodpeckers, Grouse, Ptarmigans, San Clemente Sage Sparrow, Belding's Savannah Sparrow, Large-billed Savannah Sparrow, Inyo Brown Towhee: No diazinon sprays, and one aerial malathion spray is acceptable when species are present.
- New World Vultures: No diazinon sprays, no malathion sprays, and no male annihilation when species are present.
- Hawks, Kites, Harriers, Eagles, Falcons, Murrelets, Great Gray Owl, Northern Spotted Owl: No diazinon sprays when species are present, and no aerial malathion sprays near nesting birds.
- Cuckoos and Relatives, Elf Owl, Thrushes, Gnatcatchers, Kinglets, Flycatchers, Shrikes, Vireos, Tricolored Blackbird, Saltmarsh Yellowthroat, Suisun Song Sparrow, Geckos, Iguanids, Night Lizards, Whiptails and Relatives, Alligator Lizards, Legless Lizards, Venomous Lizards, Boas, San Diego Mountain Kingsnake, Alameda Striped Racer, Santa Cruz Island Gopher Snake: No diazinon sprays and no aerial malathion spray when species is above ground; one malathion spray is acceptable when species is in hibernation.
- Edgewood Micro-Blind harvestman, Horn's Blind Harvestman, Silver Creek Blind Harvestman, Lee's Blind Harvestman, Fairmont Blind Harvestman, Tiburon Blind Harvestman, San Francisco Tree Lupine Moth, Lora's Abornas Moth: No diazinon sprays and two aerial malathion bait sprays are acceptable.
- Grasshoppers, Katydids, Crickets: No diazinon sprays and no aerial malathion aerial or ground-based bait sprays when species are present.
- Flies, Gnats, Midges, Ciervo Aegialian Scarab Beetle, Antioch Dunes Anthicid Beetle, Sacramento Anthicid Beetle, Sacramento Valley Tiger Beetle, Greenest Tiger Beetle, San Joaquin Tiger Beetle, Globose Dune Beetle, San Joaquin Dune Beetle, Channel Islands Dune Beetle, San Clemente Is. Coenonycha Beetle, Delta Green Ground Beetle, Kelso Dune Scarab Glaresis Beetle, Dorhn's Elegant Eucnemid Beetle, Saline Valley Snow Front Scarab Beetle, Barbate Polyphylian Scarab Beetle, Death Valley Polyphylian Scarab Beetle, Atascadero Polyphylian Scarab Beetle, Delta June Beetle, Andre's Dune Scarab, Northern California Ground Beetle, Humboldt Ground Beetle, Brown Tassel Trigonoscuta, Blaidsdell Trigonoscuta Weevil, Santa Catalina Island Trigonoscuta Weevil, Dorothy's El Segundo Dune Weevil, Doyen's Trigonoscuta Dune Weevil, Stanton's Trigonoscuta, Redheaded Sphecid Wasp, Antioch Mutillid Wasp, Yellow-Banded Andrenid Bee, Antioch Andrenid Bee, White Sand Bear Scarab Beetle, Pacific Sand Bear Scarab Beetle, Hopping's Blister Beetle, Mojave Desert Blister Beetle, Moestan Blister Beetle, Morrison's Blister Beetle, Nelson's Miloderes Weevil, American River Ground Beetle,

Mitigation Measures from Prior CDFA CEQA Documents
Siskiyou Ground Beetle, Trinity Alps Ground Beetle, Rude's Longhorn Beetle, Lange's El Segundo Dune Weevil, Antioch Sphecid Wasp: No diazinon sprays when species are present, and two aerial malathion bait sprays are acceptable except when adults are present. • Opler's Longhorn Moth, Oso Flaco Flightless Moth, Busck's Gallmoth, Henne's Eucosman Moth, Ford's Sand Dune Moth, Unsilvered Fritillary Butterfly, Tehachapi Mountain Silverspot Butterfly, Callippe Silverspot Butterfly, Behren's Silverspot Butterfly, Oregon Silverspot Butterfly, Myrtle's Silverspot Butterfly, Lacewings, Scorpionflies: No diazinon sprays when species are present, and two aerial malathion bait sprays are acceptable except when adults or larvae are present. • Valley Elderberry Longhorn Beetle: No diazinon sprays when species are present, and no malathion bait sprays applied to elderberry when adult beetles are present. • Franklin's Bumblebee: No diazinon sprays when species are present, and no malathion bait sprays applied to flowering plants when adults are present.

Mitigation Measures from Prior CDFA CEQA Documents
2003 PDCP EIR
• Mitigation Measure LU-4: Minimize effects on beekeepers. No mitigation is required for this less-than-significant impact. Additional program safeguards to minimize the effect to bees include notification of registered beekeepers about program activities in their area prior to treatment. With this notification, beekeepers could take whatever action they deem prudent to protect their beehives. In addition, pesticide label instructions often prohibit application of the pesticide or allowing it to drift to blooming plants and weeds if bees are visiting the treatment area. • Mitigation Measure Haz-1: Minimize exposure of people to pesticide residues in non-agricultural areas. No mitigation is required for this less-than-significant impact. Additional program safeguards to minimize potential hazards include professional application of registered pesticides and monitoring of pesticide applications by CDPR to verify proper application rates and provide information about pesticide residues in the surrounding environment. The data from environmental monitoring would be reviewed to ensure that applications do not lead to undesirable residue levels. Anomalous results would be evaluated to determine if application methods needed to be adjusted, and if so, the PDCP would require that treatments be modified accordingly. • Mitigation Measure Haz-2: Minimize exposure of agricultural and nursery workers to pesticides. No mitigation is required for this less-than-significant impact. Additional program safeguards to minimize potential hazards include professional application of registered pesticides. California law requires that pilots receive training and have a pest control aircraft pilot's certificate from CDPR. In addition, specific worker health and safety regulations require notification of pesticide applications and training for field workers. • Mitigation Measure Haz-3: Minimize exposure of fragile populations (e.g., acutely ill, very old, very young, pregnant) to pesticides. No mitigation is required for this less-than-significant impact. Additional program safeguards to reduce potential health impacts to fragile populations include notification of schools, day care centers, rest homes, and hospitals that are nearby any proposed treatment operations prior to treatment. Special scheduling would be arranged, if necessary. Pesticide treatments on school grounds and busy public areas would be scheduled for off-time hours when feasible. CDPR would conduct monitoring to verify proper application rates. The data from environmental monitoring would be reviewed to ensure that applications do not lead to undesirable residue levels. Anomalous results would be evaluated to determine if application methods needed to be adjusted, and if so, the PDCP would require that treatments be modified accordingly. • Mitigation Measure WQ-1: Minimize impacts to surface water quality. No mitigation is required for this less-than-significant impact. Additional program safeguards that mitigate potential impacts to water quality include using licensed pesticide applicators with oversight by county agricultural commissioners, and monitoring by CDPR to ensure proper application of the materials. All pesticide label requirements, including those specifically intended to avoid impacts to water quality, would be followed. CDPR would sample surface water before and after PDCP pesticide treatments in non-agricultural areas. The data from environmental monitoring would be reviewed to ensure that applications do not lead to undesirable residue levels. Anomalous results would be evaluated to determine if application methods needed to be adjusted, and if so, the PDCP would require that treatments be modified accordingly. • Mitigation Measure WQ-3: Minimize impacts to groundwater. No mitigation is required for this less-than-significant impact. Additional program safeguards that minimize effects on groundwater include using licensed pesticide applicators with oversight by county agricultural commissioners. All pesticide label requirements, including those specifically for avoiding adverse impacts to groundwater, would be followed. These use modifications are designed to prevent pesticides from reaching groundwater at concentrations that would be considered pollution.

Mitigation Measures from Prior CDFA CEQA Documents

- Mitigation Measure Bio-1: Minimize impacts to non-target invertebrates in non-agricultural areas. No mitigation is required for this less-than-significant impact. Additional program safeguards to minimize potential hazards include professional application of registered pesticides and monitoring by CDPR to verify proper application rates and coverage. CDPR monitoring provides information about pesticide residues in the surrounding environment after treatment. The data from environmental monitoring would be reviewed to ensure that applications do not lead to undesirable residue levels. Anomalous results would be evaluated to determine if application methods needed to be adjusted, and if so, the PDCP would require that treatments be modified accordingly. As an additional safeguard, CDFA would notify USFWS, CDFW, and NMFS, when appropriate, of program activities. CDFA will work with these resource agencies to avoid "take" of threatened and endangered species and to minimize adverse environmental impacts to species of concern.
- Mitigation Measure Bio-4: Minimize impacts to sensitive habitat or special-status species from host removal activities. As a safeguard, implementation of the PDCP would not include the removal of sensitive habitats or special-status plants. No mitigation is required for this less-than-significant impact.
- Mitigation Measure Bio-5: Minimize impacts to non-target organisms and the environment from non-native biological control agent releases. CDFA would evaluate foreign biological control agents prior to importation and release in California. An important phase in assessing the suitability of a new biological control agent is determining whether it could attack non-pest organisms, such as native insects, or cause harm to the environment. With these program safeguards, the potential for adverse environmental impacts would be less than significant, and no mitigation is required.

2010 LBAM Eradication PEIR

- AG-10: Minimize impacts to organic farms. Do not apply materials containing permethrin on or adjacent to organic farming operations.
- AR-2: Minimize impacts to aquatic life (especially anadromous salmonids) from twist-tie applications. Restrict access for twist-tie placement adjacent to the same stretch of stream or river where anadromous salmonids are known to spawn to less than one visit per month during the spawning season. Spawning areas are to be identified with NOAA Fisheries' and CDFW's assistance.
- AR-4: Minimize impacts to aquatic life (especially anadromous salmonids) from pesticide treatments. Restrict access for treatment adjacent to the same stretch of stream or river where anadromous salmonids are known to spawn to less than one visit per month during the spawning season. Spawning areas are to be identified with NOAA Fisheries' and CDFW's assistance.
- ECO-34: Minimize impacts to surface water quality. The CDFA will maintain 25-foot buffer areas from bodies of water, and spraying will not occur on days with wind speeds exceeding 10 miles per hour. Additional mitigation, wherein spraying is avoided near open water when wind direction is towards nearby water, should be implemented.
- ECO-54: Minimize impacts to special-status species. Avoid spraying areas with Btk and spinosad in localized areas known to harbor special-status insects. The CDFA will identify habitat for special-status insects prior to treatment. No Btk or spinosad treatments will be conducted within 1 mile of known populations of special-status insects.
- HH-7a: Minimize impacts to human health. Apply the MMA material containing Permethrin E-Pro to poles, trees, or similar structures at heights that are above the breathing zone of an average person. Placement of the formulation at this height should preclude most opportunities for direct contact while enhancing volatilization of the material. The planned height is 8 feet aboveground, and this height has been tested for sufficiency by CDPR (Kim 2009).
- HH-7b: Minimize impacts to human health. The CDFA will avoid parks and schools when treating for LBAM.

Mitigation Measures from Prior CDFA CEQA Documents

- HH-8a: Minimize the creation of hazards to public health and the environment. Ensure that alternative monomethylarsonic acid (MMA) pesticides are applied in strict accordance with label requirements.
- HH-8b: Minimize the creation of hazards to public health and the environment. Ensure that appropriate worker training is conducted prior to use of pesticides.
- HH-8c: Minimize the creation of hazards to public health and the environment. Ensure that appropriate personal protective equipment is used. Also see Mitigation Measure HH-7a.
- N-4a: Minimize temporary increases in noise levels from spray equipment staging and operation. Install temporary or permanent noise barriers and/or acoustical enclosures on compressors, generators, pumps, and engines. Noise barriers and/or acoustical enclosures will be properly installed and will remain in place during operation.
- N-4b: Minimize temporary increases in noise levels from spray equipment staging and operation. Properly maintain equipment. The application contractor will properly maintain and tune engines of all application equipment and maintain properly functioning mufflers on all internal combustion engines to minimize noise levels.
- N-4c: Minimize temporary increases in noise levels from spray equipment staging and operation. Provide advance notice specifying a window of time that operations may be near sensitive receptors. Program managers and subcontractors will provide 72 hours advanced notice prior to planned backpack and/or truck-mounted spraying near sensitive receptors in the Program Area. The advanced notice will describe the potential noise disruption and the steps the CDFA plans to take to minimize the noise, in a format suitable for reproduction and posting. If spraying is delayed due to operational issues or weather delays of more than 1 week, an additional notice will be provided.
- N-4d: Minimize temporary increases in noise levels from spray equipment staging and operation. Provide liaison for nuisance complaints. The LBAM Program will identify and provide a liaison to respond to concerns of noise from Program operations. Procedures for reaching the liaison via telephone (hotline) or in person will be included in notices distributed and posted in accordance with Mitigation Measure N-4c. Nuisance complaints, and the approach used to resolve the complaint, will be reported to the CDFA.
- N-4e: Minimize temporary increases in noise levels from spray equipment staging and operation. Install noise barriers and enclosures between noise sources and sensitive receptor. Noise barriers and/or acoustical enclosures, as discussed in Mitigation Measure N-4a, will be properly installed between the noise source and the receptor and tested in locations deemed necessary by the CDFA (or as otherwise requested by a sensitive receptor). Enclosures will remain in place and functional within 250 feet of the sensitive receptor. The CDFA or its contractor will respond to complaints of noise in accordance with Mitigation Measure N-4d. Complaints filed with the CDFA contractor and the approach used by the contractor to resolve the complaint will be reported to the CDFA. Methods to resolve complaints may include the CDFA's modification of treatment sites to reduce noise near sensitive receptors.
- N-4f: Minimize temporary increases in noise levels from spray equipment staging and operation. Perform noise monitoring. As discussed in Mitigation Measure N-4b, the application contractor will properly maintain and tune all engines. In the event of complaints by nearby parties, the CDFA or designated contractor will monitor noise during application. Noise will be measured at the perimeter of the work area or adjacent to sensitive receptors. In the event that application noise exceeds the specified limits prescribed by the CDFA, the offending activity will cease until appropriate measures are implemented. Noise thresholds will be included in the application contractor's contract with the CDFA.

Mitigation Measures from Prior CDFA CEQA Documents

- N-6: Minimize noise impacts that result from aerial pesticide applications. Respond to noise complaints from aircraft operations. The CDFA or its contractor will respond to complaints of noise caused by aircrew using high-power settings during spray applications. Noise levels will be limited in duration due to flight times; however, the CDFA implement feasible and appropriate measures to ensure aircrew stay within the flight plan published. Measures include daily preflight and post-op briefings, written flight envelope procedures, and review of recorded GPS flight data (including altitude). Complaints filed with the CDFA contractor and the approach used by the aerial application contractor(s) to resolve the complaint will be reported to the CDFA (and the U.S. Department of Agriculture as necessary).
- TR-17a: Minimize disturbance of sensitive receptors. Avoid operating aircraft close to active nests of federally or state-listed raptors. Aerial treatment will not be conducted close to active nests of federally or state-listed raptors during the breeding season. The buffer area may vary by species, ranging up to 0.25 mile.
- TR-17b: Minimize disturbance of sensitive receptors. Avoid operating aircraft close to active nests of bald eagles. Aerial treatments will not be conducted within 1,000 feet of an active bald eagle nest during the breeding season, except where eagles have demonstrated tolerance for the activity (USFWS 2007b).
- TR-17c: Minimize disturbance of sensitive receptors. Avoid operating aircraft close to active nests of other special-status raptors. Aerial treatment will not be conducted within 300 feet of an active nest for any other special-status raptor during the breeding season, except where the raptors have demonstrated tolerance for the activity.
- TR-26: Minimize impacts to special-status moths and butterflies. Avoid application of Btk and spinosad in occupied habitat for federally listed butterflies and moths. The CDFA or its contractors will check the locations of known populations of federally listed moths and butterflies prior to scheduling the application of Btk or spinosad. No Btk or spinosad treatments will be conducted within 1-mile buffer zones around known populations of federally listed moths or butterflies, or as determined in consultation with the USFWS.
- TR-30: Minimize impacts to special-status insects. Avoid parasitic wasp releases near known populations of federally listed insects. The CDFA or its contractors will check the locations of known populations of federally listed insects prior to scheduling the release of parasitic wasps. No parasitic wasp treatments will be conducted within 0.5 mile of known populations of federally listed insects.
- WR-4: Minimize impacts to surface water quality from male moth attractant applications, which contain permethrin. The CDFA will maintain 25-foot buffer areas from the edge of streambank or shoreline, and spraying will not occur on days with wind speeds exceeding 10 miles per hour. Additional mitigation, wherein spraying is avoided near open water when wind direction is towards nearby water, should be implemented.

Chapter 5
CUMULATIVE SCENARIO

5.1 Introduction to the Cumulative Scenario

This chapter presents the setting for the cumulative impacts analysis and characterizes the significance of cumulative impacts to which the Proposed Program may contribute. A cumulative impact consists of an impact which is created as a result of the combination of the Proposed Program together with other past, present, and probable future projects causing related impacts (CEQA Guidelines Section 15130[a][1]). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. (CEQA Guidelines Section 15355[b]). Under CEQA, an EIR must discuss the cumulative impacts of a project when the project's incremental contribution to the group effect is "cumulatively considerable." An EIR does not need to discuss cumulative impacts that do not result in part from the project evaluated in the EIR.

To meet the adequacy standard established by Section 15130 of the CEQA Guidelines, an analysis of cumulative impacts must contain the following elements:

- an analysis of related past, present and reasonably foreseeable projects or planned development that would affect resources in the project area similar to those affected by the proposed project;
- a summary of the environmental effects expected to result from those projects with specific reference to additional information stating where that information is available; and
- a reasonable analysis of the combined (cumulative) impacts of the relevant projects.

The cumulative impacts analysis must evaluate a project's potential to contribute to the significant cumulative impacts identified, and it must discuss feasible options for mitigating or avoiding any contributions assessed as cumulatively considerable.

The discussion of cumulative impacts is not required to provide as much detail as the discussion of the effects attributable to the project alone. Rather, the level of detail is to be guided by what is practical and reasonable.

5.2 Methods Used in this Analysis

5.2.1 Approach to Analysis: List Approach

Section 15130 of the CEQA Guidelines provides two alternative approaches for analyzing and preparing an adequate discussion of significant cumulative impacts:

- the list approach, which involves listing past, existing, and probable future projects or activities producing related or cumulative impacts, including, if necessary, those projects outside the control of the lead agency; or
- the projection approach, which uses a summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions and their contribution to the cumulative effect.

This Final PEIR uses the list approach for analysis of potential cumulative impacts. Activities related to the Proposed Program that are included in the cumulative analysis were determined using several factors, including the location and type of activity and the characteristics of the activity related to resources with the potential to be affected by the Proposed Program.

5.2.2 Resource Topics Considered and Dismissed

The Proposed Program could make a considerable contribution to potential cumulative impacts related to the following resource topics: agricultural resources and economics, air quality, biological resources, global climate change, hazards and hazardous materials, noise, and water quality. For all other resource topics, as shown in Table 5-1, either significant cumulative impacts do not exist, or the Proposed Program would not have any potential to make a considerable contribution to any potential cumulative impacts. These latter resource topics have been dismissed from consideration in the cumulative impacts analysis and are not discussed further.

Table 5-1. Resource Topics Dismissed from Further Consideration in the Cumulative Impacts Analysis

Resource Topic Not Discussed Further	Rationale
Aesthetics	The Proposed Program would not include installation of structures or facilities that could result in permanent visual changes or new sources of light or glare. Rather, visual effects associated with the Proposed Program would be short term and temporary, and would include host plant removal and equipment usage for implementation of pest management activities. Furthermore, any visual variation relative to the environmental baseline as a result of Proposed Program activities would be consistent with typical agricultural or urban pest management practices, and generally would be imperceptible to sensitive viewer groups. Aesthetic impacts from other past, present, and probable future projects would be localized and the determination of cumulative impacts generally would need

Resource Topic Not Discussed Further	Rationale
	to be made on a site-specific basis. For locations where Proposed Program activities may occur and the potential for cumulative aesthetic impacts may exist, the Proposed Program would not have potential to make a considerable contribution to any cumulative impacts related to aesthetics.
Cultural Resources	No information has been found during the preparation of this Final PEIR to suggest that a widespread loss or degradation of significant historic resources has occurred or will occur in the future in California as a result of the implementation of the types of projects included in the cumulative scenario for the Proposed Program. Rather, impacts on significant historic resources from other past, present, and probable future projects would be localized and would affect only the immediate resources in question. The activities to be carried out under the Proposed Program have limited potential to affect cultural resources and are considered highly unlikely to affect any individual cultural resources that are, or may be in the future, subject to significant cumulative impacts. For this reason, the Proposed Program has been determined to not have the potential to make a considerable contribution to any cumulative impacts related to cultural resources.
Geology, Soils, and Seismicity	The Proposed Program would not expose individuals to increased geologic or seismic hazards, would not result in erosion or the loss of topsoil, would not construct structures on unstable soils, and would not create wastewater systems in unsuitable soils. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to geology, soils, or seismicity.
Hydrology	The Proposed Program would not require the use of groundwater or surface water resources, and it would not result in the obstruction or diversion of any waterbody. The Proposed Program would not construct structures that could be subject to flooding or other hydrologic hazards. The very limited nature of vegetation removal associated with Proposed Program activities would not have the potential to increase runoff or result in flooding. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to hydrology.
Land Use and Planning	The Proposed Program would not result in the creation of any permanent structures or barriers that could divide an established community, nor would it result in any permanent land use changes that could conflict with any land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect. All activities conducted under the Proposed Program would be required to obtain any necessary authorizations from the relevant land use authority or property owner and to comply with any applicable laws or policies specific to the area. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to land use and planning.
Mineral Resources	The Proposed Program would not include any activities that would have the potential to affect mineral production sites. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to mineral resources.

Resource Topic Not Discussed Further	Rationale
Population and Housing	The Proposed Program would not require additional staff for implementation, nor would it involve construction of new housing or displace existing housing. In addition, the Proposed Program would not result in construction of infrastructure or involve other activities that could indirectly induce or remove an obstacle to population growth. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to population and housing.
Public Services	The Proposed Program would have no effect on demand for public facilities because it would not increase population or housing, or involve activities that could indirectly cause a greater demand for public services. Furthermore, the Proposed Program would not include any activities that could interfere with provision of public services (e.g., affect service ratios, response times, or other performance objectives). Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to public services.
Recreation	Although certain discrete Proposed Program activities may be conducted near recreational areas, the Proposed Program would not include any activities that would permanently affect the use or availability of recreation sites. Although not anticipated, temporary closures of parts of public recreation areas may be needed while implementing Proposed Program activities to provide for public safety. However, if needed, such closures would be short term and would be limited only to the area necessary for Proposed Program work. After activities are completed, access and availability to affected recreation areas would resume unimpeded. Because the Proposed Program would include minimal, if any, temporary closures, effects on the availability or use of recreational areas would be negligible. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to recreation.
Traffic and Transportation	Anticipated on-road vehicle use under the Proposed Program would be associated with personnel and equipment transport to and from work sites. However, such trips would be temporary and would be limited to the duration and needs for management activity at any given site. Origin and destination trips would not be concentrated to or from any given location, but rather would be initiated on an as-needed basis from the closest available dispatch area. The Proposed Program's effects would be intermittent and widespread and are not expected to have a substantial effect on regional or local roadways or transportation systems overall. In addition, because many Statewide Program activities are ongoing, many of these vehicle trips already occur under existing conditions, and thus they would not result in a change relative to baseline conditions. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to traffic and transportation.

Resource Topic Not Discussed Further	Rationale
Utilities and Service Systems	The Proposed Program would not include the disturbance, creation, or need for utility systems, including water, sewage, wastewater, or storm water. Although vegetation may require landfill disposal as a result of host removal activities, all materials would be handled according to proper containment and treatment regulations associated with disposal. Because of the widespread nature of its activities and low volume of materials expected to be generated for disposal at any one site, Proposed Program activities are not expected to generate waste amounts that would exceed the capacity of existing waste disposal facilities in any particular location. Furthermore, Proposed Program activities would be temporary and would not include any long-term waste generation activities at any given location. Thus, the effects on landfill facilities would be minimal. Therefore, the Proposed Program would not have the potential to make a considerable contribution to any cumulative impacts related to utilities and service systems.

5.2.3 Geographic Scope of Analysis

The scope of individual Proposed Program activities generally would be limited to small geographic areas. However, the overall geographic scope for the purposes of the cumulative analysis is statewide because Proposed Program activities collectively would have the potential to occur throughout the state, with some potential for simultaneous activities under more than one program at a time or with some overlap between geographic areas of program implementation. The geographic scope of the cumulative impact analysis for each resource topic is focused on the areas where potential effects of the Proposed Program could contribute to cumulative impacts. Table 5-2 defines the geographic scope of the cumulative impact analysis for those resource topics that are evaluated in this chapter.

Table 5-2. Geographic Scope for Resources with Potential Cumulative Impacts Relevant to the Proposed Program

Resource Area	Geographic Scope
Agricultural Resources and Economics	Statewide, at Proposed Program activity locations in agricultural areas
Air Quality	Statewide for criteria pollutant emissions, and locally at Proposed Program activity locations in proximity to sensitive receptors for toxic air contaminants
Biological Resources	Statewide, at Proposed Program activity locations in proximity to special-status species, their habitats, and sensitive natural communities
Global Climate Change	Global
Hazards and Hazardous Materials	Statewide, at Proposed Program activity locations in proximity to people
Noise	Statewide, at Proposed Program activity locations in proximity to sensitive receptors
Water Quality	Statewide, at Proposed Program activity locations in proximity to waterbodies (e.g., lakes, reservoirs, streams, estuaries, Pacific Ocean)

5.3 Compliance with the 2005 Court Order for the PDCP EIR

This Final PEIR has been prepared in compliance with a California Court of Appeal decision (*Californians for Alternatives to Toxics v. California Department of Food and Agriculture*, San Francisco County Sup. Ct No. CPF03503249, First District Court of Appeal, 2005, Case No. 107088) that identified additional information and analysis which must be provided by CDFA in compliance with CEQA for the PDCP EIR. The following two requirements relevant to the cumulative setting and impacts analysis were established in the court's decision:

1. The PDCP EIR cumulative impact analysis improperly relied on the CDPR's pesticide registration evaluation to conclude no additive or cumulative effect from the PDCP would occur.
2. The baseline description did not disclose environmental impacts from existing pesticide use in California.

A brief discussion of the requirements and how this cumulative impact analysis has been prepared in compliance with the requirements is provided in Section 4.2.5, Pierce's Disease Control Program EIR.

5.4 Cumulative Setting

The cumulative setting describes other activities—past, existing, and probable future programs and projects—occurring in the same geographic area and/or generating similar potential impacts on resources as the Proposed Program. The broad geographic scope of the Proposed Program requires an analysis of a number of past, existing, and probable future activities that have affected, are affecting, or would affect California's environmental resources. The effects of past and existing activities have strongly influenced existing conditions, and some past activities have created legacies that are still affecting resources. The following are the most important of these past and existing actions:

- population growth, urbanization, and land use conversion in California;
- pesticide use in residential, commercial, natural, and agricultural environments in California (including past and present use under the Statewide Program);
- prior releases of biological control agents (BCAs) into California;
- international, interstate, and intrastate travel and movement of goods; and
- global industrialization and development.

Table 5-3 presents a list of past, existing, and probable future activities that could cumulatively affect the environment in the specified geographic area, and the resource topics they could cumulatively affect.

Table 5-3. Other Activities (Past, Existing, and Probable Future) that May Cumulatively Affect Resources of Concern for the Proposed Program

Activities	Resource Topics with Potential for Cumulative Impacts						
	Agricultural Resources and Economics	Air Quality	Biological Resources	Global Climate Change	Hazards and Hazardous Materials	Noise	Water Quality
Population Growth, Urbanization, and Land Use Conversion	X	X	X	X	X	X	X
Pesticide Use in Residential, Commercial, Natural, and Agricultural Environments in California		X	X	X	X	X	X
Prior Releases of Biological Control Agents into California	X		X				
International, Interstate, and Intrastate Travel and Movement of Goods		X	X	X	X	X	
Global Industrialization and Development	X	X	X	X	X	X	X

5.4.1 Population Growth, Urbanization, and Land Use Conversion

This section describes the types of past, existing, and probable future activities carried out, being conducted, or to be performed in California that have resulted in, or may be expected to result in, the use of natural land resources and conversion of land from open space to other uses. These activities include population growth, urbanization, and other forms of land use conversion. The consequences of such activities include impacts on water quality, air quality, and the loss of natural habitats for native species.

California encompasses about 100 million acres: approximately 12 million acres of farmland (CDOC 2008), approximately 19 million acres of grazing land (CDOC 2008), approximately 5 million acres of urban and suburban uses (U.S. Census Bureau 2010), approximately 47 million acres of public lands, and the remaining land area for other uses including mining, timber, and waterbodies (CDOC 2008).

About 5 percent of California's approximate 100-million-acre land surface is estimated to have been converted to urban and suburban uses (U.S. Census Bureau 2010). Continued population growth in California and the increasing conversion of lands to urbanized uses may contribute to cumulative impacts related to: conversion of farmland to non-agricultural uses, air emissions (including GHGs), biological resources, releases of or exposure to hazards and hazardous materials, generation of noise, and degradation of water quality. Table 5-4 shows the projected population changes in California counties from 2010 to 2060 (CDOF 2013a). Nearly all the counties are expected to experience population growth, and some counties are expected to experience greater than 100 percent growth.

Between 1984 and 2008, more than 1.3 million acres of agricultural land in California were converted to nonagricultural purposes. Nearly 79 percent of this land became urbanized, while 19 percent was converted to miscellaneous land uses (including habitat restoration), and 2 percent was converted to create new water bodies. (CDOC 2011)

Table 5-4. Projected California Population Changes by County (2010-2060)

County	2010	2060	Change	County	2010	2060	Change
Alameda	1,513,236	1,675,011	10.7%	Orange	3,017,327	3,331,595	10.4%
Alpine	1,163	1,147	-1.4%	Placer	350,275	579,729	65.5%
Amador	37,853	45,116	19.2%	Plumas	19,911	19,471	-2.2%
Butte	219,990	341,850	55.4%	Riverside	2,191,886	4,216,816	92.4%
Calaveras	45,462	63,025	38.6%	Sacramento	1,420,434	2,191,508	54.3%
Colusa	21,478	40,179	87.1%	San Benito	55,350	86,939	57.1%
Contra Costa	1,052,211	1,585,244	50.7%	San Bernardino	2,038,523	3,433,047	68.4%
Del Norte	28,544	32,159	12.7%	San Diego	3,102,745	4,152,763	33.8%
El Dorado	180,921	297,972	64.7%	San Francisco	806,254	926,555	14.9%
Fresno	932,377	1,615,401	73.3%	San Joaquin	686,588	1,538,313	124.1%
Glenn	28,143	40,040	42.3%	San Luis Obispo	269,713	353,190	31.0%
Humboldt	134,663	147,377	9.4%	San Mateo	719,729	928,706	29.0%
Imperial	175,389	355,022	102.4%	Santa Barbara	424,050	519,034	22.4%
Inyo	18,528	23,921	29.1%	Santa Clara	1,786,429	2,198,503	23.1%
Kern	841,146	2,055,622	144.4%	Santa Cruz	263,260	309,474	17.6%
Kings	152,656	282,305	84.9%	Shasta	177,472	265,246	49.5%
Lake	64,599	110,055	70.4%	Sierra	3,230	3,876	20.0%
Lassen	35,136	41,961	19.4%	Siskiyou	44,893	52,646	17.3%
Los Angeles	9,824,906	11,562,720	17.7%	Solano	413,117	634,852	53.7%
Madera	151,328	373,929	147.1%	Sonoma	484,084	616,340	27.3%
Marin	252,731	272,275	7.7%	Stanislaus	515,205	953,580	85.1%
Mariposa	18,193	23,308	28.1%	Sutter	94,669	254,783	169.1%
Mendocino	87,924	102,106	16.1%	Tehama	63,487	109,201	72.0%
Merced	255,937	553,114	116.1%	Trinity	13,713	19,381	41.3%
Modoc	9,648	10,321	7.0%	Tulare	443,066	836,850	88.9%
Mono	14,240	20,755	45.8%	Tuolumne	55,144	63,947	16.0%
Monterey	416,259	569,459	36.8%	Ventura	825,077	1,034,651	25.4%
Napa	136,811	196,243	43.4%	Yolo	201,311	305,711	51.9%
Nevada	98,639	150,550	52.6%	Yuba	72,329	168,685	133.2%
Total (State)	**37,309,382**	**52,693,583**	**41.2%**				

Source: CDOF 2013a

Cumulative Impacts of Population, Urbanization, and Land Development

Key outcomes of population growth, urbanization, and land development related to the relevant resources of concern include:

- past and future conversion of agricultural and forest lands to other land uses;
- increased potential for releases of construction and operational air emissions (including GHGs) into the environment;
- loss of carbon sequestration capacity caused by changes in land uses;
- loss of sensitive habitats, such as riparian and wetland areas, and habitat for species of concern;
- increased potential for releases of hazardous materials into the environment, both intentional and unintentional, including potential for hazardous accidents affecting the environment;
- increasingly noisy environments in developing and urbanized areas; and
- creation of new point-source discharges (e.g., wastewater treatment plants, industrial activities) and non-point source runoff (e.g., vehicles), as well as increased quantity of runoff resulting from the addition of impervious surfaces.

5.4.2 Pesticide Use in Residential, Commercial, Natural, and Agricultural Environments in California

Historical Uses

At the beginning of the twentieth century, pest control was restricted primarily to botanical preparations, elemental sulfur, oil soaps, and kerosene emulsions to combat insects, and the use of lime and sodium chloride for weed control. In the early 1900s, classical biological control (use of natural enemies from a pest's historic location of origin) was popular. At about the same time, the use of compounds containing heavy metals such as arsenic and copper came into vogue, and surpassed BCAs in preference. However, these heavy metal-based inorganic pesticides had broad spectrum toxicity, not just to the pests, affecting crops, people and non-target organisms (NRC 2000).

Following the introduction of inorganic pesticides, a second generation of chemical pesticides was developed, including synthetic organic compounds such as DDT, chlorinated hydrocarbons, and organophosphates. These compounds had broad spectrum efficacy and were inexpensive. However, they were environmental liabilities in the long term because of their persistence in the environment and widespread non-target effects. Unintended harm of natural enemies led to the appearance of secondary pests, species that, before extensive insecticide use, were kept in check by their enemies. Bioaccumulation led to concern about human health effects from repeated long-term exposure to residual pesticides as environmental and dietary contaminants. By the end of the 1960s, a major effort to reevaluate the role of pesticides in U.S. agriculture emerged, and the use of many synthetic organic insecticides have since been prohibited or restricted because of health and/or environmental risks (NRC 2000).

Following the establishment of restrictions on many early synthetic organic insecticides, increasingly more targeted and less persistent pesticides have been developed and used. For example, pheromones are naturally released by insects and other animals to communicate with individuals of the same species, and they are non-toxic to target and non-target pests. In pest control, pheromones are used for monitoring, mass trapping, and mating disruption. Pheromone-laden traps attract and trap specific insects, and pheromone twist ties and other pheromone-dispensing technologies disrupt mating to reduce pest mating success and population densities (Schalau 2012). In another example, pyrethrins (botanical insecticides derived from chrysanthemum flowers) are now widely used. Pyrethrins, along with pyrethroids (which are synthetic chemical insecticides whose structures are adapted from the structures of pyrethrins) are less toxic to birds and mammals than organophosphate pesticides (although they are highly toxic to aquatic organisms), but are still effective in controlling pests (EPA 2013).

Bacillus thuringiensis, or *Bt*, is another naturally-occurring pesticide, used in lieu of conventional pesticides. Farmers and home gardeners use this soil bacterium in a microbial spray to control caterpillars, certain types of beetles, mosquitoes, and black flies. Scientists also have developed plants that produce *Bt* through the use of biotechnology. In 1995, the U.S. Environmental Protection Agency (EPA) registered the first *Bt* plant-incorporated protectants for use in the United States. These *Bt* plants, such as corn, potatoes, and cotton, have reduced the need for spraying conventional pesticides (EPA 2002).

Pesticides continue to be used throughout California by federal, State and local agencies, and by private individuals including growers, nursery operators, and homeowners, for pest control in and around buildings and structures, on agricultural crops, for maintenance of landscaping and/or the quality and integrity of natural environments, and for public health and sanitation purposes. The vast majority of such pesticide uses falls outside CDFA's authority.

Pesticide Chemicals Used

A complete list of pesticide products that can be used in California is available online at CDPR websites that contain various databases, including pesticide use in California and chemical ingredients of pesticides (see http://www.cdpr.ca.gov/dprdatabase.htm). Pesticide products and their ingredients that are proposed for use in the Proposed Program are listed in the Ecological Risk Assessment and Human Health Risk Assessment, provided in Appendices A and B, respectively. Information is not publically available about many inert ingredients included in these products because the full formulations of the products are proprietary information to the companies that create them. The Office of Environmental Health and Hazard Assessment and CDPR have access to this information and have determined the safety of the products. CDFA does not have access to proprietary information; however, CDFA consulted with both agencies during preparation of the risk assessment. The risk assessment focuses on evaluating those ingredients for which information is publically available and relied on DPR and OEHHA risk assessments of non-publically available information.

The chemicals used in the pesticides studied in this Final PEIR can be categorized based on various regulatory restrictions, human health hazard endpoints, and environmental resource-specific definitions. These classifications can be useful in describing a group of pesticides that have similar properties, regulatory schemes, and/or effect on environmental resources including human health. Human or ecological health endpoints are used to classify pesticides that have a similar mode of action, resulting in similar health effects from exposure. The health effects include cholinesterase inhibitors, reproductive toxicants, cancer-causing pesticides, and altered nerve function. Biopesticides and USDA-approved organics are included as a category because they each have specific regulatory requirements. Toxic air contaminants and groundwater protection-listed chemicals are important for air and water quality analyses. Some of the following classifications are useful to categorize types of pesticides based on their potential impacts on environmental resources:

- **Organophosphates and Carbamates**: Cholinesterase inhibitors that interfere with cholinesterase, an enzyme needed for the proper functioning of the nervous systems of humans, other vertebrates and insects.
- **Reproductive Toxicants**: Pesticide chemicals that are on the State's Proposition 65 list of chemicals which are known to cause reproductive toxicity (OEHHA 2013).
- **Cancer Causing**: Pesticide chemicals that are on the State's Proposition 65 list of chemicals which are known to cause cancer (OEHHA 2013).
- **Pyrethrins and Pyrethroids:** Pyrethrins are botanical insecticides derived from chrysanthemum flowers, most commonly found in Australia and Africa. They work by altering nerve function, which causes paralysis in target insect pests, eventually resulting in death. Pyrethroids are synthetic chemical insecticides, whose chemical structures are adapted from the chemical structures of the pyrethrins and act in a similar manner to pyrethrins. Pyrethroids are modified to increase their stability in sunlight.
- **Biopesticides:** Microorganisms and naturally occurring compounds, or compounds essentially identical to naturally occurring compounds, including those that are not toxic to the target pest (e.g., pheromones).
- **Toxic Air Contaminants** (TACs): Pesticide chemicals that are listed in Section 6860 of the California Code of Regulations (Title 3, Division 6, Chapter 4, Subchapter 1, Article 1). Pesticides are identified as TACs if their concentration in ambient air is greater than the following levels: (a) For pesticides which have thresholds for adverse health effects, this level shall be ten-fold below the air concentration which has been determined by the director of CDPR to be adequately protective of human health; and (2) For pesticides which do not have thresholds for adverse health effects, this level shall be equivalent to the air concentration which would result in a ten-fold lower risk than that which has been determined by the director of CDPR to be a negligible risk.
- **Groundwater Protection**: Pesticide chemicals that are listed as contaminants of groundwater in Section 6800(a) of the California Code of Regulations (Title 3, Division 6, Chapter 4, Subchapter 1, Article 1).
- **USDA Approved for Organics**: Chemicals approved for use in organic agriculture based on the USDA's National List of Allowed and Prohibited Substances, in Sections 205.600 through 205.619 of the Code of Federal Regulations (Title 7, Part 205, Subpart G),

Quantity of Pesticides Used

California requires reporting of all commercial pesticide use, including amounts applied and types of crops or places (e.g., structures, roadsides) treated. In 2011, in an effort to more efficiently and accurately capture pesticide use data, a new county-based reporting system, known as CalAgPermits, was created to streamline reporting procedures for pesticide users and upgrade data management capabilities of county departments of agriculture.

Agricultural and commercial applications, including those for production agriculture, structural fumigation, and urban structural (e.g., termite control) and landscape applications, must be reported by pesticide applicators and growers to local county agricultural commissioners. CDPR compiles the data in annual pesticide use reports. Pesticide use reports are posted online (http://www.cdpr.ca.gov/docs/pur/purmain.htm) (CDPR 2013). The 2011 pesticide use data corresponds to the year the NOP was filed and represents baseline conditions. More recent pesticide use data also is available at the same online location.

CDPR annually collects and processes more than 2.5 million records of pesticide applications. A single application creates more than one record if multiple pesticide products are applied at the same time. The reporting requirements apply to pesticide applications in production agriculture, parks, golf courses, cemeteries, rangeland, pastures, and along roadside and railroad rights-of-way. In addition, all postharvest pesticide treatments of agricultural commodities must be reported, along with all pesticide treatments in poultry and fish production as well as some livestock applications. All uses by licensed applicators and outdoor applications of pesticides with the potential to pollute groundwater must be reported. The primary exceptions to the reporting requirements are home-and-garden use and most industrial and institutional uses (CDPR 2013).

As summarized in Table 5-5, approximately 192 million pounds of pesticide active ingredients were reported as being used in California in 2011. Reported pesticide applications are only a portion of the pesticides sold each year. Typically, about two-thirds of the pesticide active ingredients sold in a given year are not subject to use reporting. Examples of non-reported active ingredients are chlorine (used primarily for municipal water treatment) and home-use pesticide products. Approximately 619 million pounds of pesticide active ingredients were sold in 2011. Sales data are posted online (www.cdpr.ca.gov; click “A–Z Index,” “Sales of pesticides”). Sales data does not necessarily equal the total pesticide used because some pesticides may not be completely used in a given calendar year.

Based on CDPR 2011 reported pesticide use data, Tables 5-6 through 5-11 show the breakdown of pesticide use by county and chemical for the chemicals analyzed in the risk assessment for the Proposed Program; note that totals shown in the left hand column do not exactly match the sum of the remaining columns due to the rounding used in presenting results. All other chemicals in a classification are included in the total for this classification. The pesticides are shown for the following classifications listed above and may contain overlap because some chemicals may be in more than one category. Table 5-12 shows the important farmland acreage by county, which helps to put the amount of chemicals used in a specific county in context with the amount of agricultural area.

Table 5-5. Pounds of Reported Pesticide Active Ingredients Used in California (2011)

Use	Pounds of Active Ingredients
Production Agriculture	176,924,973
Postharvest Fumigation	1,442,570
Structural[1] Pest Control	3,202,012
Landscape Maintenance	1,929,956
All Other Reported Use	8,469,802
Total Reported Use	**191,969,313**

Note:

[1] This refers to pesticide use in and around buildings.

Source: CDPR 2013

The greatest pesticide use reported in 2011 (and in previous years) was in California's San Joaquin Valley. Fresno, Kern, Tulare, San Joaquin, and Madera counties reported the highest pesticide use of all the counties in the state (CDPR 2013:12–13).

The quantity of pesticides used is not necessarily an indicator of the extent of risk of pesticide use. For example, farmers may replace a more acutely hazardous pesticide used at one pound per acre with a less hazardous compound that must be applied at several pounds per acre. This would increase the amount of pesticides used without necessarily indicating an increased risk.

Recent Trends in Quantity of Pesticide Use

Annual use has varied from year to year since complete reporting was initiated in 1990. These fluctuations can be attributed to a variety of factors, including changes in planted acreage, changes in demand for commodities, pest pressures, weather conditions, changes in climate, and changes in pesticide formulations and product registrations.

Reported pesticide use has ranged from a low of approximately 157 million pounds in 2001, to a high of 196 million pounds in 2005. The reported pesticide use in California in 2011 (approximately 192 million pounds) was an increase of just over 17 million pounds from 2010. Production agriculture, the major category of use subject to reporting requirements, accounted for nearly all of the increase. Applications increased by 17 million pounds for production agriculture, 202,000 pounds for landscape maintenance, and 872,000 pounds for other reported non-agricultural uses, that included right-of-ways, vector control, research, and fumigation of nonfood and nonfeed materials, such as lumber and furniture. In contrast, a 718,000-pound decrease occurred in postharvest treatments and a 532,000-pound decrease occurred in structural pest control.

Pesticide sales show similar variation. A reported 619 million pounds of pesticide active ingredients were sold in 2011, 629 million pounds were sold in 2010, 594 million pounds were sold in 2009, 713 million pounds were sold in 2008, and 678 million pounds were sold in 2007 (CDPR 2013).

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Table 5-6. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Draft PEIR Risk Assessment: Organophosphate- and Carbaryl-Based Chemicals

County	Quantity of Pesticide Active Ingredients Used (pounds)								
	Total Organophosphate /Carbamate Pesticide Use	Non-Program Chemicals	Acephate	Carbaryl	Chlorpyriphos	Dichlorvos	Diazinon	Malathion	Naled
Alameda	3,996	3,544	71	24	35	137	47	110	28
Alpine	-	-	-	-	-	-	-	-	-
Amador	1,263	1,212	-	0.001	51	-	-	-	-
Butte	101,937	70,360	36	191	24,724	38	4	74	6,510
Calaveras	1,912	1,423	-	-	171	-	0.3	220	97
Colusa	142,834	120,265	0.001	790	8,751	-	4,081	7,536	1,410
Contra Costa	27,772	21,291	54	824	974	0.3	546	4,082	-
Del Norte	6,518	6,512	5	-	-	-	-	-	-
El Dorado	2,426	1,827	85	28	1	-	430	56	-
Fresno	1,271,813	841,283	50,058	16,880	257,588	159	4,034	38,422	63,389
Glenn	95,488	65,845	1	1,298	20,376	-	-	6,015	1,953
Humboldt	36	5	0.4	30	-	-	0.02	-	-
Inyo	623,954	503,969	5,137	-	71,023	-	2,293	37,844	3,689
Imperial	219	149	-	70	-	-	-	-	-
Kern	690,992	416,052	5,115	5,912	218,448	146	11,152	31,195	2,973
Kings	615,036	396,275	17,533	4,900	124,402	388	378	8,544	62,616
Lake	2,723	974	1	13	263	-	1,079	393	-
Lassen	3,386	759	0.1	2	2,602	-	-	23	-
Los Angeles	13,360	8,914	1,355	655	328	741	47	1,058	261
Madera	221,308	182,378	2,231	1,085	23,537	15	3,189	7,204	1,670
Marin	537	413	118	5	0.1	0.04	0.2	1	-
Mariposa	36	27	1	8	-	-	-	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)								
	Total Organophosphate /Carbamate Pesticide Use	Non-Program Chemicals	Acephate	Carbaryl	Chlorpyriphos	Dichlorvos	Diazinon	Malathion	Naled
Mendocino	746	482	0.14	31	24	-	181	29	-
Merced	341,635	251,521	1,570	2,154	34,041	340	815	50,893	301
Modoc	6,863	4,655	472	-	1,644	-	-	91	-
Mono	2,359	1,187	0.001	990	182	-	-	-	-
Monterey	411,180	227,056	25,627	5,484	38,315	23	19,792	80,338	14,545
Napa	5,043	4,907	1	20	114	-	-	-	0.3
Nevada	106	85	6	12	-	-	0.4	3	-
Orange	11,703	6,935	1,542	299	772	18	105	1,770	261
Placer	6,071	4,345	30	10	1,364	-	78	243	-
Plumas	122	75	47	-	-	-	0.0002	-	-
Riverside	143,719	130,572	1,584	502	7,866	65	707	2,171	252
Sacramento	40,271	27,372	207	4,828	3,006	0.4	2,299	2,396	163
San Benito	38,727	29,086	2,367	331	2,832	103	2,077	881	1,049
San Bernardino	19,656	15,340	389	268	1,924	334	9	690	702
San Diego	14,897	6,111	3,459	583	2,454	74	97	2,119	-
San Francisco	476	303	67	103	1	0.02	2	-	-
San Joaquin	267,078	177,858	1,015	10,090	40,018	396	3,747	32,125	1,829
San Luis Obispo	75,540	31,213	1,793	74	2,695	-	3,293	33,612	2,861
San Mateo	5,464	3,060	312	275	646	-	3	932	237
Santa Barbara	156,875	51,283	8,940	224	16,328	-	1,560	67,738	10,802
Santa Clara	29,419	17,631	2,309	77	1,506	2	4,481	2,466	947
Santa Cruz	32,158	4,933	1,447	533	1,714	-	2,472	19,252	1,807
Shasta	3,074	1,173	20	164	1,444	1	9	265	-
Sierra	-	-	-	-	-	-	-	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)								
	Total Organophosphate /Carbamate Pesticide Use	Non-Program Chemicals	Acephate	Carbaryl	Chlorpyriphos	Dichlorvos	Diazinon	Malathion	Naled
Siskiyou	3,144	2,063	593	-	379	-	-	110	-
Solano	45,133	35,405	3	164	6,833	-	2,003	725	-
Sonoma	14,073	12,261	256	107	1,327	-	61	21	40
Stanislaus	223,764	144,513	3,740	3,258	56,868	631	1,843	12,462	449
Sutter	117,313	65,955	931	3,196	27,119	114	7,840	3,425	8,733
Tehama	22,491	13,089	13	442	8,176	78	187	506	-
Trinity	3	2	1	-	-	0.3	-	-	-
Tulare	512,119	243,995	3,157	2,583	244,859	1,252	1,323	13,909	1,041
Tuolumne	727	727	-	-	0.1	-	0.3	-	-
Ventura	99,171	38,228	8,285	1,317	19,102	0.1	1,182	28,179	2,878
Yolo	134,475	112,031	361	3,903	6,509	178	2,636	8,842	15
Yuba	27,133	6,112	1	20	12,740	3	511	2,342	5,404
California Total	**6,640,274**	**4,315,042**	**152,346**	**74,756**	**1,296,074**	**5,236**	**86,595**	**511,313**	**198,913**

Source: CDPR 2013; additional data available online: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-7. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Final PEIR Risk Assessment: Proposition 65 Reproductive Toxic Chemicals

County	Quantity of Pesticide Active Ingredients Used (pounds)			
	Total Prop 65 Reproductive Toxic Pesticide Use	Non-Program Chemicals	Proposed Program Chemicals	
			Carbaryl	Dichlorvos
Alameda	15,073	14,921	24	128
Alpine	-	-	-	-
Amador	6,685	6,685	0.001	-
Butte	296,816	296,588	191	37
Calaveras	17,013	17,013	-	-
Colusa	163,033	162,243	790	-
Contra Costa	39,693	38,869	824	0.276
Del Norte	247,473	247,473	-	-
El Dorado	7,063	7,035	28	-
Fresno	7,025,398	7,008,365	16,880	153
Glenn	206,551	205,252	1,298	-
Humboldt	8,960	8,930	30	-
Inyo	1,305,086	1,305,086	-	-
Imperial	158	88	70	-
Kern	7,036,785	7,030,732	5,912	141
Kings	1,518,462	1,513,201	4,900	361
Lake	8,876	8,863	13	-
Lassen	644	642	2	-
Los Angeles	68,840	67,495	655	689
Madera	985,679	984,579	1,085	15
Marin	1,496	1,491	5	0.035
Mariposa	88	80	8	-
Mendocino	19,910	19,879	31	-
Merced	932,991	930,520	2,154	317
Modoc	77,862	77,862	-	-
Mono	1,207	217	990	-
Monterey	1,535,609	1,530,103	5,484	22
Napa	53,309	53,288	20	-
Nevada	1,452	1,440	12	-

County	Quantity of Pesticide Active Ingredients Used (pounds)			
	Total Prop 65 Reproductive Toxic Pesticide Use	Non-Program Chemicals	Proposed Program Chemicals	
			Carbaryl	Dichlorvos
Orange	102,049	101,734	299	17
Placer	14,289	14,278	10	-
Plumas	708	708	-	-
Riverside	718,994	718,432	502	60
Sacramento	105,538	100,709	4,828	0.371
San Benito	177,952	177,525	331	96
San Bernardino	48,542	47,964	268	310
San Diego	97,398	96,746	583	69
San Francisco	712	609	103	0.021
San Joaquin	1,055,322	1,044,851	10,090	382
San Luis Obispo	788,116	788,042	74	-
San Mateo	86,614	86,339	275	-
Santa Barbara	1,929,298	1,929,074	224	-
Santa Clara	254,759	254,680	77	2
Santa Cruz	364,817	364,284	533	-
Shasta	11,748	11,584	164	0.546
Sierra	-	-	-	-
Siskiyou	21,615	21,615	-	-
Solano	41,978	41,814	164	-
Sonoma	63,599	63,491	107	-
Stanislaus	1,649,957	1,646,105	3,258	594
Sutter	313,702	310,395	3,196	111
Tehama	269,282	268,764	442	76
Trinity	187	187	-	0.233
Tulare	1,296,632	1,292,883	2,583	1,166
Tuolumne	3,040	3,040	-	-
Ventura	1,214,162	1,212,845	1,317	0.127
Yolo	427,802	423,726	3,903	173
Yuba	178,562	178,538	20	3
California Total	32,819,582	32,739,903	74,756	4,923

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-8. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Draft PEIR Risk Assessment: Cancer-Causing Chemicals

County	Quantity of Pesticide Active Ingredients Used (pounds)				
	Total Cancer-Causing Pesticide Use	Non-Program Chemicals	Proposed Program Chemicals		
			Carbaryl	Methyl Bromide	Tau-Fluvalinate
Alameda	19,745	4,324	24	15,396	0.101
Alpine	0.946	0.946	-	-	-
Amador	503	503	0.001	-	-
Butte	18,000	2,543	191	15,266	0.006
Calaveras	376	376	-	-	-
Colusa	4,536	2,621	790	1,099	26
Contra Costa	15,574	14,739	824	11	1.105
Del Norte	130,046	130,045	-	-	1.146
El Dorado	1,831	1,802	28	-	0.906
Fresno	3,070,204	3,041,768	16,880	11,556	0.028
Glenn	54,628	4,682	1,298	48,648	0.525
Humboldt	1,076	1,046	30	-	0.008
Imperial	1,211,385	1,211,385	-	-	-
Inyo	76	6	70	-	-
Kern	4,356,503	4,246,940	5,912	103,650	-
Kings	724,379	714,476	4,900	5,003	0.103
Lake	870	857	13	-	-
Lassen	19,134	424	2	18,707	-
Los Angeles	136,090	7,799	655	127,634	2
Madera	328,448	241,615	1,085	85,748	0.065
Marin	269	264	5	-	0.094
Mariposa	27	20	8	-	-
Mendocino	1,745	1,714	31	-	0.037
Merced	128,143	59,673	2,154	66,311	4
Modoc	57,799	57,799	-	-	-
Mono	1,099	109	990	-	-

County	Total Cancer-Causing Pesticide Use	Non-Program Chemicals	Carbaryl	Methyl Bromide	Tau-Fluvalinate
	Quantity of Pesticide Active Ingredients Used (pounds)		Proposed Program Chemicals		
Monterey	1,105,871	160,830	5,484	939,467	90
Napa	2,479	2,453	20	6	-
Nevada	311	299	12	-	-
Orange	8,049	7,273	299	434	44
Placer	11,190	2,345	10	8,826	8
Plumas	253	253	-	-	-
Riverside	572,721	567,886	502	4,312	22
Sacramento	17,175	12,335	4,828	4	8
San Benito	5,666	4,238	331	1,096	0.179
San Bernardino	1,701	1,321	268	104	8
San Diego	49,740	21,027	583	27,890	239
San Francisco	785	682	103	-	0.189
San Joaquin	412,067	216,864	10,090	185,094	19
San Luis Obispo	174,647	78,707	74	95,839	27
San Mateo	21,986	21,662	275	-	48
Santa Barbara	288,621	79,710	224	208,651	36
Santa Clara	7,121	5,095	77	1,943	7
Santa Cruz	343,185	2,931	533	339,713	8
Shasta	43,634	5,529	164	37,941	-
Sierra	3	3	-	-	-
Siskiyou	717,705	9,059	-	708,646	-
Solano	20,436	20,272	164	-	-
Sonoma	19,512	19,404	107	0.276	0.571
Stanislaus	190,500	123,059	3,258	64,182	2
Sutter	109,739	7,169	3,196	99,355	19
Tehama	70,646	1,727	442	68,477	-
Trinity	189	189	-	-	-
Tulare	247,892	200,825	2,583	44,484	0.135
Tuolumne	40	40	-	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)				
	Total Cancer-Causing Pesticide Use	Non-Program Chemicals	Proposed Program Chemicals		
			Carbaryl	Methyl Bromide	Tau-Fluvalinate
Ventura	1,110,236	461,536	1,317	647,258	126
Yolo	69,589	55,570	3,903	10,043	73
Yuba	3,455	789	20	2,646	-
California Total	15,909,630	11,838,611	74,756	3,995,441	822

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-9. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Final PEIR Risk Assessment: Pyrethrins and Pyrethroids

	Quantity of Pesticide Active Ingredients Used (pounds)									
			Proposed Program Pyrethrins and Pyrethroids							
County	Total Pyrethrins and Pyrethroids	Non-Program Pyrethrins and Pyrethroids	Beta-Cyfluthrin	Bifenthrin	Cyfluthrin	Deltamethrin	Fenpropathrin	Lambda-Cyhalothrin	Permethrin	Tau-Fluvalinate
Alameda	2,588	751	79	889	226	50	0.1	170	422	0.1
Alpine	9	4	0.1	1	2	0.1			3	
Amador	393	105	16	110	61	1		1	99	
Butte	7,325	1,653	25	1,358	147	15		1,582	2,545	0.01
Calaveras	1,871	435	6	127	101	2		2	1,199	
Colusa	7,088	984	56	3,493	31	2	61	1,121	1,315	26
Contra Costa	6,277	1,417	99	2,919	211	77	351	205	997	1
Del Norte	91	22	1	27	20	0.1		0.2	20	1
El Dorado	7,926	513	38	6,401	31	65	11	44	823	1
Fresno	79,128	24,782	2,095	28,950	1,583	65	2,151	6,380	13,121	0.03
Glenn	6,522	2,129	27	1,408	16	3	101	773	2,066	1
Humboldt	266	49	1	149	36	0.4	2	2	27	0.01
Imperial	31,393	12,965	1,815	2,605	334	66	148	5,317	8,144	
Inyo	60	25	2	8	8	3		9	4	
Kern	62,260	11,001	1,836	26,948	2,833	276	5,822	4,167	9,377	
Kings	26,703	5,904	815	12,677	314	5	1,565	1,337	4,086	0.1
Lake	26,525	1,121	11	137	6	8	25	0.3	25,217	
Lassen	308	91	25	7	81	0.2		8	95	
Los Angeles	92,196	20,017	2,752	8,361	8,180	1,290	2	1,348	50,245	2
Madera	33,097	3,035	326	19,466	90	17	196	2,424	7,544	0.1
Marin	813	56	23	238	26	19		10	440	0.1
Mariposa	213	124	1	23	6	3		0.3	57	

County	Quantity of Pesticide Active Ingredients Used (pounds)									
			Proposed Program Pyrethrins and Pyrethroids							
	Total Pyrethrins and Pyrethroids	Non-Program Pyrethrins and Pyrethroids	Beta-Cyfluthrin	Bifenthrin	Cyfluthrin	Deltamethrin	Fenpropathrin	Lambda-Cyhalothrin	Permethrin	Tau-Fluvalinate
Mendocino	322	192	27	42	1	0.5	5	7	47	0.04
Merced	32,934	4,600	473	10,459	748	4,767	653	4,991	6,238	4
Modoc	59	0.1	25	0.01	0.04			34		
Mono	272	4	0.03	2	0.1	0.2		28	238	
Monterey	49,770	6,140	51	4,562	507	31	2,361	4,361	31,666	90
Napa	285	48	8	115	5	3	2	31	74	
Nevada	527	90	7	291	44	2		4	90	
Orange	84,614	2,628	1,147	31,014	1,909	917	21	907	46,026	44
Placer	8,629	1,898	134	5,113	435	122	2	245	673	8
Plumas	122	43	2	2	32	0.1		0.1	42	
Riverside	25,510	4,637	1,359	12,029	783	316	108	1,675	4,581	22
Sacramento	51,728	2,604	147	40,678	634	543	126	985	6,003	8
San Benito	3,133	569	17	230	59	5	22	316	1,915	0.2
San Bernardino	18,943	3,139	497	9,132	944	322	39	1,455	3,407	8
San Diego	32,806	3,078	582	15,153	973	852	125	920	10,883	239
San Francisco	743	335	30	62	159	23		22	110	0.2
San Joaquin	23,512	3,091	91	7,511	432	110	931	4,086	7,241	19
San Luis Obispo	5,329	865	122	739	202	34	1,441	153	1,746	27
San Mateo	3,680	415	44	208	46	70	1	10	2,838	48
Santa Barbara	11,608	1,206	226	1,248	178	14	2,260	360	6,079	36
Santa Clara	18,910	2,240	586	1,560	157	136	2	254	13,970	7
Santa Cruz	1,949	439	1	359	28	2	313	235	565	8

County	Quantity of Pesticide Active Ingredients Used (pounds)									
			Proposed Program Pyrethrins and Pyrethroids							
	Total Pyrethrins and Pyrethroids	Non-Program Pyrethrins and Pyrethroids	Beta-Cyfluthrin	Bifenthrin	Cyfluthrin	Deltamethrin	Fenpropathrin	Lambda-Cyhalothrin	Permethrin	Tau-Fluvalinate
Shasta	2,088	653	51	122	121	9		59	1,074	
Sierra	9	4	0.2	3	1	0.1		0.01	0.3	
Siskiyou	487	121	134	49	74	0.3		73	35	
Solano	4,437	1,112	95	1,250	111	42		1,283	544	
Sonoma	3,698	232	77	547	101	389	97	18	2,237	1
Stanislaus	27,725	5,996	87	7,513	891	119	418	3,017	9,682	2
Sutter	9,029	3,062	35	2,319	128	11		1,960	1,494	19
Tehama	1,864	686	7	547	46	3	7	73	496	
Trinity	15	5	2	3	2	0.1		0.003	3	
Tulare	26,948	4,710	1,687	4,361	679	11	7,556	1,716	6,227	0.1
Tuolumne	1,407	445	1	240	103	1	0.4	0.3	616	
Ventura	12,565	2,982	130	2,772	641	89	969	114	4,743	126
Yolo	8,565	1,778	38	4,008	170	94	101	1,727	576	73
Yuba	3,499	1,398	15	504	88	9	2	541	940	
California Total	**870,771**	**148,627**	**17,985**	**281,049**	**25,773**	**11,010**	**27,996**	**56,560**	**300,949**	**822**

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-10. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Final PEIR Risk Assessment: Biopesticides

County	Quantity of Pesticide Active Ingredients Used (pounds)											
			Proposed Program Biopesticides									
	Total Biopesticides	Non-Program Biopesticides	*Bt israelensis* Serotype H14	*Bt kurstaki* Serotype 3A, 3B	*Bt kurstaki* Strain EG 23	*Bt israelensis* Strain AM 65-52	E,E-8,10-Dodecadien-1-ol	Geraniol	Limonene	Margosa Oil	Methyl Eugenol	Propylene Glycol
Alameda	6,348	3,436	-	33	0.049	-	1	-	-	2,878	-	-
Alpine	1.42	0.709	-	-	-	-	0.709	-	-	-	-	-
Amador	96	72	-	-	-	-	3	-	-	20	-	-
Butte	5,244	2,644	-	-	-	-	2,559	37	-	5	-	-
Calaveras	136	107	-	-	-	-	8	-	-	21	-	-
Colusa	1,667	1,667	-	-	-	-	-	-	-	-	-	-
Contra Costa	4,774	4,253	12	9	-	-	53	-	-	447	-	-
Del Norte	2	2	-	-	-	-	-	-	-	-	-	-
El Dorado	569	510	-	0.349	4	-	17	0.574	-	37	-	-
Fresno	112,897	107,812	0.013	897	75	371	2,856	103	0.596	657	124	-
Glenn	2,212	1,117	-	0.009	5	-	1,090	-	-	-	-	-
Humboldt	84	79	-	0.153	-	-	5	-	-	-	-	-
Imperial	11,724	10,392	-	-	-	-	3	-	-	183	1,146	-
Inyo	724	32	-	675	-	-	17	-	-	-	-	-
Kern	108,238	99,495	-	858	71	-	6,240	-	-	88	1,486	-
Kings	13,980	8,506	-	4,587	-	13	862	6	-	-	-	5
Lake	3,389	2,728	-	531	-	-	9	105	1	14	-	-
Lassen	9	4	-	-	-	-	-	-	-	4	-	-
Los Angeles	22,690	14,410	3	232	-	-	1,184	-	-	6,860	-	-
Madera	17,920	16,111	-	51	-	-	1,756	-	2	-	-	-
Marin	2,982	1,598	-	4	0.128	-	767	-	-	613	-	-
Mariposa	29	29	-	-	-	-	-	0.047	-	-	-	-
Mendocino	2,723	2,661	0.026	-	-	-	-	36	4	22	-	-
Merced	8,502	5,095	-	216	-	-	3,162	-	-	28	-	-
Modoc	24	24	-	-	-	-	-	-	-	-	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)											
			Proposed Program Biopesticides									
	Total Biopesticides	Non-Program Biopesticides	*Bt israelensis* Serotype H14	*Bt kurstaki* Serotype 3A, 3B	*Bt kurstaki* Strain EG 23	*Bt israelensis* Strain AM 65-52	E,E-8,10-Dodecadien-1-ol	Geraniol	Limonene	Margosa Oil	Methyl Eugenol	Propylene Glycol
Mono	100	11	-	84	-	-	5	-	-	-	-	-
Monterey	47,026	38,680	0.069	16	0.354	-	230	3	-	3,976	4,120	-
Napa	18,229	18,054	-	3	0.606	-	-	-	2	169	-	-
Nevada	37	37	-	-	-	-	-	-	-	-	-	-
Orange	14,752	8,878	0.003	4	-	-	1,349	-	-	4,307	214	-
Placer	10,609	5,368	-	14	-	-	5,224	4	-	0.016	-	-
Plumas	0.115	0.115	-	-	-	-	-	-	-	-	-	-
Riverside	15,814	15,205	-	90	-	-	421	-	-	98	-	-
Sacramento	9,719	8,436	-	296	0.273	7	543	355	-	82	-	-
San Benito	4,174	3,326	-	-	-	-	9	19	-	712	109	-
San Bernardino	2,791	2,367	-	99	-	-	5	-	-	320	-	-
San Diego	36,225	20,930	0.647	2,191	5	-	1,013	0.743	-	12,077	6	-
San Francisco	939	494	0.036	2	0.004	-	1	-	-	442	-	-
San Joaquin	31,465	18,509	7	8,181	32	45	3,615	379	2	695	-	-
San Luis Obispo	39,224	38,878	-	0.143	2	1	244	-	-	99	-	-
San Mateo	8,043	3,884	0.016	982	0.208	-	0.234	12	-	3,164	-	-
Santa Barbara	59,787	59,270	-	4	0.005	-	265	21	-	227	-	-
Santa Clara	26,076	15,331	0.199	19	0.556	-	242	-	-	10,483	-	-
Santa Cruz	18,730	17,937	-	26	-	-	197	34	-	536	-	-
Shasta	789	371	-	183	0.018	-	235	-	-	-	-	-
Sierra	0.010	0.010	-	-	-	-	-	-	-	-	-	-
Siskiyou	38	38	-	-	-	-	-	-	-	-	-	-
Solano	660	617	-	0.055	-	-	-	4	-	40	-	-
Sonoma	13,051	10,655	2	530	0.152	2	633	5	0.182	1,224	-	-

	Quantity of Pesticide Active Ingredients Used (pounds)											
			Proposed Program Biopesticides									
County	**Total Biopesticides**	**Non-Program Biopesticides**	***Bt israelensis* Serotype H14**	***Bt kurstaki* Serotype 3A, 3B**	***Bt kurstaki* Strain EG 23**	***Bt israelensis* Strain AM 65-52**	**E,E-8,10-Dodecadien-1-ol**	**Geraniol**	**Limonene**	**Margosa Oil**	**Methyl Eugenol**	**Propylene Glycol**
Stanislaus	8,259	6,878	-	141	-	-	1,039	121	-	78	-	-
Sutter	18,881	11,193	-	72	-	-	7,386	24	-	205	-	-
Tehama	25	20	-	4	-	-	-	0.725	-	-	-	-
Trinity	0.076	0.076	-	-	-	-	-	-	-	-	-	-
Tulare	43,905	41,530	-	593	47	38	864	42	0.093	295	496	-
Tuolumne	1.389	0.755	-	-	-	-	-	-	-	0.634	-	-
Ventura	49,279	47,405	0.169	1	-	-	889	11	-	972	-	-
Yolo	35,020	23,045	-	793	0.009	-	6,117	47	-	5,017	-	-
Yuba	3,080	1,652	-	-	-	-	1,414	14	-	0.015	-	-
California Total	843,689	701,785	26	22,423	244	478	52,533	1,384	12	57,096	7,701	5

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-11. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Draft PEIR Risk Assessment: Toxic Air Contaminants

County	Quantity of Pesticide Active Ingredients Used (pounds)						
			Proposed Program Chemicals				
	Total	Non-Program Chemicals	Carbaryl	Dichlorovos	Methyl Bromide	Napthalene	Xylene
Alameda	76,499	60,951	24	128	15,396	-	-
Alpine	-	-	-	-	-	-	-
Amador	1,879	1,879	0.001	-	-	-	-
Butte	318,598	303,104	191	37	15,266	-	-
Calaveras	1,306	1,306		-	-	-	-
Colusa	98,267	96,377	790	-	1,099	-	-
Contra Costa	31,755	30,920	824	0.3	11	-	-
Del Norte	244,963	244,963		-	-	-	-
El Dorado	8,370	8,342	28	-	-	-	-
Fresno	7,156,187	7,127,584	16,880	153	11,556	-	14
Glenn	165,961	116,015	1,298	-	48,648	-	-
Humboldt	9,887	9,856	30	-	-	-	-
Imperial	1,402,092	1,401,895	-	-	-	-	197
Inyo	296	225	70	-	-	-	-
Kern	7,056,975	6,947,272	5,912	141	103,650	-	-
Kings	1,615,192	1,604,929	4,900	361	5,003	-	-
Lake	5,388	5,375	13	-	-	-	-
Lassen	32,738	14,029	2	-	18,707	-	-
Los Angeles	855,477	726,499	655	689	127,634	-	-
Madera	922,517	835,669	1,085	15	85,748	-	-
Marin	16,679	16,674	5	0.03	-	0.02	-
Mariposa	188	181	8	-	-	-	-
Mendocino	22,387	22,356	31	-	-	-	-
Merced	876,840	808,053	2,154	317	66,311	-	5
Modoc	79,692	79,692	-	-	-	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)						
			Proposed Program Chemicals				
	Total	Non-Program Chemicals	Carbaryl	Dichlorovos	Methyl Bromide	Napthalene	Xylene
Mono	1,430	440	990	-	-	-	-
Monterey	2,587,453	1,642,477	5,484	22	939,467	-	3
Napa	46,479	46,454	20	-	6	-	-
Nevada	824	812	12	-	-	-	-
Orange	402,270	401,520	299	17	434	-	-
Placer	21,506	12,670	10	-	8,826	-	-
Plumas	920	920		-	-	-	-
Riverside	813,440	808,566	502	60	4,312	-	0.1
Sacramento	107,264	102,421	4,828	0.4	4	-	10
San Benito	169,472	167,947	331	96	1,096	-	1
San Bernardino	68,870	68,189	268	310	104	-	-
San Diego	474,471	445,929	583	69	27,890	-	0.1
San Francisco	1,330	1,226	103	0.02	-	-	-
San Joaquin	1,212,985	1,017,401	10,090	382	185,094	-	19
San Luis Obispo	905,380	809,467	74	-	95,839	-	-
San Mateo	132,427	132,152	275	-	-	-	-
Santa Barbara	2,166,643	1,957,759	224	-	208,651	-	10
Santa Clara	397,961	395,909	77	2	1,943	-	30
Santa Cruz	711,779	371,533	533	-	339,713	-	-
Shasta	53,790	15,684	164	1	37,941	-	-
Sierra	2	2	-	-	-	-	-
Siskiyou	734,594	25,948	-	-	708,646	-	-
Solano	47,724	47,561	164	-	-	-	-
Sonoma	83,763	83,656	107	-	0.3	-	-
Stanislaus	1,699,136	1,631,101	3,258	594	64,182	-	1
Sutter	392,730	290,068	3,196	111	99,355	-	-
Tehama	335,236	266,240	442	76	68,477	-	-

County	Quantity of Pesticide Active Ingredients Used (pounds)							
			Proposed Program Chemicals					
	Total	Non-Program Chemicals	Carbaryl	Dichlorovos	Methyl Bromide	Napthalene	Xylene
Trinity	298	297	-	0	-	-	-
Tulare	1,145,828	1,097,595	2,583	1,166	44,484	-	-
Tuolumne	5,452	5,452	-	-	-	-	-
Ventura	1,891,566	1,242,991	1,317	0	647,258	-	-
Yolo	471,559	457,439	3,903	173	10,043	-	0.1
Yuba	169,752	167,083	20	3	2,646	-	-
California Total	**38,254,467**	**34,179,056**	**74,756**	**4,923**	**3,995,441**	**0.02**	**291**

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

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Table 5-12. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Draft PEIR Risk Assessment: Ground Water Protection List

County	Quantity of Pesticide Active Ingredients Used (pounds)
Alameda	4,261
Alpine	-
Amador	7,330
Butte	22,748
Calaveras	15,625
Colusa	8,647
Contra Costa	28,107
Del Norte	1,078
El Dorado	1,313
Fresno	143,620
Glenn	21,585
Humboldt	342
Imperial	23,313
Inyo	29
Kern	186,522
Kings	63,935
Lake	3,599
Lassen	39
Los Angeles	34,218
Madera	61,769
Marin	300
Mariposa	40
Mendocino	421
Merced	48,768
Modoc	1,557
Mono	-
Monterey	13,031
Napa	5,410
Nevada	26
Orange	12,590
Placer	1,264
Plumas	-
Riverside	26,116
Sacramento	19,017
San Benito	397
San Bernardino	52,769
San Diego	15,936
San Francisco	-

County	Quantity of Pesticide Active Ingredients Used (pounds)
San Joaquin	68,490
San Luis Obispo	6,824
San Mateo	113
Santa Barbara	5,198
Santa Clara	2,224
Santa Cruz	207
Shasta	586
Sierra	-
Siskiyou	3,023
Solano	7,146
Sonoma	6,486
Stanislaus	44,226
Sutter	6,024
Tehama	14,648
Trinity	-
Tulare	232,328
Tuolumne	2,485
Ventura	7,609
Yolo	12,641
Yuba	3,584
California Total	**1,249,564**

Note: There are no Program chemicals on the Groundwater Protection List part a.

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Table 5-13. Reportable Pesticide Use in 2011 in California by County for Those Chemicals Analyzed in the Final PEIR Risk Assessment: USDA Organic Chemicals

County	Quantity of Pesticide Active Ingredients Used (pounds)						
			Proposed Program Chemicals				
	Total Chemicals	Non-Program Chemicals	Geraniol	Methyl Eugenol	Phenylethyl Propionate	Propylene Glycol	Spinosad
Alameda	137	125	-	-	3	0.0004	9
Alpine	0.02	0.02	-	-	0.005	-	-
Amador	1	1	-	-	-	-	-
Butte	22	18	-	-	1	-	2
Calaveras	34	34	-	-	0.01	-	0.01
Colusa	28	28	-	-	0.03	-	0.004
Contra Costa	473	345	-	-	4	-	125
Del Norte	1	0.5	-	-	1	-	-
El Dorado	18	16	-	-	1	-	2
Fresno	10,325	6,446	1	-	5	1	3,872
Glenn	60	59	-	-	0.003	-	2
Humboldt	15	14	-	-	1	-	1
Imperial	11,223	9,023	-	-	0.1	-	2,200
Inyo	12	11	-	-	0.2	-	-
Kern	24,975	18,164	-	-	3	-	6,809
Kings	2,899	1,934	-	5	0.004	0.05	959
Lake	148	92	1	-	0.5	-	55
Lassen	0.1	0.1	-	-	0.01	-	-
Los Angeles	1,099	979	-	-	91	0.02	28
Madera	847	76	2	-	2	-	766
Marin	61	49	-	-	2	-	10
Mariposa	1	1	-	-	0.3	-	-
Mendocino	41	24	4	-	2	-	12

County	Quantity of Pesticide Active Ingredients Used (pounds)						
			Proposed Program Chemicals				
	Total Chemicals	Non-Program Chemicals	Geraniol	Methyl Eugenol	Phenylethyl Propionate	Propylene Glycol	Spinosad
Merced	1,859	1,312	-	-	5	-	542
Modoc	0.03	0.03	-	-	-	-	-
Mono	1	0.3	-	-	1	-	-
Monterey	9,753	5,595	-	-	0.1	-	4,158
Napa	131	41	2	-	2	-	86
Nevada	2	2	-	-	0.2	-	0.1
Orange	523	368	-	-	27	-	128
Placer	55	35	-	-	3	-	18
Plumas	1	1	-	-	0.002	-	-
Riverside	1,370	825	-	-	19	-	526
Sacramento	827	266	-	-	3	-	558
San Benito	645	88	-	-	0.1	-	558
San Bernardino	118	79	-	-	13	-	26
San Diego	3,768	2,964	-	-	79	-	725
San Francisco	61	61	-	-	0.3	-	0.3
San Joaquin	1,266	499	2	-	2	-	764
San Luis Obispo	4,943	4,514	-	-	2	-	427
San Mateo	173	56	-	-	46	-	71
Santa Barbara	5,474	4,637	-	-	6	-	831
Santa Clara	885	629	-	-	64	0.2	192
Santa Cruz	3,006	2,698	-	-	0.3	-	308
Shasta	60	27	-	-	0.3	-	33
Sierra	0.03	0.03	-	-	0.004	-	-
Siskiyou	3	2	-	-	0.1	-	1
Solano	186	182	-	-	2	-	2

County	Quantity of Pesticide Active Ingredients Used (pounds)						
	Total Chemicals	Non-Program Chemicals	Proposed Program Chemicals				
			Geraniol	Methyl Eugenol	Phenylethyl Propionate	Propylene Glycol	Spinosad
Sonoma	195	136	0.2	-	11	-	48
Stanislaus	1,263	949	-	-	0.2	2	312
Sutter	319	232	-	-	0.1	-	87
Tehama	25	10	-	-	0.1	-	15
Trinity	0.002	0.001	-	-	0.001	-	-
Tulare	4,364	1,083	0.1	-	0.3	-	3,281
Tuolumne	2	2	-	-	0.005	-	-
Ventura	16,945	15,571	-	-	15	-	1,360
Yolo	318	52	-	-	3	-	264
Yuba	144	65	-	-	0.5	-	79
California Total	**111,112**	**80,421**	**12**	**5**	**421**	**3**	**30,251**

Source: CDPR 2013; additional data available: http://www.cdpr.ca.gov/docs/pur/purmain.htm

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Table 5-14. Farmland Acreage by County

County	Important Farmland (acres)
Alameda	7,566
Alpine	unavailable[1]
Amador	9,831
Butte	237,272
Calaveras	unavailable[1]
Colusa	554,695
Contra Costa	90,148
Del Norte	unavailable[1]
El Dorado	64,259
Fresno	1,370,273
Glenn	348,147
Humboldt	unavailable[1]
Inyo	unavailable[1]
Imperial	539,273
Kern	914,830
Kings	552,087
Lake	45,926
Lassen	112,490
Los Angeles	39,812
Madera	361,582
Marin	63,817
Mariposa	340
Mendocino	unavailable[1]
Merced	596,527
Modoc	285,997
Mono	unavailable[1]
Monterey	235,147
Napa	76,210
Nevada	25,934
Orange	7,264
Placer	132,741
Plumas	62,345
Riverside	428,989
Sacramento	211,744
San Benito	57,460
San Bernardino	22,761
San Diego	218,921
San Francisco	unavailable[1]
San Joaquin	614,994

County	Important Farmland (acres)
San Luis Obispo	409,726
San Mateo	5,292
Santa Barbara	125,292
Santa Clara	27,751
Santa Cruz	20,577
Shasta	19,716
Sierra	22,935
Siskiyou	759,080
Solano	147,464
Sonoma	160,250
Stanislaus	403,802
Sutter	285,820
Tehama	231,592
Trinity	unavailable[1]
Tulare	859,991
Tuolumne	unavailable[1]
Ventura	119,683
Yolo	374,534
Yuba	82,538
California Total	**123,454,252**

Notes:

[1] Agricultural acreage has not been mapped and, therefore, is unavailable.

[2] Reflects an incomplete total because of missing values for certain counties (see Footnote 1).

Source: CDPR 2013; additional data available online: http://www.cdpr.ca.gov/docs/pur/purmain.htm

Recent Trends in Types of Pesticides Used

Trends in pesticide applications in California over time indicate a marked decrease in reliance on traditional organophosphate and carbamate pesticide products (i.e., human cholinesterase-inhibiting insecticides that are broad-spectrum, affecting both target and non-target [including beneficial] insects) and a corresponding increased reliance on reduced-risk conventional pesticides and pesticide products that are approved for use in organic farming (e.g., sulfur, copper sulfate, *Bacillus thuringiensis*, spinosad, insecticidal soaps, horticultural oils, sticky traps). Between 2002 and 2011, the quantity of organophosphate and carbamate-based pesticide products decreased by 47 percent (CDPR 2013:30). A similar trend exists for pesticides on California's Proposition 65 list of chemicals that are known to cause reproductive toxicity. Between 2002 and 2011, the quantity of Proposition 65 pesticides decreased by 40 percent (CDPR 2013:20). This trend continued for pesticides on the "A" part of CDPR's groundwater protection list (i.e., atrazine, simazine, bromacil, diuron, prometon, bentazon, and norflurazon) which are ground water contaminants. Between 2002 and 2011, the quantity of Part A chemicals decreased by 45 percent (CDPR 2013:34). The quantity of pesticides listed on CDPR's TACs list remained fairly static (CDPR 2013:39). These trends are likely to continue, irrespective of CDFA's Statewide Program.

Activities Using Pesticides

Pesticide use occurs in a variety of settings throughout California, including agricultural production, around buildings and other structures, in urban and residential settings, along roadways, in waterways, and in natural settings, such as parks and forested areas. The majority of pesticide use is not associated with the Statewide Program. All pesticide use has the potential to generate effects; however, pesticide uses that generate potential effects which are isolated from effects generated by the Proposed Program are not evaluated further in this document. Table 5-15 identifies the past, existing, and future pesticide use activities within the geographic range of the Proposed Program. Each of these activities is briefly discussed below.

CDFA maintains numerous programs throughout California for the prevention and management of plant pests, including several programs that are not part of the Proposed Program. As identified in Table 5-15, several of these other programs use the same chemicals as the Proposed Program as well as other pesticides that have the potential to generate cumulative risk. Pesticide use under existing CDFA programs is conducted by CDFA, its contractors, or others who are conducting activities pursuant to CDFA requirements (e.g., in response to quarantines).

In addition to CDFA's programs, federal agencies, other state agencies, local agencies, and private parties (both commercial and non-commercial) use pesticides for a variety of purposes, including livestock and plant pest prevention and management, landscape maintenance, infrastructure maintenance, public health, and sanitation. These are also identified in Table 5-15.

Table 5-15. Past, Existing, and Future Pesticide Use Activities

Responsible Agency/Entity	Pesticide Use	Geographic Range
CDFA Pest Prevention and Management Programs		
CDFA Red Imported Fire Ant Interior Exclusion Program[1]	• Pesticide use, including bifenthrin, chlorpyrifos • Use of many different application methods	Areas in California supporting subtropical species[2]
CDFA Light Brown Apple Moth (LBAM) Eradication and Containment Program[1]	• Pesticide use, including chlorpyrifos, lambda-cyhalothrin, permethrin, spinosad, BtK • Use of many different application methods	Areas in California supporting subtropical species[2]
CDFA LBAM Exclusion Program	• Pesticide use, including carbaryl, chlorpyrifos, deltamethrin • Mechanically pressurized sprayer; backpack sprayer	Areas in California supporting subtropical species[2]
CDFA Gypsy Moth Eradication and Containment Program	• Pesticide use, including carbaryl • Use of many different application methods	Throughout California
CDFA Japanese Beetle Eradication and Containment Program	• Pesticide use, including carbaryl, imidacloprid • Use of many different application methods	Throughout California
CDFA Asian Citrus Psyllid Eradication and Containment Program	• Pesticide use, including imidacloprid, chlorpyrifos, carbaryl, cyfluthrin • Drench-mechanically pressurized sprayer; drench-chemigation; backpack sprayer	Areas in California supporting subtropical species[2]
CDFA Asian Citrus Psyllid Exclusion Program	• Pesticide use, including imidacloprid, fenpropathrin, chlorpyrifos, carbaryl, cyfluthrin • Drench-mechanically pressurized sprayer; drench-chemigation; backpack sprayer	Areas in California supporting subtropical species[2]
CDFA European Grapevine Moth Exclusion Program	• Pesticide use, including chlorpyrifos, carbaryl, deltamethrin • Mechanically pressurized sprayer; backpack sprayer	Throughout California

Responsible Agency/Entity	Pesticide Use	Geographic Range
CDFA Beet Curly Top Virus (BCTV) Eradication and Containment Program[1]	• Pesticide use, including malathion • Aerial spraying of agricultural and rangeland in the foothills under a permit with the U.S. Bureau of Land Management	San Joaquin, Imperial, and Salinas valleys[3]
CDFA Fruit Fly Control Program	• Pesticide use, including diazinon, dichlorvos (DDVP), naled, spinosad, malathion, and methyl bromide • Use of many different application methods, including aerial (in agricultural and nursery environments), use of traps and bait stations, backpack sprayer, tank sprayer, fumigation sprayer, and manual application	Throughout California below 1,500 feet elevation
CDFA Pierce's Disease Control Program	• Pesticide use including imidacloprid, acetamiprid, permethrin, cyfluthrin, carbaryl, fenpropathrin, deltamethrin, chlorpyriphos, tau-fluvalinate, acephate, pyrethrins, bifenthrin, fenpropathrin, and neem oil • Use of many different application methods	Throughout California, with the exception of Del Norte, Siskiyou, Modoc, Lassen, Plumas, Sierra, Alpine, Inyo, and Mono Counties.
All other CDFA Eradication, Containment, and Interior Exclusion Programs[1]	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Federal Agencies		
U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Services (APHIS) Glassy-Winged Sharpshooter (GWSS) Control	• Conducts or funds activities • Use of a variety of pesticides • Use of many different application methods	Various locations in California, including locations of suitable habitat for special-status species
USDA Control Programs for Other Pests	• Conducts or funds activities • Use of a variety of pesticides • Use of many different application methods	Various locations in California, including locations of suitable habitat for special-status species
National Park Service	• Use of a variety of pesticides • Use of many different application methods	Manages high profile federal parklands in California
U.S. Forest Service, Pacific Southwest Region 5	• Use of a variety of pesticides • Use of many different application methods	Manages 20 million acres of national forest in California

Responsible Agency/Entity	Pesticide Use	Geographic Range
U.S. Bureau of Land Management	• Use of a variety of pesticides • Use of many different application methods	Manages 17 million acres of public lands in California
U.S. Fish and Wildlife Service	• Use of a variety of pesticides • Use of many different application methods	Manages National Wildlife Reserves in California
U.S. Army Corps of Engineers, South Pacific Division	• Use of a variety of pesticides • Use of many different application methods	Owns 75,000 acres of land and 30,000 surface acres of water in California, primarily associated with dams
Bureau of Reclamation	• Use of a variety of pesticides • Use of many different application methods	Manages water conveyance facilities in California
Bureau of Indian Affairs	• Use of a variety of pesticides • Use of many different application methods	Assists tribes in pest prevention and management on tribal lands in California
State Agencies		
California Department of Parks and Recreation	• Use of a variety of pesticides • Use of many different application methods	Manages 1.4 million acres of public land in California
Department of Water Resources	• Use of a variety of pesticides • Use of many different application methods	Manages water conveyance facilities in California under Bureau of Reclamation oversight
California Department of Fish and Wildlife	• Use of a variety of pesticides • Use of many different application methods	Manages approximately 970,000 acres of fish and wildlife habitat
California Department of Boating and Waterways	• Use of a variety of pesticides • Use of many different application methods	Manages a program for control of certain aquatic weeds in Sacramento-San Joaquin Delta and its tributaries
California Department of Forestry and Fire Protection	• Use of a variety of pesticides • Use of many different application methods	Oversees fire protection on over 31 million acres of privately owned wildlands
California Department of Transportation	• Use of a variety of pesticides • Use of many different application methods	Manages roadside weeds along California highway right-of-ways

Responsible Agency/Entity	Pesticide Use	Geographic Range
California Bay-Delta Authority	• Use of a variety of pesticides • Use of many different application methods	Manages a program for control of certain aquatic weeds in Sacramento-San Joaquin Delta and its tributaries
Local Agencies		
County agricultural commissioners	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Pest control districts (i.e., commodity-specific special districts)	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Weed management areas (i.e., cooperative efforts to control commonly occurring noxious weeds)	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Cities	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Counties	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Other local and regional agencies (e.g., flood control districts, ports, special districts)	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Private Parties		
Voluntary activities	• Use of a variety of pesticides • Use of many different application methods	Throughout California
Tribes		
Voluntary activities	• Use of a variety of pesticides • Use of many different application methods	Throughout California on tribal lands

Notes:

[1] Not included in the Proposed Program but carried out by CDFA under previous CEQA and NEPA authorizations and other approvals.

[2] Subtropical species and associated pesticide use have the potential to occur in all California counties *except* Del Norte Siskiyou, Modoc, Lassen, Plumas, Sierra, Humboldt, and Trinity counties, and high elevations in Nevada, Placer, and El Dorado counties.

[3] BCTV activities occur in San Joaquin, Stanislaus, Merced, Fresno, Monterey, Kings, San Luis Obispo, Kern, Santa Barbara, Riverside, and Imperial counties.

Cumulative Impacts of Pesticide Use

Effects on Ecological Receptors and Human Health

Potential cumulative effects on ecological receptors and human health from pesticide use include potential additive and/or synergistic toxic effects on non-target ecological organisms and human health. For additional discussion of risk assessment methodologies in the context of potential additive and/or synergistic effects, see Section 6.5, Hazards and Hazardous Materials, and Appendix A, Ecological Risk Assessment, and Appendix B, Human Health Risk Assessment. Effects on human health from cumulative exposure to pesticides include potential to cause cancer, respiratory irritation, nausea, reproductive issues, and/or nervous system damage. Certain demographic groups are considered to be particularly at risk, because of their occupation, location, or particular sensitivity to certain ailments. These groups include nursery and production agriculture workers, the infirm and disabled, senior citizens, children, and those living in proximity to locations of pesticide applications. Effects on non-target ecological organisms from cumulative exposure to pesticides include morbidity and mortality of amphibians, reptiles, invertebrates (e.g., soil, terrestrial, aquatic), birds, mammals, and fish, including several special-status species. In addition, pesticide use has the potential to result in cumulative degradation of water quality.

The cumulative risk is equivalent to the aggregate and potential synergistic risk produced for receptors from the Proposed Program in combination with other pesticide use in the state. The cumulative risk that can be generated would depend on the pesticide chemicals used, other chemical additives used, how a pesticide is applied, where pesticide use occurs, the quantity and concentration of the pesticides applied, exposure pathways, and the biological characteristics of the receptor.

Air Emissions (including Greenhouse Gases)

To the extent that pesticide applications result in combustion of fuels (e.g., application methods using mechanical pumps), this would result in emissions of criteria pollutants and GHGs. In addition, volatilization of pesticide ingredients would result in the release of reactive organic compounds, which are ozone precursors as well as toxic air contaminants (TACs). These potential regional (e.g., ozone precursors and particulate matter) and localized impacts (particulate matter and TACs) could be of concern from a cumulative standpoint, depending on the setting in which the impacts occur (i.e., locations where other particulate matter and TACs are being released and other sources of ozone precursors within the same air basin). This would be a particular concern for areas where the current national and State ambient air quality standards are not being achieved.

Noise

Pesticide applications may involve motorized equipment that generates noise. Depending on the ambient noise environment in which the pesticide application is taking place, this may contribute to potential cumulative impacts, although in most cases, any noise increases would be temporary, lasting only for the duration of the pesticide application, and would not create a permanent increase in ambient noise levels.

Water Quality Degradation

Runoff of pesticides to water bodies is a known issue of concern. As described in Chapter 6.7, Water Quality, numerous water bodies in California are on the Clean Water Act 303(d) list as impaired for pesticides. Many others are listed as impaired for toxicity, the origin of which may be pesticide runoff. The State Water Resources Control Board and its Regional Water Quality Control Boards regulate discharges of pesticides to water bodies through the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act. The regulatory programs associated with these two laws are discussed in Appendix O, Regulatory Setting.

5.4.3 Prior Releases of Biological Control Agents into California

BCAs have been released to manage pests for hundreds of years throughout the world (Johnson 2000). The Chinese are believed to have been the first to use natural enemies to control pest populations because they are documented as having intentionally released a type of ant to control citrus pests in the third century (Johnson 2000). In Europe in 1776, the bedbug was effectively controlled through releases of the predatory pentatomid, *Picromerus bidens* (Johnson 2000).

In the early days of biological control, little scientific study was done before an agent was released into the environment (Johnson 2000). A species was released without first assessing their potential impacts on non-target organisms and, therefore, unintended consequences and substantial ecological impacts occurred. For example, the cane toad, native to Central and South America, which was released in Australia in 1935 to manage the Greyback cane beetle without scientific study beforehand, proved ineffective at controlling its target pest, preyed on a wide range of non-target organisms, and spread widely (Queensland Department of Agriculture, Fisheries, and Forestry 2013).

Since the 1950s, and especially over the last 15 years, however, the release of BCAs has become a scientifically rigorous process. Established protocols now exist for identifying the host-specificity of potential natural enemies (i.e., to ensure they do not prey on many non-target organisms) and testing the effects of agent release in small areas before commencing a full-scale program (CDFA 2013).

The scientifically-based process for BCA release adhered to by CDFA is described in Section 2.9.2, Biological Management Activities. With this process in place, biological control now is considered a safe and cost-effective approach to managing agricultural and other pests (CDFA 2013; U.S. Department of Agriculture 2013). Many successful biological control programs have been implemented in California and elsewhere. For example, since the introduction and establishment of a natural enemy of the Ash Whitefly in 1989, populations of this pest have been kept at low levels, resulting in substantial annual savings in pest control costs (CDFA 2013).

Cumulative Impacts of Prior Releases of Biological Control Agents

Key outcomes of prior releases of BCAs related to the relevant resources of concern include the following:

- Releases of BCAs are believed to be generally beneficial for agricultural resources and economics, because they reduce the prevalence of pest species that are harmful to agricultural crops.
- In the current regulatory environment, BCAs are not released that have potential for substantial adverse effects on sensitive species or habitats. Releases are closely monitored for adverse effects on non-target species and other types of unintended consequences. As a result, modern BCAs are believed to have a benign effect on native biological resources, and benefit these resources by reducing the prevalence of non-native pest species that may cause biological resource degradation.

5.4.4 International, Interstate, and Intrastate Travel and Movement of Goods

As the global population has increased dramatically over the last 25 years, and countries have continued to industrialize and grow, U.S. trade with foreign partners has increased substantially. Table 5-16 shows that U.S. imports from foreign countries increased by 480 percent (from $473 billion to $2,275 billion) between 1989 and 2012 (International Trade Administration 2013).

Table 5-16. Global Trade - Increase in U.S. Trade with Foreign Partners (1989-2012)

Trade	1989	2012
US Global Exports	$364 billion	$1,550 billion
US Global Imports	$473 billion	$2,275 billion

Source: International Trade Administration 2013

Having some of the nation's most active ports, California's international imports also have increased substantially (Haveman and Hummel 2004). California's trading partners are more diverse today than in the past, with more developing countries importing goods into the state than ever before. California's top 15 trading partners in 2012 were China, Japan, Mexico, Canada, South Korea, Germany, Taiwan, Malaysia, Saudi Arabia, Thailand, Ecuador, Iraq, Vietnam, Indonesia, and the United Kingdom (U.S. Census Bureau 2013). California is also a major destination for tourists; the state received 14.1 million international travelers in 2011 (Visit California 2012).

Interstate trade and travel in California has also increased in recent years. As shown in Table 5-17, the number of trucks entering and/or exiting California increased 170 percent (from 666,866 to 1,144,877) between 1995 and 2012 (U.S. Department of Homeland Security 2013). The number of personal vehicles also increased substantially (205 percent), as well as all other modes of transport (U.S. Department of Homeland Security 2013). With respect to tourism and travel, California was the destination for 215.1 million domestic person-trips in 2012 (Visit California 2012).

Table 5-17. Transborder Trade and Transport to/from California (1995-2012)

Mode	1995	2012
Trucks	7,995,635	10,727,430
Trains	40,453	37,481
Train Passengers	240,018	272,367
Buses	273,665	320,232
Bus Passengers	5,101,362	5,302,245
Personal Vehicles	100,930,608	95,786,139
Personal Vehicle Passengers	265,959,174	177,057,763
Pedestrians	33,533,935	41,568,621

Note: Units are number of vehicles or number of people.

Source: U.S. Department of Homeland Security 2013

Based on current projections for continued population and economic growth in the world and in California, these trends are likely to continue. Over the coming years, California is likely to see greater numbers of goods coming into its ports and across its borders, from foreign countries (including emerging economies with fewer resources available for enforcement of pest management requirements), as well as a greater number of visitors arriving by personal vehicle, bus, or other mode of transport, who may unknowingly and/or unintentionally transport damaging agricultural pests. Greater numbers of goods and vehicles also are likely to move (and potentially transport pests) within the state in the future.

For the Statewide Program, this future increased activity (and threat of pest introduction) at California's ports would increase the need for the exterior quarantine and CAPS programs. Additional inspectors likely would need to be staffed at CDFA's border stations, additional traps may need to be deployed, and additional visual surveys may need to be conducted at port and other areas where potentially infested shipments are destined. In addition to CDFA's Statewide Program, the USDA conducts similar activities at international ports and jointly administers the CAPS program with CDFA, which likely would need to increase its staff for these programs.

Although CDFA's Statewide Program is designed to prevent pests from entering the state, increased international and interstate trade and travel could result in greater numbers of pest introductions. CDFA's programmatic response (i.e., early detection trapping and surveys, rapid response eradication projects) should limit the chances that introduced pests become established and damage crops; however, an increased number of pests becoming established in the future would be possible. Therefore, more long-term quarantines may be necessary, and the overall magnitude of physical, biological, and chemical management activities may increase.

Cumulative Impacts of International, Interstate, and Intrastate Travel and Movement of Goods

Key outcomes of international, interstate, and intrastate travel and movement of goods related to the relevant resources of concern include:

- increased mobile source operational air emissions (including GHGs) into the environment from increased use of passenger automobiles, trucks, trains, and ships, to accommodate goods movement and travel;
- increased air emissions of diesel particulate matter into the environment, a TAC;
- increased invasion with competing species and pollution of sensitive habitats;
- increased potential for releases of hazardous materials into the environment, both intentional and unintentional, including potential hazardous accidents affecting the environment; and
- increasingly noisy environments associated with mobile sources used for travel and goods movement.

5.4.5 Global Industrialization and Development

As areas around the world continue to become more industrialized and develop further to increase the population and raise the standard of living, this increased industrialization and development will have numerous global impacts. Primarily, the increased industrialization and development will result in increases in the amount of GHGs emitted, and therefore will have an effect on global climate change. Numerous activities generate GHG emissions, including carbon dioxide (CO_2), methane, nitrous oxide, and fluorinated gases (F-gases). Fossil fuel use is the primary source of CO_2. Deforestation also is a major source of CO_2. Agricultural activities, waste management, and energy use all contribute to methane emissions. Fertilizer use for agriculture is the primary source of nitrous oxide emissions. Furthermore, industrial processes, refrigeration, and the use of a variety of consumer products contribute to emissions of F-gases, including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Industrialization and development will have impacts on products produced in California. These impacts will include increased demand and increased pest pressure because of new, favorable pest conditions resulting from climate change.

Cumulative Impacts of Global Industrialization and Development

Key outcomes of global industrialization and development related to the relevant resources of concern include:

- past and future conversion of agricultural and forest lands to other land uses because of competition from new global sources;
- increased amounts of air emissions and GHGs being emitted as a result of global industrialization and development;

- increased climate change effects because of increased amounts of GHG emissions in the environment;
- loss of species of concern because of climate change impacts;
- increased potential for releases of hazardous materials into the environment, both intentional and unintentional, including potential for hazardous accidents affecting the environment;
- increasingly noisy environments in developing and urbanized areas; and
- creation of new point-source discharges (e.g., wastewater treatment plants, industrial activities) and nonpoint source runoff (e.g., vehicles), as well as changes in quantity of runoff resulting from climate change.

5.5 Cumulative Impacts

Table 5-18 presents a summary of cumulative impacts and identifies those that are considered cumulatively significant. Chapter 6, Environmental Setting and Impacts Analysis evaluates the Proposed Program to determine whether it would make a cumulatively considerable incremental contribution to any significant cumulative impact.

Table 5-18. Cumulatively Significant Impacts

Resource Topic	Cumulatively Significant Impacts
Agricultural Resources and Economics	Increasing population levels and urbanization is resulting in a cumulatively significant conversion of agricultural land to other uses.
Air Quality	Increasing population levels; urbanization; international, interstate, and intrastate travel and movement of goods; and global industrialization and development is resulting in cumulatively significant levels of air pollution. Generation of air pollutant emissions affects the surrounding air quality, both at a local level especially for particulate matter and TACs, and at the air basin level especially for ozone precursors and particulate matter. Ambient air concentrations of criteria air pollutants above the ambient air quality standards are above levels that are protective to human health and the environment. Increases in air pollutant emissions require additional planning and reduction measures to attain and maintain air quality. A number of air basins in California are designated as being in non-attainment at the State or federal level for various air pollutants; such locations are of particular concern with respect to cumulative impacts for those pollutants.
Biological Resources	Increasing population levels, urbanization, and activities such as pesticide use are resulting in a cumulatively significant conversion of habitat, loss of species, and increased numbers of federal- and State-listed endangered and threatened species.
Global Climate Change	Increasing population levels; urbanization; international, interstate, and intrastate travel and movement of goods; and global industrialization and development are resulting in a significant cumulative impact on the global climate. Numerous activities generate greenhouse gas (GHG) emissions, including carbon dioxide, methane, nitrous oxide, and ozone. Anthropogenic emissions of GHGs are widely accepted in the scientific

Resource Topic	Cumulatively Significant Impacts
	community as contributing to global climate change. Because of the nature of climate change, potential local impacts must be considered on a statewide and even global scale.
Hazards and Hazardous Materials	Increasing population levels; urbanization; pesticide use; international, interstate, and intrastate travel and movement of goods; and global industrialization and development are generating cumulatively significant impacts on the physical environment related to hazards and hazardous materials, including increased health risks from exposure to hazardous chemicals and increasing cancer rates.
Noise	Increasing population levels; urbanization; international, interstate, and intrastate travel and movement of goods are resulting in a cumulatively significant contribution to noise and vibration impacts in California. The extent to which these noise and vibration impacts are cumulatively significant is site-specific, depending on the local noise environment and proximity of sensitive receptors.
Water Quality	Increasing population levels, urbanization, and pesticide use in the region may lead to a variety of cumulatively significant impacts on water quality, including new sources of point source and non-point source pollution, and discharges of contaminants to water bodies designated as having no further assimilation capacity for those contaminants (i.e., 303[d]-listed water bodies), or those that can become so designated.

Chapter 6
ENVIRONMENTAL SETTING AND IMPACTS ANALYSIS

6.0 Introduction to the Environmental Setting and Impacts Analysis

This chapter begins with introductory information related to the evaluation of environmental impacts associated with the CDFA's Proposed Program, and specifically introduces: the overall approach to the environmental setting and impacts analysis; describes how the significance of environmental impacts is evaluated; discusses resource topics eliminated from detailed analysis in this Final PEIR; discusses the issue of impacts which may occur outside of geographic boundaries of the State as a result of the Proposed Program; and details the concept of environmental risk.

6.0.1 Introduction to the Resource Sections

Seven topical sections are presented that describe the environmental resources and potential environmental impacts of the Proposed Program. Each section (Sections 6.1 through 6.7) contains the following information about its resource topic:

- a description of the environmental setting and background information related to the resource topic, to help the reader understand the resources that could be affected by the Proposed Program;
- a discussion of the thresholds used in determining the significance of the Proposed Program's potential environmental impacts;
- a discussion of the potential environmental impacts of the Proposed Program on the resource, including the significance of each potential impact; and
- mitigation measures that would allow CDFA to avoid, minimize, or compensate for any potentially significant impacts.

6.0.2 Environmental Baseline of Analysis

Many of the activities that would be conducted under the Proposed Program are already ongoing. Therefore, the impacts analysis presented in this PEIR considers these ongoing activities to be a part of the baseline environmental conditions. The baseline level of CDFA's ongoing pest prevention and management activities may vary by resource topic, depending on whether the nature of the resource impacts is local, regional, or global. For example, because the scale of greenhouse gas (GHG) analysis is global, all existing GHG emissions associated with the Proposed Program are considered to be a part of the baseline emissions. In contrast, although noise-generating pest management activities are ongoing, they may occur in locations which have not been previously subjected to these activities; therefore, the baseline level of noise-generating pest management activities is zero in these locations.

6.0.3 Significance of Environmental Impacts

CEQA requires that an EIR define a threshold of significance for each impact that may occur to the physical environment. A threshold of significance, or significance criterion, is an identifiable quantity, quality, or performance level of a particular environmental effect. In general, potential impacts are identified as either potentially significant (above threshold) or less than significant (below threshold).

Under CEQA, impacts of a proposed project or program are assessed relative to an environmental baseline, which is defined as the existing physical conditions in the affected area as they existed at the time the Notice of Preparation was published (CEQA Guidelines Section 15126.2[a]) (see Section 6.0.2, above, for a discussion of the environmental baseline as it relates to the analysis in this PEIR). Impacts of a proposed project or program are limited to changes in the baseline physical conditions of the environment (CEQA Guidelines Section 15125[a]) that would result directly, indirectly, or cumulatively from the proposed project or program. CEQA does not require the lead agency to consider impacts that are speculative (CEQA Guidelines Section 15145).

For the purposes of this PEIR, significance criteria are drawn from the CEQA Guidelines, Appendix G: Environmental Checklist Form. Each environmental resource topic is evaluated in a separate section in this chapter. Each section contains impact statements that identify the mechanism of impact of a specific Proposed Program activity on a specific environmental attribute. Each impact statement is tied to one or more significance criteria. Each impact statement is followed by an analysis that characterizes the potential physical change as a result of Proposed Program activities compared to the environmental baseline, relative to one or more significance criteria. If a potentially significant impact is identified, mitigation measures are included that, if feasible, would be implemented to avoid, minimize, rectify, reduce, eliminate, and/or compensate for the potentially significant environmental impact. In some cases, a potentially significant impact may be identified as unavoidable if the impact would likely remain significant after application of all feasible mitigation measures or if no feasible mitigation measures exist.

6.0.4 Impact Terminology

This PEIR uses the following terminology to describe environmental effects of the Proposed Program.

- A finding of ***no impact*** is made when the analysis concludes that the Proposed Program would not affect a particular environmental resource or issue.
- A potential impact is considered ***less than significant*** if the analysis concludes that the Proposed Program would not result in a substantial adverse change in the environment, and no mitigation is needed.

- A potential impact is considered ***significant or potentially significant*** if the analysis concludes that the Proposed Program could result in a substantial adverse effect on the environment.

- A potential impact is considered ***significant and unavoidable*** if the analysis concludes that the Proposed Program could result in a substantial adverse effect on the environment and the impact would remain significant after application of all feasible mitigation measures.

- A potential impact is considered ***beneficial*** if the analysis concludes that the Proposed Program would result in an increase in the quality of the environment.

- A ***substantial adverse change*** in the environment would be a change resulting from the Proposed Program that was greater than the established threshold of significance for each potential impact.

- ***Mitigation*** refers to specific measures or activities that would be implemented by CDFA to avoid, minimize, rectify, reduce, eliminate, and/or compensate for a significant or potentially significant impact resulting from the Proposed Program.

- A ***cumulative impact*** can result when a change in the environment results from the incremental impact of the Proposed Program when added to similar impacts of other related past, present, or probable future projects or programs. Significant cumulative impacts may result from individually minor but collectively significant interactions among projects. The cumulative impact analysis in this PEIR focuses on whether the Proposed Program's incremental contribution to identified cumulatively significant impacts caused by past, present, or probable future projects (including the past, present and future Statewide Program activities) is considerable (i.e., significant).

6.0.5 Sections Eliminated from Further Analysis

The following ten environmental resource areas have been eliminated, and an eleventh resource area has been partially eliminated, from further analysis in this PEIR because little or no potential exists for these activities to have a physical effect on the specified resources, based on the nature and scope of Proposed Program activities.

Aesthetics

The Proposed Program would not include the installation of structures or facilities that could result in permanent visual changes or new sources of light or glare. Visual effects associated with the Proposed Program would be short term and temporary, and would include host plant removal and equipment usage for implementation of pest management activities. A number of management activities under CDFA's authority, including host removal and vehicle usage, currently are ongoing under baseline conditions, and visual effects associated with Proposed Program activities would not result in a change in the nature or magnitude of these activities that could result in an adverse aesthetic impact. Any visual variation relative to the environmental baseline would be consistent with typical agricultural or urban pest management practices, and generally would be imperceptible to sensitive viewer groups, even if multiple concurrent pest management activities were to occur in the same location. Therefore, the Proposed Program's effects on aesthetic resources would not have the potential to be significant, and the Proposed Program's contribution to potential cumulative aesthetic impacts would be less than considerable.

Cultural Resources

The Proposed Program would not include any activities which could physically modify historic structures or excavate into native soils potentially containing archeological resources, paleontological resources, or human remains. For this reason, the Proposed Program has been determined to not have the potential for impacts related to cultural resources.

Geology and Soils

The Proposed Program would not include construction of structures that could be subject to earthquake-related hazards, unstable soils, expansive soils, or other geotechnical hazards, and it would not entail construction of septic or other wastewater disposal systems. The extent to which the Proposed Program could disturb soils would be limited to host plant removal, and such activities would be consistent with current agricultural crop practices under baseline environmental conditions (e.g., tilling of soil, crop rotation). Thus, the Proposed Program would not expose individuals to increased geological or seismic hazards, would not result in erosion or the loss of topsoil, would not construct structures on unstable soils, and would not create wastewater systems in unsuitable soils. Therefore, the Proposed Program's effects on geologic or soil resources would not have the potential to be significant, either at a project level or cumulatively.

Hydrology

Proposed Program activities would have no potential effects on hydrology. The Proposed Program would not require the use of substantial amounts of groundwater or surface water resources, and would not result in the obstruction or diversion of any water body. Proposed Program activities would not entail construction of structures that could be subject to flooding or other hydrologic hazard (e.g., seiche, tsunami). Although certain host removal activities would include the disposal of soils closely associated with the root mass of a tree in an agricultural orchard setting, such activities would not include removal of soil in quantities that would have any potential effects on drainage patterns of agricultural fields. The very limited nature of vegetation removal associated with Proposed Program activities would not have the potential to increase runoff or result in flooding. Therefore, the Proposed Program's effects on hydrologic resources would not have the potential to be significant, either at a project level or cumulatively. Potential water quality impacts are discussed in Section 6.7, Water Quality.

Land Use and Planning

The Proposed Program would not result in the creation of any permanent structures or barriers that could divide an established community, nor would it result in any permanent land use changes that could conflict with any land use plans, policies, or regulations adopted to avoid or mitigate an environmental effect. The Proposed Program may specify methods for pest detection, eradication, or control; however, they would not supersede other agency rules or requirements, and they would not authorize activities that would be inconsistent with existing or future land use plans or policies. All actions conducted under the Proposed Program would be required to obtain any necessary authorizations from the relevant land use authority or property owner and to comply with any applicable laws or policies specific to the area. Therefore, the Proposed Program's effects related to land use and planning would not have the potential to be significant, either at a project level or cumulatively. Potential effects related to habitat conservation plans are discussed in Section 6.3, Biological Resources.

Mineral Resources

The Proposed Program would not include any activities that would have the potential to affect mineral production sites. No impact would occur on the availability or use of a known, valuable mineral resource either at a project level or cumulatively.

Population and Housing

The Proposed Program would not result in any population changes, nor would it include construction of new housing or displace existing housing. In addition, the Proposed Program would not result in construction of infrastructure or include other activities that could indirectly induce or remove an obstacle to population growth. Therefore, the Proposed Program would have no potential to cause adverse effects related to population growth or housing demand. No impact would occur on population and housing, either at a project level or cumulatively.

Public Services

The Proposed Program would have no effect on demand for public facilities because it would not increase population or housing, or include activities that could indirectly cause a greater demand for public services aside from a possible increase in the need for hazardous materials spill response services, which is evaluated in Section 6.5, Hazards and Hazardous Materials. Furthermore, the Proposed Program would not include any activities that could interfere with provision of public services (e.g., affect service ratios, response times, or other performance objectives). Therefore, the Proposed Program's effects on public services unrelated to hazardous materials spill response would not have the potential to be significant either at a project level or cumulatively.

Recreation

Although certain discrete Proposed Program activities may be conducted near recreational areas, the Proposed Program would not include any actions that would permanently affect the use or availability of recreation sites. Though not anticipated, temporary closures of parts of public recreation areas may be needed to implement Proposed Program activities, to provide for public safety. However, if needed, such closures would be short term and would be limited only to the area necessary for Proposed Program work. Once activities are completed, access and availability to affected recreation areas would resume unimpeded. Because the Proposed Program would include minimal, if any, temporary closures, effects on the availability or use of recreational areas would be negligible. Therefore, the Proposed Program's effects on recreation would not have the potential to be significant either at a project level or cumulatively.

Traffic and Transportation

Anticipated on-road vehicle use under the Proposed Program would be associated with personnel and equipment transport to and from work sites. However, such trips would be temporary and would be limited to the duration and needs for management activity at any given site. Origin and destination trips would not be concentrated to or from any given location, but rather would be initiated on an as-needed basis from the closest available dispatch area. The Proposed Program's effects would be intermittent and widespread and are not anticipated to have a substantial effect on regional or local roadways or transportation systems overall. In addition, because many Proposed Program activities are ongoing, many of these vehicle trips already occur under existing conditions, and thus they would not result in a change relative to baseline conditions. Therefore, the Proposed Program's effects on traffic and transportation would not have the potential to be significant.

Utilities and Service Systems

The Proposed Program would not include the disturbance, creation, or need for utility systems, including water, sewage, wastewater, or stormwater. Although vegetation may require landfill disposal as a result of host removal activities, all materials would be handled according to proper containment and treatment regulations associated with disposal. Because of the widespread nature of its activities and low volume of materials expected to be generated for disposal at any one site, Proposed Program activities are not anticipated to generate waste amounts that would exceed the capacity of existing waste disposal facilities in any particular location. Furthermore, Proposed Program activities would be temporary and would not include any long-term waste generation activities at any given location throughout the state. Thus, the effects on landfill facilities would be minimal. Therefore, the Proposed Program's effects on utilities and service systems would not have the potential to be significant.

6.0.6 Environmental Risk

Because much of the analysis in this PEIR is based on the results of the Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively), an introduction to basic concepts related to environmental risk is discussed next.

For the purposes of this PEIR, risk is defined as the probability of harmful effects on human health or on ecological receptors (i.e., species) resulting from exposure to an environmental stressor. A stressor is any physical, biological, or chemical entity that can induce an adverse response. Environmental risk is a function of the probability of occurrence for an environmental stress event and the magnitude of the potential harm that would be caused by such an event.

Risk Assessment Overview

The science of risk assessment aims to quantify risk. Government and industry use risk assessments to estimate the safety, reliability, and effectiveness of various products, processes, and facilities. Agencies such as the California Department of Pesticide Regulation (CDPR) and the California Office of Environmental Health Hazard Assessment (OEHHA) employ toxicologists and risk assessors to evaluate risks posed by hazardous substances and provide analysis of the health impacts of proposed regulations. The risk assessment prepared for the Proposed Program quantifies the potential risk to human health and biological species from the use of chemicals under a variety of scenarios.

The risk assessment process includes the following four steps (NRC 1983 and EPA 2012a):

1. **Hazard Identification:** This step is taken to identify the types of adverse health effects (e.g., cancer, other diseases, birth defects) that may be caused by exposure to the chemical in question, and characterization of the quality and weight of evidence supporting this identification. The available scientific data for a given chemical is examined to develop a weight of evidence that characterizes the link between the negative effects and the chemical agent.
2. **Toxicology/Dose-Response:** This step is taken to identify the response (i.e., adverse health effects) in a subject (i.e., human or biological organism) from different doses (i.e., quantities) of chemicals over different time frames (e.g., instantaneous—"acute", or over a longer time period—"chronic"). Typically, as the dose and/or the duration of exposure increases, the measured response also increases. The dose-response relationship for a chemical depends on, and may vary for, different adverse health effects and subjects. First, all data that are available through experiments to document the dose-response relationship are assessed. Then, to estimate probability of adverse effect beyond the lower range of available observed data, inferences are made to determine the dose level that begins to cause the adverse effect in the subject.
3. **Exposure Assessment:** This step is taken to identify the quantity of the chemical to which subjects are exposed during a specified time period. Exposure is defined as the contact between a chemical and the body of a subject. Exposure to chemicals can occur through various means, including inhalation, dermal (i.e., skin) contact, and consumption of contaminated food or water. Exposure assessment includes measuring or estimating the magnitude, frequency, and duration of a subject's exposure, or expected exposure, to a chemical in the environment. Environmental pathways, including air, water and soil, of chemicals are assessed using models of chemical transport and fate. The range of exposure for any specific chemical is considered. Specifically, subjects having a high degree of contact with a chemical for an extended period are considered. Uncertainties in assumptions of exposure also are considered.
4. **Risk Characterization:** This is the final step, to summarize and integrate information from the preceding three steps and then synthesize an overall conclusion about risk. Risk characterization conveys the nature and presence or absence of risks, along with information about how the risk was assessed and where assumptions and uncertainties still exist. Risk is usually characterized in probabilities. Probabilities can be expressed in several ways, which presents challenges in presenting and communicating risk. Thus, a risk assessment needs to consider what numbers mean and how they are interpreted.

Risk Assessment Methods Used in this PEIR

Potential impacts related to the suite of chemicals that may be used for pest management activities under the Proposed Program were analyzed quantitatively, based on a review of the chemicals and equipment to be used in the Proposed Program.[1] This included conducting a detailed Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively). This assessment followed the standard risk assessment process described previously for hazard identification, toxicology/dose-response, exposure assessment, and risk characterization. In addition, throughout the risk assessment process, CDFA conducted regular consultation and review of risk assessment methods, assumptions, and results with OEHHA and CDPR staff to help ensure that the risk assessments were conducted appropriately. Brief summaries of the detailed methods used in the risk assessments are presented next. For more detailed descriptions, see Appendices A and B.

Human Health Risk Assessment Methods

Exposure and health impacts associated with several types of potentially exposed populations were evaluated following well established and conservative health risk assessment guidance and methods. The human health risk assessment (HHRA) was performed in general accordance with the guidance in the following documents:

- Standard Operating Procedures for Residential Pesticide Exposure Assessment (EPA 2012b)
- Supplemental Guidance for Assessing Susceptibility from Early-life Exposure to Carcinogens (EPA 2005)
- Exposure Factors Handbook: 2011 Edition (EPA 2011)
- Risk Assessment Guidance for Superfund Volume 1, Human Health Evaluation Manual (Part A) (EPA 1989)
- Review of Worker Exposure Assessment Methods (EPA 2007)
- PHED [Pesticide Handler Exposure Data] Surrogate Exposure Guide: Estimates of Worker Exposure (EPA 1998a)

Hazard Identification

The list of potential hazardous chemicals that were evaluated in the HHRA were obtained from pesticide manufacturers' labels and material safety and data sheets. These labels contain the active ingredients that target a given pest. Several other ingredients may be contained in a specific pesticide formulation. These other chemicals typically are solvents and adjuvants that assist with the dispersal or efficacy of the active ingredient, and many are not considered harmful. Pesticide manufacturers are not required to report these other chemicals or their concentrations if they are determined to be a trade secret or are in small quantities, as allowed under pesticide labeling regulations. To the extent that information

[1] Certain chemicals or scenarios that were qualitatively determined to not have the potential to pose significant risk to humans or ecological receptors, such as chemicals that are commonly used in household or other settings (such as bleach) were not subjected to the quantitative analysis.

about these other chemicals was available, it was included in the HHRA; otherwise, they remain trade secrets and were not available to CDFA for use in the HHRA. A total of 79 pesticides products (including adjuvants or other formulations used in conjunction with pesticides), containing 91 different active or inert ingredients, were assessed. Some of these chemicals were determined to be not of concern for the following reasons:

- The chemical showed no endpoints of concern from an oral, inhalation, and/or dermal route of exposure in toxicity tests where dose levels near or above testing limits were employed in experimental animal studies. If endpoints such as blood parameter measurements, body weight, organ weight, or measured enzyme levels were not associated with pathology, these endpoints were considered not of concern.

- The only available toxicity data showed that the chemical was not known to be harmful to humans and had a history of safe use.

Other chemicals were evaluated as a potential chemical of concern if public agencies or literature reported pathological health effect endpoints or they were considered to have the potential to lead to a pathological effect. In some instances insufficient data was available to conduct some or all of the risk analysis, and in these instances could not be included in the risk assessment.

Toxicology/Dose-Response

After the chemicals and concentrations in the pesticide product were identified, the next step in the HHRA was to determine the toxicity of the individual chemicals. Toxicity values are quantitative values that describe the relationship between an estimated dose and the probability of developing an adverse health effect, such as cancer.

Toxicity is determined through numerous scientific studies that estimate the amount of chemicals to which a human body is exposed through inhalation, ingestion, or absorption that results in a specific adverse health effect. The specific toxicity factor type depends on the health effect. Acute and chronic non-cancer health effects are evaluated using a no observable adverse effect level (NOAEL). The NOAEL is the highest exposure level at which no statistically or biologically significant increases occur in the frequency or severity of adverse effects of the exposed population. Cancer health effects are evaluated using a cancer slope factor (CSF). A CSF is an upper bound on the increased risk from a lifetime exposure to a chemical, based on dose-response studies extrapolated to a dose of zero.

Often adequate human scientific studies are not available for a specific chemical and its health effects to derive a toxicity value based on a dose-response model. In these situations a hierarchy of alternative scientific studies is used to derive an appropriate toxicity value. For instance, often scientific studies are available for various animal species that exhibit similar effects as humans would on exposure. In other cases, a specific chemical may not be available, but a related chemical that is expected to behave in a similar manner does have adequate studies available. In such instances, a toxicity value is derived using these data while applying safety and uncertainty factors to account for extrapolation of the studies and to reflect population variation. Toxicity information was gathered on pesticides, inert ingredients and adjuvants from various government sources, including the

U.S. Environmental Protection Agency (EPA), OEHHA, the Agency for Toxic Substances and Disease Registry, CDPR, the Hazardous Substances Data Bank, and Health Canada.

Toxicological data for the chemicals in the HHRA were obtained from the following sources (references for these sources are available in Appendix B):

- EPA Reregistration Eligibility Decision documents
- EPA Human Health Assessment Scoping documents
- CDPR Risk Characterization documents
- Agency for Toxic Substances and Disease Registry toxicological profile
- OEHHA Toxicity Criteria Database
- United Nations Environment Programme Screening Information Dataset Initial Assessment Profile
- U.S. Department of Agriculture Human Health and Ecological Risk Assessment
- OEHHA Chronic Toxicity Summary

The toxicity values used in an HHRA are intended to protect identifiable sensitive individuals from harm. However, the toxicity values may not necessarily be protective for hypersensitive individuals who do not exhibit a dose-response reaction with chemical exposure. In a typical HHRA, the chances of an adverse health effect are assumed to escalate with increasing exposure to a specific chemical. The health effects of an individual who may have an allergy to a specific chemical do not follow a dose-response mechanism, rather the person gets the same effect regardless of the amount of chemical to which he/she is exposed.

Exposure Assessment

The third step in the HHRA was to determine how much chemical exposure an exposed individual (referred to as a "sensitive receptor") could receive. The exposure assessment portion of the HHRA was divided into two steps. The first step was to determine the potential concentration of the chemical in the environment through fate and transport processes. In the context of pesticide application, this included determining the specific concentration of chemicals that may be found in the air, water, soil, and/or contained in/on the plant as a result of the application. This took into account the total amount of pesticide to be applied, along with any mechanisms of dispersal or degradation of the chemicals that may occur during or shortly after application of the pesticide. The HHRA used several different tools and methods to determine the concentrations available in the environment. Some of the models and methodologies used were the following:

- First Order Soil Dissipation (Lyman 1990)
- Occupational Pesticide Handler Exposure Data, Occupational Pesticide Handler Unit Exposure Surrogate Reference Table (EPA 2013b)

- Human Health Risk Assessment of Isomate-EGVM (OEHHA 2010a)
- Air Dispersion "Box Model" (specifically developed for the HHRA based on the standard mathematical model for exposure assessments)
- Novel Fumigation Off-Gassing Models (based on Nicas 2003)
- AgDRIFT Version 2.1.1
- EPA Terrestrial Residue Exposure (T-REX) Model Version 1.5
- EPA Standard Operating Procedures for Residential Pesticide Exposure Assessment (EPA 2012b)

The next step in determining human exposure after the concentrations in the environment were identified was to estimate how much the human body takes up. Exposure was determined by combining the concentration in the environment with specific exposure factors. Exposure factors took into account the amount that would be taken into the body, the amount of time exposure would occur, and the frequency of exposure. Exposure factors that describe the amount taken into the body would include human breathing rates, amount of exposed skin, absorption rate through the skin, and amount of material ingested. The following exposure routes were analyzed:

- Inhalation**:** Aerosols and vapors
- Intentional Ingestion of Soil**:** Pica behavior (children that intentionally eat soil)
- Ingestion of Vegetation**:** Eating garden produce
- Dermal Exposure to Soil**:** Resulting from working or playing in treated areas
- Dermal Exposure to Vegetation**:** Resulting from working or playing in treated areas
- Incidental Ingestion of Soil**:** Hand-to-mouth transfer of soil caused by touching perioral areas (tissues around the mouth) or eating
- Incidental Ingestion of Vegetation Residues**:** Hand-to-mouth transfer of plant-residues caused by touching perioral areas or eating

Detailed exposure models are presented in the HHRA. An exposure pathway would have to be complete for it to be relevant to the HHRA. For instance, ingestion of tree leaves at a nursery would not be likely to occur because most people do not eat leaves. Thus, ingestion of tree leaves would not be considered a completed exposure pathway, and this was not evaluated. In some instances, the exposure pathway may be complete, but based on low concentrations or a minimal amount of exposure compared to a dominant pathway of exposure, it may not have been fully quantified and was dismissed as discountable. Detailed exposure models were identified for the following potential sensitive receptors:

- **Mixer-Loader Applicator**: The mixer-loader applicator (MLA) represents a combination exposure of a worker who may be occupationally exposed to Proposed Program pesticides, inert ingredients, and adjuvants while preparing pesticide solutions and applying them. The MLA was determined to have potential to be exposed through dermal and inhalation routes. Ingestion was not evaluated for this receptor because the applicator would be properly trained not to consume treated vegetation and to avoid incidental ingestion exposure (e.g., hand-to-mouth).

- **Post-Application Loader**: The post-application loader (PAL) represents a worker at a nursery who may be occupationally exposed to pesticide, inert ingredient, and adjuvant residues while loading plants, treated under the Proposed Program, onto trucks for transport. Loading was assumed to occur after the appropriate re-entry interval (REI) had past. The PAL generally would have proficient knowledge about chemical toxicity and proper chemical handling techniques; therefore, he/she would be expected to avoid incidental ingestion of residues from hand-to-mouth activity and ingestion of treated vegetation. However, the PAL would have the potential to be exposed through dermal contact with vegetation after foliar treatments and with soil while handling pots.

- **Combined-Nursery Worker**: The combined-nursery worker represents a combination exposure of a worker employed at a nursery who may be occupationally exposed to Proposed Program pesticides, inert ingredients, and adjuvants while preparing pesticide solutions and applying them, as well as while loading the treated plants into a truck for transport. In other words, for this receptor analysis, the mixer-loader-applicator and post-application-loader would be the same individual.

- **Post-Application Worker**: The post-application worker (PAW) represents a worker at a production agriculture facility who may be occupationally exposed to pesticide, inert ingredient, and adjuvant residues while harvesting crops that have been treated under the Proposed Program. Harvesting was assumed to occur after the appropriate REI had passed, and the PAW generally would have limited knowledge about chemical toxicity and proper chemical handling techniques. The PAW would have the potential to be exposed to residues on vegetation and soil through dermal contact and hand-to-mouth incidental ingestion. The PAW also could be exposed to the ingredients of traps/lures that may be used under the Proposed Program through inhalation because of the possibility that harvesting may occur in the vicinity of traps/lures. Post-application inhalation exposure would not be likely to occur, and the PAW would not be expected to consume recently treated vegetation.

- **Downwind Bystander**: The downwind bystander (DWB) represents any adult or child located downwind from an application site and who would have the potential to be exposed to off-site drift. In accordance with EPA's Overview of Issues Related to the Standard Operating Procedures for Residential Exposure Assessment (EPA 1999b), the DWB was assumed to be 25 feet away from the application. For scenarios involving use of ground-based equipment, the DWB potentially could be exposed to drift through inhalation, and when airblast and aerial equipment[2] is used, the DWB potentially could receive both inhalation and dermal exposure. Exposure was assumed to be discountable for a DWB during soil drench and trap/lure applications. Both an adult DWB and a child DWB were assessed.

[2] Aerial spraying would not occur in residential areas.

- **Post-Application Resident**: The post-application resident (PAR) represents a typical individual living in an urban or residential environment who would have the potential to come into contact with Proposed Program pesticides, inert ingredients, or adjuvant residues after residential treatments. The PAR was conservatively assumed to be active in the gardens and trees on his/her property and could consume homegrown produce. An adult PAR could be exposed to residues on plant surfaces and soil through dermal contact and through ingestion of treated produce. A child PAR could be exposed through the same mechanisms as well as through incidental ingestion from hand-to-mouth activity. Both the adult and child PARs potentially could be exposed to trapping agents and lures through inhalation, because a trap/lure could be placed in a residential setting. Post-application inhalation exposure to pesticides, inert ingredients, and adjuvant air concentrations were considered discountable because none of the ingredients that may be used in any substantial quantity in residential settings are known to have substantial post-application volatilization.

- **During and Post-Application Resident**: The during and post-application-resident represents a combination exposure of a resident who may be downwind at the time his/her property is being treated, and who would potentially be exposed to pesticides, inert ingredients, and adjuvant residues on treated vegetation after chemical applications. In other words, for this receptor analysis, the DWB and the PAR would be the same individual. Both the adult and the child were analyzed.

- **Fumigation Worker**: The fumigation-worker (FUW) represents a worker who would be employed at a commodity fumigation facility and would have the potential to be exposed during a fumigation activity, including during application of a fumigant in a fumigation chamber, when aerating the chamber, or when using a forklift to unload a commodity from the chamber. Fumigations may occur in shipping, packaging, and transport environments in sea vans or chambers, and all fumigation activities were assumed to be performed according to appropriate fumigation guidelines. The FUW could be exposed to Proposed Program fumigants through inhalation. Dermal exposure would be discountable when compared to inhalation.

- **Fumigation Downwind Bystander**: The fumigation downwind bystander (FDWB) represents an individual downwind from a commodity fumigation site who potentially could be exposed to fumigants through off-site drift. Fumigations may occur in shipping, packaging, and transport environments in sea vans or chambers, and fumigation activities were assumed to be performed according to appropriate fumigation guidelines. The FDWB would potentially be exposed to Proposed Program fumigants through inhalation. Dermal exposure was considered discountable when compared to inhalation.

- **Post-Transfer Worker**: The post-transfer worker (PTW) represents a worker employed at a post-transfer receiving facility who could be exposed to fumigant that had off-gassed from treated commodity during transport. PTW inhalation exposure could occur as a result of unloading treated commodities from transport containers after fumigations have been conducted. Ingestion and dermal exposure were not evaluated for this receptor because the PTW was assumed to not consume treated commodities, and dermal penetration would be negligible relative to inhalation exposure from fumigants.

Various assumptions for acute and chronic exposures were developed for each receptor group under each application scenario, using widely accepted models and data sources to estimate the concentrations in the various environmental media and the amounts that would be ingested, absorbed, or inhaled by sensitive receptors. The detailed assumptions and models are presented in Appendix B.

Risk Characterization

Risk characterization is the process of estimating the incidence of a health effect resulting from the human exposure described in an exposure assessment. For this analysis, it was performed by combining the exposure and dose-response assessments to determine the likelihood that the use of the chemicals could cause harm to the relevant sensitive receptors.

The goal of risk characterization is to provide an understanding of the type and magnitude of an adverse health effect that a particular chemical could cause under particular circumstances. The process of combining exposure and dose-response is different for carcinogens and noncarcinogens. For noncarcinogens, the dose estimate is divided by the NOAEL to obtain the Margin of Exposure (MOE). If the MOE is greater than 100, the chemical exposure under consideration is regarded as unlikely to lead to adverse health effects (EPA 2007). If the MOE is less than 100, adverse health effects are more likely and measures to reduce the potential for such effects need to be considered. The MOE is not an actual measure of risk, but it is a benchmark that can be used to estimate the likelihood of risk. For carcinogens, excess lifetime risk is calculated by multiplying the dose estimate by a cancer potency factor. The result is an upper bound probability that lifetime exposure to a chemical will lead to excess cancer risk. This value is usually expressed as a population risk such as 1×10^{-6}, which means that no more than 1 in a million exposed persons is expected to develop cancer. Risk estimates obtained in this way are not scientific estimates of actual cancer risk; upper bounds exist on actual cancer risk that are useful in setting exposure limits. Generally, acceptable cancer risk is set at no more than one potential new case in a population of 1 million. (OEHHA 2001)

When exposure to more than one chemical occurs, the cancer risk estimates are combined in an additive manner for each route of exposure. For noncarcinogens, the MOEs may be combined when chemicals have the same mechanism of toxicity (e.g., liver damage). This is the typical approach taken by regulators in evaluating risk assessments that allows them to make an informed regulatory decision, which is protective and manages the risk. However, some pesticides are recognized to have the potential to act synergistically (greater than additive) when a common mechanism of toxicity exists. EPA has identified five groups of pesticides that each have a common mechanism of toxicity: organophosphates, N-methyl carbamates, triazines, chloroacetanilides, and pyrethrins/pyrethroids (EPA 2012c). EPA's cumulative exposure and risk assessment of common mechanism pesticides is more comprehensive in the exposure and chemicals included than were feasible to conduct for the Proposed Program because exposures to these pesticides could occur from sources other than the Proposed Program, a large number of possible combinations of exposures would be possible, and predicting which combinations would be most likely would be difficult. In its most recent cumulative risk assessments, EPA concluded that these groups of pesticides do not exceed the agency's level of concern (LOC) when the latest risk mitigation measures for these pesticides are implemented (EPA 2012a).

The CEQA significance threshold for potential impacts on human health from the Proposed Program that has been used in this PEIR is as follows: for noncarcinogenic effects, an impact has been determined to be potentially significant if the MOE has been modeled to be less than 100; and for carcinogenic effects, an impact has been determined to be potentially significant if the excess cancer risk has been modeled to be greater than 1 in a million.

Ecological Risk Assessment Methods

Potential exposure and related adverse impacts on various species were evaluated following well established and conservative ecological risk assessment guidance and methods. The ecological risk assessment (ERA) was performed in general accordance with guidance in the following documents (references for these sources are available in Appendix A):

- Wildlife Exposure Factors Handbook (EPA 1993)
- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final (EPA 1997)
- Guidelines for Ecological Risk Assessment (EPA 1998b)
- EPA Screening Level Risk Assessment Protocol (EPA 1999a)
- Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs, U.S. Environmental Protection Agency. Endangered and Threatened Species Effects Determinations (EPA 2004)
- Ecological Risk Assessment, Second Edition (Suter 2007)

Hazard Identification/Problem Formulation

The list of potential hazardous chemicals to evaluate in the ecological risk assessment was developed in the same manner as for the HHRA. For an ERA, it was important to determine appropriate assessment endpoints for which possible adverse effects would be evaluated. Three principal criteria were used to select the appropriate entities for assessment endpoints: (1) ecological relevance, (2) susceptibility to known or potential stressors, and (3) relevance to management goals. This ERA focused on organism-level endpoints (i.e., species). Adverse effects assessed included mortality, reproductive effects, and gross anomalies (EPA 2003). The assessment endpoints were broadly applied for all application scenarios when Proposed Program activities would have the potential to occur in habitats appropriate for the species of concern.

For acute effects, the ERA evaluated the potential for mortality of an individual of a species. The chronic assessment evaluated potential for mortality as well as adverse effects on reproduction. Reproduction is a more sensitive endpoint than mortality, because it is a sublethal effect. Adverse reproductive effects generally do not materialize until chronic exposures have occurred, and so such effects were not considered for the evaluation of potential acute effects. Many of the pesticide active and inert ingredients would have the potential to produce adverse reproductive effects.

For this ERA, it was not considered feasible to quantitatively assess the risk to all the species that may be present, particularly because the geographic area under consideration is large and varied. Therefore, surrogate species were selected to represent the full suite of potentially affected species. Native species, rather than hypothetical species fitting various size and dietary categories, were selected to provide realism to the assessment. Many different criteria could be used to select surrogate species on which to estimate potential risk; for this assessment, special-status species were selected as surrogates whenever possible. Taxonomic representation included aquatic and terrestrial invertebrates, fish, birds, mammals, amphibians, and reptiles.

The surrogate species were chosen to represent species that potentially could be present in the locations where chemical management activities under the Proposed Program may occur, and the selected species exhibit a wide variety of life history traits, such as dietary composition and habitat preferences. The selected aquatic species occur in marine, estuarine, and freshwater habitats. The terrestrial species range from the desert in southern California, to grassland and riparian habitats in northern California. Because Proposed Program activities primarily would occur in urban/residential, agricultural, and nursery settings, no species restricted to deep forest habitats were evaluated.

In addition to evaluating species from different habitats, species with different methods of exposure also were evaluated. For example, among the birds and mammals evaluated, carnivores, insectivores, invertivores, herbivores, and granivores were included. Those species with documented and readily available life history information were selected over species for which this information was lacking.

Toxicology/Dose-Response (Effects Assessment)

The effects assessment included an evaluation of available toxicity or other adverse effects information that can be used to relate the exposures to pesticides and inert ingredients and adverse effects in ecological receptors. Data that can be used include: literature-derived or site-specific, single-chemical toxicity data; site specific, ambient-media toxicity tests; and site-specific field surveys (Suter 2007). For this ERA, data were restricted to single-chemical toxicity data from literature sources. These were used to develop toxicity reference values (TRVs).

For acute TRVs, results from acute toxicity tests were used. These included laboratory tests based on a single oral dose, or a short-term exposure, generally less than 96 hours. For chronic TRVs, chronic endpoints (i.e., long term defined as greater than 10 percent of the animal's lifespan) were the preferred source. Subchronic endpoints (repetitive exposures during less than 10 percent of the animal's lifespan but greater than 14 days) (EPA 1999) were used when no chronic endpoints were available. Acute endpoints were used only in cases where no chronic or subchronic endpoints were available. NOAELs were preferred over lowest observable adverse effects levels, with the least preferred endpoint being the median lethal (or effective) dose or concentration (e.g., LD50, ED50, LC50, or EC50).

A common practice in ecological risk assessments is to apply a safety or uncertainty factor to the result of a toxicity test in the development of a TRV. Uncertainty factors are used to adjust the result of a toxicity test to a value representing no likely adverse effects. For example, when the toxicity estimate is 50 percent mortality, the TRV needs to be decreased to represent a level of mortality not thought to be detrimental to the species population.

Various sources provide either literature or government agency-accepted toxicity data. Literature was identified by searching the following resources (full citations for these sources are available in Appendix A):

- EPA's ECOTOX database
- National Library of Medicine's TOXLINE on-line literature database
- BIOSIS, a bibliographic database that indexes the worldwide literature of research in biological and biomedical sciences, produced by Thomson Scientific
- Hazardous Substances Data Bank summary
- EPA's Office of Pesticide Program's database of toxicity testing results
- Toxicity data listed in EPA's Registration Eligibility Decision documents
- International Uniform Chemical Information Database

Exposure Assessment

The exposure assessment provided a description and quantification of the nature and magnitude of the interaction between pesticides and inert ingredients in surface water, sediment, soil, or groundwater and ecological receptors. Various exposure models and assumptions for acute and chronic exposures, for each receptor group in general, in aquatic and terrestrial environments, and under each application scenario were developed using widely accepted models and data sources to estimate the concentrations in the various environmental media and the amounts that would be ingested, absorbed, or inhaled by various species. The detailed assumptions and models are described in Appendix A.

Risk Characterization

In the risk characterization, exposure and effects data were integrated to draw conclusions concerning the presence, nature, and magnitude of effects that may exist under the application scenario. The environmental concentration or daily dose was divided by the TRVs to obtain a risk quotient (RQ). The risk quotient was compared to an established LOC for the species. When the RQ is equal to or exceeds a LOC, the risk to the ecological receptor was determined to be potentially significant. In general, the LOC was 1.0; however, to provide an additional margin of safety for special-status species, the LOC was 0.5. When multiple chemicals were assessed (e.g., various ingredients in a pesticide product or applications involving the use of multiple substances), the RQs for all chemicals present were added to determine the combined risk, which was compared to the applicable LOC.

Use of the Risk Assessment to Determine Environmental Impacts in the PEIR

The quantitative assessment of risk provided in Appendices A and B evaluates the potential risk to human and ecological receptors, but is not equivalent to an environmental impact analysis under CEQA. The risk assessment prepared for this PEIR quantifies the risk associated with individual exposure events that would occur instantaneously (i.e., acute exposure) and over time (i.e., chronic exposure), but it does not quantify the potential cumulative effects of multiple different types of exposure events. No reliable method exists to perform the latter type of quantitative analysis because the possible combinations of numbers and types of events to which a particular receptor may be exposed would be numerous and difficult to predict. Therefore, the effects of multiple different types of exposure events that may occur under the Proposed Program were evaluated qualitatively. In addition, the cumulative risk of acute and chronic human and ecological health outcomes (i.e., the total risk to humans, species, and ecosystems as a result of past, present, and potential future exposures to chemicals and other hazards of all kinds) was assessed qualitatively.

The risk to biological species is further characterized in Section 6.3, Biological Resources, and the risk to humans is further characterized in Section 6.5, Hazards and Hazardous Materials. Environmental impact analyses for these resources are evaluated relative to the significance criteria for each resource (as described in Section 6.0.2, Environmental Baseline of Analysis).

Section 6.1

Agricultural Resources and Economics

6.1 Agricultural Resources and Economics

6.1.1 Introduction

This section presents the environmental setting and potential impacts of the Proposed Program related to agricultural resources and economics. This analysis integrates agricultural and horticultural economic information throughout to show the close relationship between economic factors on the physical environment as they relate to agricultural resources, as well as to illustrate the importance of these industries to local economies and California. Section 15131 of the CEQA Guidelines states that "economic or social effects shall not be treated as significant effects on the environment." Therefore, economic effects are not considered environmental impacts under CEQA unless they subsequently result in an impact on the physical environment. Thus, this analysis makes use of the economic information as appropriate where such a nexus exists.

As part of this section, a discussion of organic farming and the roles of beneficial insects and natural pollinators in agricultural production are provided. Information regarding agricultural resources presented in this section is based on the California Farmland Mapping and Monitoring Program (FMMP) and data from the U.S. Department of Agriculture (USDA).

In California, responsibility for the control of forest pest outbreaks falls under the jurisdiction of CAL FIRE on State and privately owned lands and the U.S. Forest Service, U.S. Bureau of Land Management, National Park Service, or other federal entities on federal lands. Therefore, forestry resources and related pest management activities in forestlands are not included in the Proposed Program and are not discussed further.

6.1.2 Environmental Setting

The following discussion describes agricultural resources and economics related to the Proposed Program. Economic impacts are evaluated under CEQA only when such impacts may result in a physical change in the environment. In this case, economic information is provided to support the evaluation of the potential physical change related to conversion of agricultural land to another use because of economic impacts to landowners.

Proposed Program Area

For this analysis, the Proposed Program area is defined as the state of California. In accordance with USDA District classification, the state is divided into six agricultural regions by the following counties:

- **Central Coast**: Lake, Sonoma, Napa, Marin, Contra Costa, Alameda, San Francisco, San Mateo, Santa Clara, Santa Cruz, San Benito, Monterey, and San Luis Obispo
- **Northeast**: Del Norte, Humboldt, Mendocino, Siskiyou, Shasta and Trinity
- **Sacramento Valley**: Tehama, Glenn, Butte, Colusa, Sutter, Yuba, Yolo, Solano, and Sacramento

- **San Joaquin Valley**: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern
- **Sierra Nevada Mountains**: Modoc, Lassen, Plumas, Sierra, Nevada, Placer, El Dorado, Amador, Alpine, Calaveras, Tuolumne, Mariposa, Mono, and Inyo
- **Southern California**: Santa Barbara, Ventura, Los Angeles, San Bernardino, Orange, Riverside, San Diego, and Imperial

Economic Baseline

The key economic indicators considered in this analysis are employment and earnings for California by industry. Unless otherwise specified, monetary values are shown in 2011 U.S. dollars, in accordance with the majority of the most recent available agricultural data.

Employment

Table 6.1-1 presents total employment and employment growth between 2000 and 2011 for each of the agricultural regions. The Southern California region had the largest total employment, with 10.5 million full- and part-time jobs in 2011, which was 53 percent of the total employment in the state.

Between 2000 and 2010, employment in California grew at a compound rate of 0.1 percent annually. During this time, the Northeast and Central Coast regions experienced annual job loss rates of -0.2 percent and -0.6 percent, respectively. The Sierra Nevada Mountain region had the greatest compound rate of job growth, at 1.2 percent. From 2010 to 2011, total employment in the state grew at a compound rate of 1.4 percent per year. Over the last few years, both the Northeast and Central Coast regions have continued to lose jobs, while the Sierra Nevada Mountains region has had the highest employment growth rate.

Table 6.1-1. Total Employment and Employment Growth in California

	Employment (Jobs)			Employment Growth (Annual Compound)	
Agricultural Region	2000	2010	2011	2000–2010	2010–2011
Central Coast	4,986,530	4,693,624	4,779,963	-0.6%	-5.9%
Northeast	240,863	237,106	235,549	-0.2%	-1.6%
Sacramento Valley	1,199,622	1,255,011	1,251,005	0.5%	4.6%
San Joaquin Valley	1,542,085	1,643,677	1,662,228	0.6%	6.6%
Sierra Nevada Mountains	388,122	439,185	442,405	1.2%	13.2%
Southern California	9,975,186	10,416,567	10,532,779	0.4%	4.4%
California	**19,466,162**	**19,732,278**	**19,969,266**	**0.1%**	**1.4%**

Source: Bureau of Economic Analysis 2012a

Table 6.1-2 presents current employment by industry for the state and agricultural regions. The largest economic sector is Other Services, which employed over 10 million people and accounted for about half of the total jobs in California in 2011. Other Services is made up of a broad range of business types, including personal services (e.g., automotive repair and maintenance, personal and laundry services) and other classifications such as religious, grant writing, and civic, professional, and similar organizations. Other major job sectors include Wholesale and Retail Trade, with 13.3 percent of total jobs, and federal, state, and local Government jobs, with 13.1 percent.

In 2011, statewide farm and agricultural employment was 228,811 jobs, or 1.1 percent of all jobs. Farm employment was highest in the San Joaquin Valley region, with 89,060 jobs, which represented 39 percent of total statewide farm employment. The regions with the next highest numbers of farm employment were Southern California and Central Coast, respectively.

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Table 6.1-2. Employment by Industry within California and Agricultural Regions (2011)

Agricultural Region	Farm/ Agriculture	Natural Resources and Mining	Construction	Manufacturing	Wholesale and Retail Trade	Transportation and Warehousing	Utilities	Finance and Insurance	Other Services	Government	Total	Farm/Agriculture as a Percent of Total
Central Coast	38,746	53,331	202,083	340,757	555,764	63,875	6,793	243,266	2,579,916	500,454	4,641,640	0.8%
Northeast	6,449	1,805	13,563	9,889	33,802	4,991	703	7,762	106,366	42,683	235,549	2.7%
Sacramento Valley	21,418	10,167	63,560	49,519	164,005	40,179	2,695	59,863	594,512	292,845	1,310,164	1.6%
San Joaquin Valley	89,060	123,049	70,740	107,625	216,174	65,647	6,020	58,274	636,580	270,290	1,662,228	5.4%
Sierra Nevada Mountains	7,110	3,847	31,005	15,536	57,971	5,953	1,433	25,729	220,825	65,064	442,405	1.6%
Southern California	59,464	66,716	482,400	805,291	1,602,106	351,668	32,769	594,575	6,161,974	1,433,943	11,598,116	0.5%
California	**228,811**	**290,327**	**866,567**	**1,332,911**	**2,650,278**	**579,333**	**60,221**	**991,192**	**10,348,276**	**2,621,350**	**19,969,266**	
Percent of Total	**1.1%**	**1.5%**	**4.3%**	**6.7%**	**13.3%**	**2.9%**	**0.3%**	**5.0%**	**51.8%**	**13.1%**	**100.0%**	

[1]Industry/sections based on a summary of North American Industry Classification System (NAICS) industry classifications

Source: Bureau of Economic Analysis 2012b

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Earnings by Industry

This section presents the earnings by industry for the state and its agricultural regions. The measure of earnings by industry is important for evaluating the potential economic impacts of the Proposed Program because it focuses on the income to employees and proprietors (or businesses) that can be directly affected by changes in agricultural production and farm-level expenditures.

Table 6.1-3 presents earning by industry in 2011 for California and each of its agricultural regions. For the agricultural sector, earnings for employees are shown with the combined earnings, including proprietor earnings shown in parentheses. Earnings were highest in the *Other Services, Government, and Whole and Retail Trade* sectors, with $546 billion, $206 billion, and $130 billion, respectively. Jointly, these industry sectors account for 73 percent of all California's work-related earnings. Farm-related earnings accounted for 1.3 percent of total statewide earnings, although other industry sectors may have a relationship to agriculture (e.g., retail trade of agricultural products).

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Table 6.1-3. Earnings by Industry in California and Agricultural Regions (2011)

Agricultural Region	Agriculture (with proprietors' nonfarm personal income)	Natural Resources and Mining	Construction	Manufacturing	Wholesale and Retail Trade	Transportation and Warehousing	Utilities	Finance and Insurance	Other Services	Government	Total	Agriculture as a Percent of Total
Central Coast	1,706,413 (2,343,479)	2,355,511	15,057,738	48,212,957	32,360,120	4,292,755	1,339,787	24,864,611	173,723,962	42,383,372	350,727,331	**0.5**
Northeast	144,641 (205,328)	56,447	601,481	457,575	1,156,977	249,896	93,999	285,413	3,399,268	2,503,043	9,250,811	**1.6**
Sacramento Valley	1,801,476 (3,162,016)	351,330	3,897,477	3,916,895	6,437,255	1,906,851	414,246	3,376,213	26,434,286	23,620,033	72,818,815	**2.5**
San Joaquin Valley	8,757,010 (15,107,889)	5,004,271	4,099,363	6,691,625	8,537,414	3,760,274	872,274	2,340,998	24,116,652	18,638,604	83,653,530	**10.5**
Sierra Nevada Mountains	145,064 (245,179)	101,595	1,771,859	1,120,938	2,286,301	350,760	198,709	1,318,840	7,834,096	4,251,690	19,627,571	**0.7**
Southern California	2,757,032 (3,961,392)	3,606,441	30,440,490	63,841,305	78,109,923	20,166,258	4,721,838	42,425,070	308,333,265	113,573,210	668,212,582	**0.4**
California	**15,705,158 (25,594,604)**	**12,509,378**	**56,203,406**	**124,609,921**	**130,096,256**	**33,579,370**	**9,380,225**	**74,702,656**	**545,689,430**	**206,222,644**	**1,208,698,444 (1,234,293,048)**	**1.3 (2.1)**

[1]Values in thousands ($1,000) of dollars

Source: Bureau of Economic Analysis 2012c

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Agricultural and Horticultural Resources

This section describes the agricultural and horticultural resources that may be affected by the Proposed Program, including organic farming and beneficial insect populations assisting agricultural production. This section also provides an overview of the key agricultural programs and policies applicable to farming in California.

Host Crops and Plants

Many horticultural and agricultural species are hosts of Proposed Program pests. For this analysis, a sample subset of important host crops, presented in Table 6.1-4, was used to focus on production and value data that is representative of some of the key economic consequences of the Proposed Program. Hereafter, this subset of crops is referred to as "sample host crops."

Table 6.1-4. Sample Host Crops - Groups and Descriptions

Crop Group	List of Major Crop Commodity Types
Almonds	(Shelled)
Cotton	Cotton Lint, Cottonseed
Grapes	Raisins, Table, Wine type
Lettuce	Head, Leaf, Romaine
Nursery Stock	Nursery, Greenhouse, Forestry
Oranges	Valencia, Navel and Miscellaneous
Peaches	Clingstone, Freestone
Peppers	Bell, Chili
Tomatoes	Fresh, Processing
Walnuts	n/a

Source: CDFA 2012

Agricultural Production

The unique combination of a mild Mediterranean climate and fertile soil allows year-round agricultural production in California. Over 400 different commodities are produced, ranging from fruits, vegetables, nuts, dairy products, and nursery commodities. The approximately 81,700 working farms and ranches in California produce nearly half of all U.S.-grown fruits, nuts, and vegetables (CDFA 2012). More than 31 million acres of land in California are devoted to farming and ranching. Of this total, approximately 19 million acres are used for grazing and 12 million acres are used for agricultural crop production (CDOC 2014).

As described in Section N-1 in Appendix O, Regulatory Setting, the FMMP provides maps and statistical data on the nature, location, and extent of farmland and grazing land in California. Figure 6.1-1 shows the Important Farmlands in California. The map reflects the distribution of areas most conducive to agricultural production. Each of these areas is described in more detail below. Most of the Important Farmland in California is in the Central Valley (made up of the Sacramento and San Joaquin valleys). The western half of the

San Joaquin Valley contains broad stretches of Prime Farmland, while the eastern portion of the San Joaquin Valley contains a mixture of the four types of Important Farmland. The western portion of Colusa County has a large, continuous area of Farmland of Local Importance. The Klamath Basin in Siskiyou County in the Northeast region also includes broad areas of Farmland of Local Importance. Both the Central Coast and Southern California regions contain a mixture of Prime Farmland and Farmland of Statewide Importance. The total acreages of each type of Important Farmland are listed in Table 6.1-5.

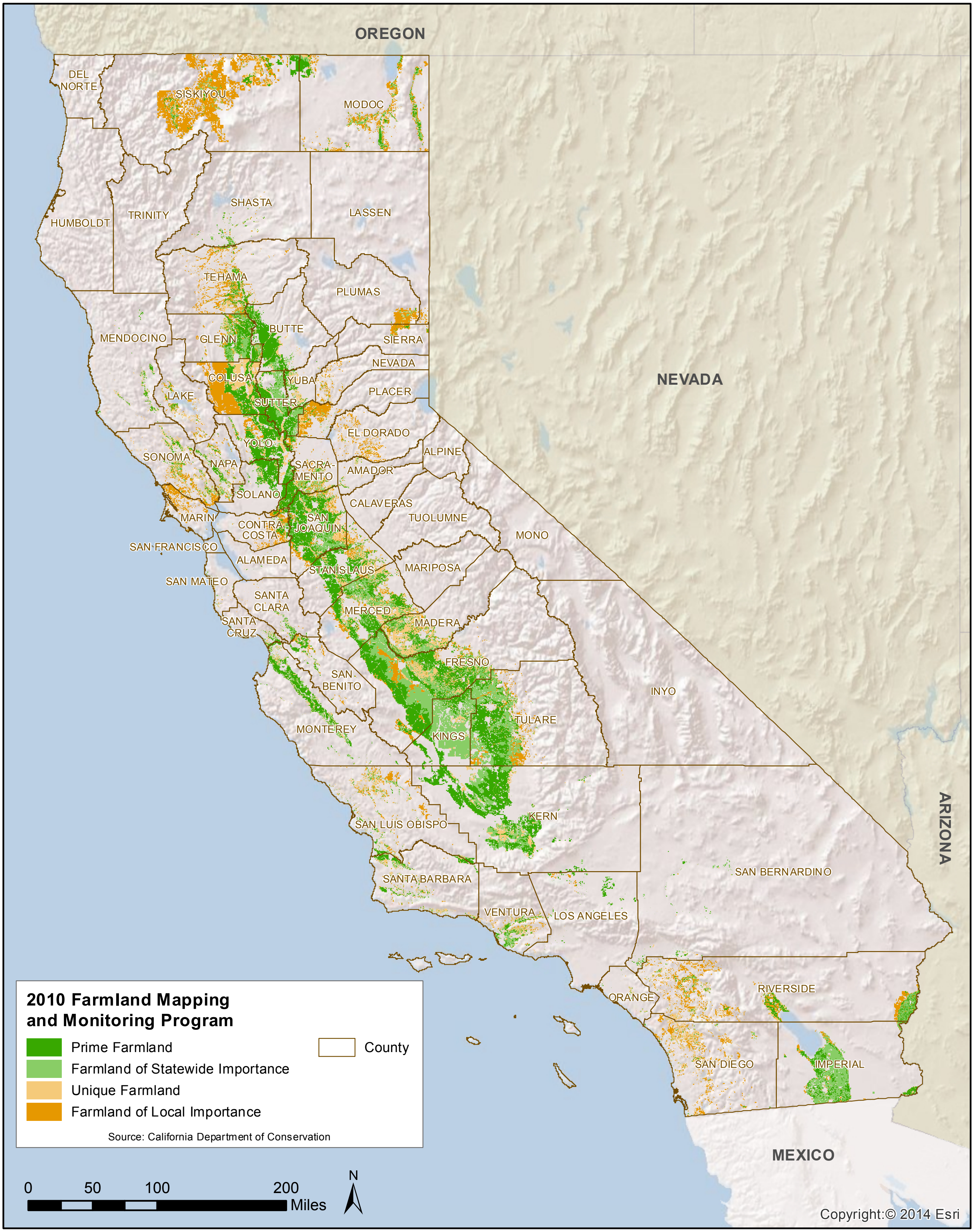
Table 6.1-5. Important Farmland Acreages in California

Important Farmland Categories	Acres
Farmland of Local Importance	3,186,017
Farmland of Statewide Importance	2,621,601
Prime Farmland	5,146,562
Unique Farmland	1,331,874

Source: CDOC 2014

Approximately half of California's 30-million-acre farmlands are enrolled in the Williamson Act (see discussion in Section N-1 in Appendix O, Regulatory Setting). These 15 million acres represent nearly one-third of the privately owned land in the state. Of the land enrolled in the Williamson Act, 5 million acres are considered prime farmland. About 860,000 acres are part of the Farmland Security Zone program, and the remainder is Williamson Act non-prime farmland. In 2009, the county with the greatest acreage enrolled in the Williamson Act was Kern County, with 1.7 million acres, followed by Fresno County, with 1.5 million acres (CDOC 2010b).

Table 6.1-6 provides an agricultural profile of California's primary agricultural counties by region, with acreages of Important Farmland, Farmland of Local Importance, Williamson Act enrollment, and primary agricultural commodities.



Horizon WATER and ENVIRONMENT

Figure 6.1-1
Important Farmlands in California

Table 6.1-6. Agricultural Profiles by Region and County (2010-2011)

County	Total Area of Important Farmland (acres)	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Unique Farmland (acres)	Farmland of Local Importance (acres)	Williamson Act Lands (acres)[1]	Primary Agricultural Commodities
Central Coast and San Francisco Bay Area							
Alameda	7,566	3,953	1,230	2,383	0	135,293	Grapes, Nursery Products, Cattle, Hay
Contra Costa	90,148	26,484	7,420	3,205	53,039	46,739	Cattle, Corn, Unspecified Vegetables, Tomatoes
Marin	63,817	0	233	287	63,297	102,937	Milk, Cattle, Poultry, Shellfish
Monterey	235,147	166,251	43,372	25,524	0	763,800	Strawberries, Lettuce, Grapes, Broccoli
Napa	76,210	31,621	9,711	16,414	18,464	70,640	Grapes, Cattle, Nursery Products, Livestock Products
San Benito	57,460	27,425	6,475	2,250	21,310	583,563	Unspecified Vegetables, Lettuce, Peppers, Spinach,
San Francisco[2]	None listed	None listed	None listed	None listed	None listed	None listed	Flowers, Alfalfa and Bean Sprouts
San Luis Obispo	409,726	41,319	21,132	39,950	307,325	799,914	Strawberries, Grapes, Cattle, Unspecified Vegetables
San Mateo	5,292	2,180	146	2,271	695	None listed	Nursery Plants, Nursery Products, Brussels Sprouts, Flowers
Santa Barbara	125,292	66,568	12,475	35,606	10,643	549,668	Strawberries, Broccoli, Unspecified Vegetables, Flowers
Santa Clara	27,751	17,270	3,630	2,523	4,328	310,410	Mushrooms, Nursery Plants and Products, Peppers, Tomatoes
Santa Cruz	20,577	13,817	2,449	3,763	548	17,071	Strawberries, Raspberries, Flowers, Unspecified Vegetables
Solano	147,464	131,820	6,369	9,275	0	269,606	Walnuts, Hay, Unspecified Vegetables, Tomatoes
Sonoma	160,250	29,939	17,192	32,924	80,195	302,376	Grapes, Milk, Poultry, Livestock Products

County	Total Area of Important Farmland (acres)	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Unique Farmland (acres)	Farmland of Local Importance (acres)	Williamson Act Lands (acres)[1]	Primary Agricultural Commodities
Northwest							
Del Norte[2]	None listed	None listed	None listed	None listed	None listed	None listed	Cattle, Milk, Nursery Products, Livestock Products
Humboldt[2]	None listed	None listed	None listed	None listed	None listed	200,837	Nursery Products, Milk, Cattle, Livestock Products
Lake	45,926	11,603	847	11,083	22,393	50,080	Grapes, Pears, Walnuts, Cattle
Mendocino	30,090	21,346	1,374	7,370	0	498,495	Grapes, Pears, Cattle, Milk
Trinity[2]	None listed	None listed	None listed	None listed	None listed	22,035	Forest Products, Cattle, Grapes, Hay
Northeast							
Lassen[3]	112,490	None listed	None listed	None listed	None listed	305,469	Hay, Unspecified Vegetables, Cattle
Modoc	285,997	78,065	43,193	14,556	150,183	127,170	Hay, Cattle, Potatoes, Wheat
Shasta	19,716	11,082	2,928	499	5,207	177,111	Forest Products, Hay, Cattle, Nursery Products
Siskiyou	759,080	74,245	26,729	33,584	624,522	414,886	Cattle, Hay, Grain, Livestock
Sacramento Valley							
Tehama	231,592	62,175	17,304	19,565	132,548	801,079	Walnuts, Plums, Almonds, Olives
Glenn	348,147	157,940	87,071	17,300	85,836	418,538	Rice, Almonds, Milk, Walnuts
Butte	237,272	193,290	21,792	22,190	0	215,979	Rice, Walnuts, Almonds, Plums
Colusa	554,695	196,320	2,046	120,316	236,013	320.979	Rice, Almonds, Tomatoes, Seeds
Sutter	285,820	162,673	105,395	17,752	0	64,544	Rice, Plums, Walnuts, Peaches
Yuba	82,538	39,485	10,829	32,224	0	N/A	Rice, Plums, Walnuts, Peaches
Yolo	374,534	252,083	16,412	43,629	62,410	415,619	Tomatoes, Grapes, Rice, Vegetables
Sacramento	211,744	97,476	45,264	15,076	53,928	181,163	Grapes, Milk, Poultry, Pears
San Joaquin Valley							
San Joaquin	614,994	385,337	83,307	69,481	76,869	536,215	Grapes, Milk, Cherries, Walnuts
Stanislaus	403,802	253,435	31,474	87,527	31,366	690,067	Almonds, Milk, Chickens, Walnuts

County	Total Area of Important Farmland (acres)	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Unique Farmland (acres)	Farmland of Local Importance (acres)	Williamson Act Lands (acres)[1]	Primary Agricultural Commodities
Merced	596,527	271,100	151,340	109,030	65,057	455,650	Milk, Chickens, Almonds, Cattle
Madera	361,582	97,095	84,755	165,931	13,801	539,269	Almonds, Milk, Grapes, Pistachios
Fresno	1,370,273	685,411	415,689	92,649	176,524	1,494,496	Almonds, Tomatoes, Poultry, Milk
Kings	552,087	130,257	388,891	21,801	11,138	679,459	Milk, Cattle, Tomatoes, Cotton
Tulare	859,991	370,249	323,599	11,593	154,550	1,098,529	Milk, Cattle, Oranges, Grapes
Kern	914,830	608,789	213,465	91,830	0	1,700,742	Grapes, Milk, Vegetables, Almonds
Sierra Nevada Mountains							
Alpine[2]	None listed	None listed	None listed	None listed	None listed	None listed	Cattle, Pasture, Hay
Amador	9,831	3,211	1,421	3,335	1,864	93,904	Grapes, Cattle, Unspecified Vegetables, Hay
Calaveras[2]	None listed	None listed	None listed	None listed	None listed	140,859	Cattle, Grapes, Poultry, Walnuts
El Dorado	64,259	661	827	3,206	59,565	34,036	Apples, Grapes, Cattle
Inyo[2]	None listed	None listed	None listed	None listed	None listed	None listed	Hay, Cattle, Honey, Sheep
Mariposa	340	6	49	285	0	205,628	Cattle, Livestock Products, Poultry, Unspecified Fruits and Nuts
Mono[2]	None listed	None listed	None listed	None listed	None listed	13,310	Hay, Cattle, Sheep, Potatoes
Nevada	25,934	398	1,586	480	23,470	4,236	Cattle, Grapes, Nursery Products, Sheep
Placer	132,741	7,340	4,068	18,060	103,273	44,520	Rice, Cattle, Livestock, Nursery Products
Plumas[3]	62,345	None listed	None listed	None listed	None listed	82,996	Cattle, Hay, Unspecified Fruits and Nuts, Livestock
Sierra[3]	22,935	None listed	None listed	None listed	None listed	40,470	Cattle, Hay, Unspecified Fruits and Nuts
Tuolumne[2]	None listed	None listed	None listed	None listed	None listed	120,197	Cattle, Forest Products, Nursery Products, Sheep

County	Total Area of Important Farmland (acres)	Prime Farmland (acres)	Farmland of Statewide Importance (acres)	Unique Farmland (acres)	Farmland of Local Importance (acres)	Williamson Act Lands (acres)[1]	Primary Agricultural Commodities
Southern California							
Los Angeles	39,812	30,876	952	1,129	6,855	40,031	Nursery Plants, Unspecified Vegetables, Hay
Orange	7,264	3,243	367	3,654	0	8,044	Nursery Products, Strawberries, Unspecified Vegetables, Cucumbers
San Bernardino	22,761	12,848	6,242	2,511	1,160	4,541	Milk, Eggs, Cattle, Hay
Ventura	119,683	42,420	33,482	28,793	14,988	128,993	Strawberries, Celery, Raspberries, Lemons
Riverside	428,989	119,635	44,086	35,391	229,877	59,307	Nursery Products, Milk, Grapes, Chickens/Eggs
San Diego	218,921	7,085	9,439	48,359	154,038	61,873	Nursery Products, Flowers, Avocados, Tomatoes
Imperial	539,273	194,137	307,221	2,141	35,774	136,649	Cattle, Lettuce, Wheat, Hay

[1]Includes land under the following contracts: Land Conservation Act, Farmland Security Zone, Agricultural Conservation Easement, and other Enforceable Restriction.
[2]Agriculture acreage has not been mapped and is therefore unavailable.
[3]Data was provided for Sierra Valley of 197,771 acres. Sierra Valley represents the agricultural acreage in Lassen, Plumas, and Sierra counties. The county value represents the weighted valley based on county total acreage for the counties represented by the Sierra Valley.
Sources: CDOC 2010a, 2010b; CDFA 2011b, 2013c

The following descriptions provide overviews of the various agricultural regions in California.

Northwest

In terms of gross value, the leading agricultural commodities produced in Northwestern California include milk and dairy products and cattle, as well as fruits such as grapes and pears. Abundant forests in the region provide for a robust production of timber supplies. Additionally, pastoral activities are a large part of the agricultural economies of the Northwestern counties (CDFA 2013c).

Northeast

Agriculture in the Northeastern counties consists mostly of pasture, rangeland, forest products, and some crop and nursery production. The major crops produced in the region from irrigation from the Klamath River are horseradish, potatoes, and dry-farmed grain. The major profit source for agriculture in Siskiyou County comes from raising strawberry nursery plants that are shipped south and transplanted into the Salinas Valley and other areas (Starrs and Goin 2010).

Sierra Nevada Mountains

Mountainous areas generally are not known for their agricultural production. The Sierra Nevada Mountains are characterized by irrigated, specialized crops in the foothills and grazing land in the drier high altitude, with some crop production in the wetter high altitude areas (Momsen 1996).

Central Coast

California's Central Coast lies between the ocean and a series of mountains. The climate tends to be cool in the summer and warm in the winter. The highly productive Salinas Valley in Monterey County is a roughly 90-mile strip of land that runs in a southeast to northwest direction, following the direction of the Salinas River. Lettuce, spinach, broccoli, cauliflower, strawberries, and asparagus, among other crops, are grown in the Salinas Valley. Agricultural areas in and around the San Francisco Bay Area feature abundant wine grape production, and several northern Bay Area counties produce milk and other dairy products. Fruit, nut, and vegetable production occurs throughout the region as well, such as along the San Mateo and Santa Cruz coasts.

Central Valley (Sacramento and San Joaquin Valleys)

California's Central Valley (as stated previously, the combined Sacramento Valley and San Joaquin Valley), a large, flat swath of land covering over 42,000 square miles in the middle of the state, contains the majority of agricultural land in California. The Sacramento Valley encompasses large portions of the following counties: Tehama, Glenn, Butte, Colusa, Sutter, Yuba, Yolo, Solano, and Sacramento. The San Joaquin Valley encompasses large portions of the following counties: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern. Table 6.1-6 lists the counties of the Central Valley, from north to south.

Six of the top seven agricultural producing counties are in the Central Valley. The Sacramento and San Joaquin Valleys vary considerably in type of crop production. In general, the climate warms considerably from north to south in the Central Valley, and precipitation decreases from north to south, from an annual average of 32 inches at Chico in the northern Sacramento Valley, to 6.5 inches in Bakersfield.

Southern California

Southern California produced a variety of crops from the early 1900s to the mid-1930s, but the landscape has changed considerably with urban and suburban development; nonetheless, the region remains a force in agriculture. The major focus shifted from citrus production to nursery products in the late twentieth century, including trees and shrubs, woody ornamentals, potted plants, bedding plants, nursery stock, and foliage. (Starrs and Goin 2010)

Imperial County lies in southeastern Southern California. It contains an area known as the Imperial Valley, a large structural trough between the Coachella Valley and the Gulf of California, which is mostly below sea level. The Imperial Valley is irrigated by water that is diverted from the Colorado River and transported to the valley by the All-American Canal

(Imperial Irrigation District 2012). The Imperial Valley produces over 100 different crops on a half-million acres of land (Imperial County Farm Bureau 2012). Imperial Valley is one of California's top five producers of spinach, potatoes, cauliflower, sweet corn, broccoli, and onions, and is a major producer of hay for the state's dairy industry.

Agricultural Production of Host Crops and Plants

Table 6.1-7 lists acres in production and production values for the sample host crops in California in 2011 (CDFA 2013b). Statewide in 2011, a total of 2,782,300 acres were in sample host crop production. Over half of sample host crop production was in grapes and almond crops, approximately 1,556,000 acres combined. Other host crops with substantial production acreages include cotton (454,000 acres) and tomatoes (285,000 acres).

Table 6.1-7. Sample Host Crop Acreage and Value in California (2011)

Commodity Group	Acres	Percent of Acres	Value ($ millions)	Percent of Value	Value per Acre
Almonds	760,000	27.3	3,867	22.9	5,088
Cotton	454,000	16.3	1,080	6.4	2,379
Grapes	796,000	28.6	3,860	22.9	4,850
Lettuce	206,000	7.4	1,513	9.0	7,345
Nursery stock	--	--	2,676	15.9	--
Oranges	180,000	6.5	656	3.9	3,646
Peaches	47,500	1.7	289	1.7	6,088
Peppers	29,300	1.1	338	2.0	11,538
Tomatoes	285,000	10.2	1,265	7.5	4,438
Walnuts	24,500	0.9	1,323	7.8	54,003
Total	**2,782,300**	**100**	**16,868**	**100**	**6,063**

Source: CDFA 2012

In 2011, the total value of crop production in California was $31.4 billion (CDFA 2013b). The value of sample host crop production was $16.9 billion, or 54 percent of the statewide total. The single highest-value host crop group in California was almonds, with a total value of $3.87 billion in 2011. After dairy products, almonds were California's second most valuable agricultural commodity. Other high-value host crops in the State were grapes, with a value of $3.86 billion in 2011, and nursery stock, with a value of $2.68 billion in 2011. These were the third and fifth most valuable agricultural commodities statewide, respectively.

The agricultural values in Table 6.1-7 represent the sale value of harvested crops. Agricultural sector earnings (including farm proprietors' income, representing the full financial returns from farming) is lower than the total value of crop production because of the costs for purchased inputs that determine the net farm income.

Organic Cropland

The U.S. organic food industry has more than doubled since the late 1990s. Consumer demand has outpaced production during this time, as organic food sales have more than quintupled, from $3.6 billion in 1997 to $21.1 billion in 2008 (Greene et al. 2009).

Statewide organic sample host crop acreages are listed in Table 6.1-8. The largest acreage is for grapes. Organic grapes account for over 27,000 acres and 41.1 percent of the statewide organic host crop acreage. Organic lettuce was the second largest of the sample host crops, covering 18,000 acres and having 26.6 percent of the total organic sample host crops acreage.

Organic farms are located throughout the state's agricultural areas. Figure 6.1-2 shows the distribution of organic farming acreage in California. Table 6.1-9 compares the value of organic agriculture and the total agricultural production in each of California's agricultural regions. The largest share of regional agricultural production was in the Northeast region (10.4 percent), followed by the Central Coast (3.8 percent); the statewide average for organic production was 1.2 percent of the total agricultural production value in California (as of 2011)

Table 6.1-8. Certified Organic Host-Crop Acreage and Value in California (2011)

Crop Group	Acres	Organic Acres as a Percent of Total Crop Group Acres	Value of Organic Acreage Produce ($ Millions)	Organic Value as a Percent of Total Crop Group Value	Organic Value per Acre ($/acre)
Almonds	5,196	7.7	21.1	4.6	4,065
Cotton	(D)	---	(D)	---	---
Grapes	27,779	41.1	150.7	32.9	5,423
Lettuce	18,012	26.6	197.5	43.1	10,963
Nursery stock	---	---	---	---	---
Oranges	4,530	6.7	21.0	4.6	4,631
Peaches	1,809	2.7	13.9	3.0	7,669
Peppers	412	0.6	7.5	1.6	18,185
Tomatoes	4,779	7.1	36.5	8.0	7,636
Walnuts	5,139	7.6	10.0	2.2	1,938
Total	**67,656**	**100**	**458.0**	**100**	**6,770**

(D) Withheld to avoid disclosing data for individual farms.

Source: USDA 2012b

Table 6.1-9. Organic Farms and Value in California and Agricultural Regions (2011)

Agricultural District	Number of Farms	Estimated Acres	Total Organic Value ($ Millions)	Total Agricultural Production Value ($ Millions)	Organic Value as Percent of Total Agricultural Production Value (percent)
Central Coast	984	95,929	251.7	6,588.2	3.8
Northeast	305	140,340	64.7	620.0	10.4
Sacramento Valley	263	79,880	47.4	4,032.6	1.2
San Joaquin Valley	486	103,280	188.6	30,243.6	0.6
Sierra Nevada Mountains	106	5,589	---	517.8	---
Southern California	745	19,224	39.4	8,804.1	0.4
Statewide Program Area	**2,889**	**444,242**	**591.9**	**50,806.4**	**1.2**

Note: Some counties do not report information on organic agricultural production.

Source: USDA 2011

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Horizon WATER and ENVIRONMENT

Figure c.1-2
Organic Production Acreages

Agricultural and Horticultural Economics

This section focuses on agricultural and horticultural economic parameters as related to Statewide Program activities. These include conventional and organic crop revenues, agricultural exports and trade, and regional economic benefits from existing agricultural and horticultural production of crops that are susceptible to pest infestation. Details regarding these parameters are presented to provide context for the evaluation of effects of the Proposed Program on agriculture.

California's agriculture sector provides crops for consumption in California as well as in other domestic and international markets. California's farms also generate employment and income for thousands of workers in both the farming sector and other agricultural-support industries. Farm production is linked to other industries, such as equipment and chemical manufacturing, food and beverage processing, financial services, textiles, and transportation. California farming and its closely related processing industries are estimated to employ 7.3 percent of the state's private sector labor force and account for 5.6 percent of the state labor income (Sumner et al. 2009).

Agricultural Revenues and Production Values

The value of sample host crop products produced in California is substantial. The agricultural revenues (or farmgate values) of the commodities, including organic crops, are shown in Table 6.1-7and Table 6.1-8.

Sample Host Crops

Statewide, the annual value of the sample host crops was approximately $16.9 billion in 2011. The highest-value host crop group was almonds, with a total value of $3.87 billion in 2011. The other high-value host crops were grapes, with a value of $3.86 billion in 2011, and nursery stock, with a value of $2.68 billion in 2011. These top three crop groups accounted for over 60 percent ($10.4 billion) of the total agricultural host crop value.

Organic Host Crops and Price Premiums

In 2011, the agricultural revenue from organic host crops in California was approximately $458 million. Organic lettuces generated about $197 million, which represented 43.1 percent of the total value of organic host crop production. Other organic crops generating substantial annual revenues included grapes, with a value of $151 million (32.9 percent), and tomatoes, with a value of $36 million (8.0 percent).

Certified organic produce generally receives a price premium that reflects higher costs for additional processing, transportation, and handling requirements. Comprehensive price data for organic products are not available. However, several studies have analyzed available farm-level, wholesale, and retail organic prices, showing significant premiums for organic fruits, vegetables, grains, and milk (Oberholtzer et al. 2005). In addition, USDA has collected data on wholesale organic price premiums for several fruits and vegetables. It found that organic prices were substantially higher than conventional prices for several crops (USDA 2008). For example, from 1999 to 2007, organic broccoli sold for 44.1 percent more than nonorganic broccoli. Premiums for organic carrots and organic salad mix were 35.3 percent and 10.0 percent higher than their respective nonorganic counterparts. From

2005 through 2007, fruits overall received a price premium of 54.4 percent and vegetables 77.1 percent (USDA 2014a, 2014b).

Agricultural and Nursery Product Exports

California is the top exporter in the nation for fruits, tree nuts, and many other specialty crops[1] (CDFA 2013c). In 2011, exports of California agricultural and nursery products were valued at $16.87 billion (CDFA 2012). The leading 57 export commodities accounted for $14.7 billion, or 87 percent of total agricultural exports. The top 10 commodities have been reasonably consistent from year to year, although the rankings within the group change occasionally. Almonds continued to be California's top commodity, with a value of $2.83 billion in foreign sales. Dairy products, wine, walnuts, rice, pistachios, table grapes, oranges, processed tomatoes, and cotton are the remaining top 10 exported agricultural commodities[2].

California agricultural products were exported to 194 countries in 2008 (Matthews et al. 2010), with the top 10 destinations accounting for 81 percent of total export sales. The largest export markets have consistently been Canada, the European Union, and Japan. In 2008, Canada accounted for 24 percent of California's total agricultural export sales.

Table 6.1-10 shows the export values of sample host crops from California and their shares of total U.S. exports by value. The largest export crop value was for almonds, with an average of $2.6 billion in export annually between 2010 and 2011. California produced 100 percent of total U.S. almond exports. Grapes were the second largest export crop, earning an average of $2.2 billion annually, with California production accounting for 97 percent of U.S. exports.

Table 6.1-10. Average Annual Agricultural Export Values of Sample Host Crops in California (2010-2011)

Crop Group	Export Value (2010–2011) ($ millions)	Total U.S. Export Value (2010–2011) ($millions)	California Share of U.S. Export Value (2010–2011) (percent)
Almonds	2,610	2,610	100
Cotton	420	7,350	6
Grapes	2,206	2,286	97
Lettuce	339	452	75
Nursery stock[2]	86	368	24
Oranges	616	1,234	50
Peaches[1]	145	201	72
Peppers	28	83	34

[1] Specialty crops are fruits, vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture).

[2] Commodities are raw materials or primary agricultural products that can be bought and sold.

Crop Group	Export Value (2010–2011) ($ millions)	Total U.S. Export Value (2010–2011) ($millions)	California Share of U.S. Export Value (2010–2011) (percent)
Tomatoes	584	754	77
Walnuts	940	940	100
Total	**7,974**	**16,277**	**49**

[1] Total for peaches and nectarines.

[2] Total for flowers and nursery products.

Source: Agricultural Issues Center 2011a, 2011b

Regional Economic Contribution of Existing Agriculture (Sample Host Crops)

The contribution of agriculture in local economies throughout the state extends beyond the farm-level direct benefits. Any change in agricultural production sets in motion a series of "ripple effects," which collectively cause changes in output (economic production) throughout the economy. The indirect and induced effects generally are estimated with the use of input-output models. Table 6.1-11 presents the regional economic impacts of current agricultural production of sample host crops in California.

The regional economic effects attributable to sample host crop production throughout the state are substantial. The value of sample host crop production was 54 percent of the statewide total crop production value of $31.4 billion. Host crop production in California annually supports approximately $16.9 billion and $34 billion in direct and total output, respectively.

Table 6.1-11. Economic Importance of Existing Sample Host Crop Production

Area	Annual Output ($ million)		
	Direct	Indirect and Induced	Total
California	$16,868	$17,389	$34,257

Note: Values reported in thousands 2011 dollars

Source: Bureau of Economic Analysis 2010

Beneficial Insects and Agriculture

Many insects provide important agricultural benefits in the form of crop pollination, or because they suppress pest populations.

Honeybee pollination is essential for more than 90 food crops (USDA 2009). Data on the value of insect pollination for total agricultural production is limited. However, research on the impact of honeybee pollination on production values for various crops estimated that the economic value attributable to honeybees was $19.1 billion (in terms of 2011 dollars) across the U.S. in 2000 (Morse and Calderone 2000). Proportionally, by applying the estimated value of honeybee pollination to the Statewide Program sample host crops and their statewide production values, the economic value attributed to honeybee pollination is estimated to be $4.4 billion a year.

The honeybee *Apis mellifera* is the most common agricultural pollinator. Nationwide, farmers rent more than 2 million honeybee colonies every year for pollination (USDA 2009). A few other bee species are managed, including a bumblebee (*Bombus impatiens*), the alfalfa leafcutting bee (*Megachile rotundata*), a few species of mason bees (*Osmia* spp.), and the alkali bee (*Nomia melanderi*).

"Natural enemies", or "good bugs" that are commonly found in California include: lady beetles, whose adults and larvae eat aphids; lacewings, whose larvae feed on many insect pests; syrphid flies, whose larvae eat aphids; and parasitic mini-wasps, many species of which lay their eggs in pests such as aphids or caterpillars and their hatching larvae consume the pest and kill it; and spiders, who feed on insects or other arthropods (UC IPM 2012).

6.1.3 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze agricultural resources and economics. It also presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts.

Methodology

This section evaluates the direct and indirect effects on agricultural resources of implementing management actions to be included in the Proposed Program. The Proposed Program would not involve activities that would directly convert farmland to non-agricultural use. The discussion of the potential impacts on agricultural lands considers indirect effects on organic farming and organic farm certification, beneficial insects and pollinators, economic effects, and the related potential for the Proposed Program to result indirectly in conversion of Important Farmland and Williamson Act land.

Section 15131 of the CEQA Guidelines state that economic or social information may be included in an EIR. However, such effects are not to be treated as significant impacts on the environment, although an EIR may trace the chain of cause and effect from economic to environmental impacts, focusing on the resultant physical change in the environment (CEQA Guidelines Section 15131[a]). For this reason, this Final PEIR does not establish criteria for assessing the significance of economic impacts themselves. Rather, the evaluation of potential effects of the Proposed Program in this section takes into account economic considerations from the standpoint of whether they could result in a reasonably foreseeable physical impact on the environment with respect to the significance criteria.

Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact on agricultural resources and economics if it would:

A. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use;

B. Conflict with existing zoning for agricultural use, or Williamson Act contract;

C. Involve other changes in the existing environment that, because of their location or nature, could result in conversion of Farmland to non-agricultural use.

None of the Proposed Program activities has potential to conflict with existing zoning for agricultural use or a Williamson Act contract; for this reason, Criterion B is not discussed further.

Environmental Impacts of the Proposed Program

All Management Approaches

Impact AG-GEN-1: Proposed Program activities would reduce pest infestations and would help prevent conversion of farmland to non-agricultural use. (Beneficial Impact)

Pests adversely affect many agricultural host crops by feeding on the leaves, fruit, and stems, causing both internal and external damage. Currently, invasive pests cause billions of dollars in damage in rural and urban areas statewide (Center for Invasive Species Research 2014). Left unchecked, many of these pests could cause certain crops to no longer be economically viable, and in a worst-case scenario, result in conversion of farmland to non-agricultural uses.

The Proposed Program's various management approaches would focus on high-priority pests that are known to occur or likely to occur in California. These management activities would be used in a combination of detection, eradication, and interior quarantine projects to reduce the potential for economic losses to agriculture.

Implementation of these pest management activities may be costly to the agriculture industry. In the short term, measures such as quarantines may cause an inconvenience and economic losses to producers and handlers, and could lead to higher prices for consumers (James and Anderson 2002). Control methods (e.g., fruit stripping) could be costly for producers (Dowell and Krass 1992). Treatments and inspections could take weeks to complete and could cause decreases in agricultural revenues from the loss of access to domestic and international markets. Use of biological control agents would require funding to develop, produce, release, and manage. To the extent that these activities would be funded by industry, they could increase costs to producers, shippers, receivers, and consumers of agricultural products.

However, over the long term, the Proposed Program's pest management activities would benefit the agriculture industry, by controlling and ideally eradicating pest populations. When taken in the context of the total potential economic losses associated with priority pests, these long-term benefits would outweigh the short-term economic costs associated with implementation of the Proposed Program. The Proposed Program would be economically beneficial overall, creating an economic incentive against conversion of farmland to non-agricultural uses. Therefore, the impact would be beneficial.

Chemical Management Approaches

Impact AG-CHEM-1: Potential for chemical use in response to interior quarantine requirements to disrupt organic farming and convert farmland to non-agricultural use. (No Impact)

Eradication or control of the majority of priority pests discussed in Chapter 3, Proposed Program Activities, may be achievable with the use of physical, biological, and USDA organic-approved chemical management approaches. However, the eradication or control of certain pests, such as the glassy-winged sharpshooter (GWSS), Asian citrus psyllid (ACP), exotic fruit flies, and Japanese beetle, likely would not be achievable with currently available organic options (see USDA Organic Pesticide Alternative, Section 7.4.3, for more details). Organic growers of host crops for these species, and/or shippers of the products, would need to use non-USDA organic-approved chemical treatments on those crops grown within an interior quarantine area to ship the products outside the quarantine area. Similarly, growers and shippers of organic products could use non-USDA organic-approved chemical treatments on other host crops, even if physical, biological, and USDA organic-approved chemical management approaches exist.

Organic farms would not lose their organic certification status if they apply pesticides under a CDFA quarantine. However, organic farmers or shippers would temporarily lose the ability to label, market, and sell crops as USDA organic if those crops have had contact with a prohibited substance. Other crops could be sold as organic later in the year, as long as they had no contact with the prohibited substance. (CCOF 2012)

The treated products would not command the typical premium prices demanded for organic produce in the marketplace. Depending on the economic implications of this reduced profitability, individual organic farmers theoretically could choose to reduce their production costs and offset losses by temporarily or permanently converting to conventional agricultural methods or by growing alternate crops that are not hosts to the pest in question. However, evidence was not found during preparation of this PEIR to suggest that this has occurred in the past, and therefore such an impact is considered speculative. Furthermore, even if such a conversion were to take place, this would not result in a conversion of farmland to non-agricultural use, but instead would be a conversion of one type of agricultural use to another.

In conclusion, in the event that organic growers apply non-organic pesticides under the Proposed Program, organic certification would not be lost, and the use of chemicals would not be expected to result in the conversion of farmland to non-agricultural use. Therefore, no impact would occur.

Impact AG-CHEM-2: Potential for pesticide drift to disrupt organic farming and convert farmland to non-agricultural use. (No Impact)

Pesticide spray drift is the physical movement of a pesticide through air at the time of application or soon thereafter, to any site other than that intended for application (EPA 2001). The nozzles of spray equipment produce droplets during pesticide applications, by ground spray equipment or aircraft. Many of these droplets can be so small that they stay suspended in air and are carried by air currents, until they contact a surface or drop to the ground. A number of factors influence drift including weather conditions, topography, application equipment and methods, and decisions by the applicator (CDPR 2010).

Depending on the chemicals used, drift can happen days or even weeks after application as some pesticides evaporate (volatilize) into gas. Off-site drift can reach a home garden or a neighboring farm's crops, causing unintended pesticide residues and/or plant damage that could jeopardize organic certification for USDA organic-certified growers, or more likely, affect their ability to market their product as organic. State law requires that applicators take all possible measures to prevent substantial drift (Title 3, California Code of Regulations Section 4416). Certified organic growers are required to have distinct, defined boundaries and buffer zones between organic and non-organic production areas to prevent pesticide drift.

Pesticide use pursuant to a CDFA interior quarantine that resulted in the use of non-USDA organic approved chemical products would have the potential to create drift that potentially could affect their ability to market their product as organic. This would have the potential to result in financial hardship to a grower and could change a grower's organic practices. However, evidence was not found during preparation of this PEIR to suggest that this has occurred in the past, and therefore, such an effect is considered speculative. Furthermore, even if such a conversion were to take place, this would not result in a conversion of farmland to non-agricultural use, but instead a conversion of organic farming to conventional farming.

In addition, the following management practices (MPs, described fully in Chapter 2, Proposed Program Description) would be recommended for any grower required to use non-USDA approved pesticide products in the vicinity of an organic growing operation, to minimize the potential for pesticide drift and other modes of non-drift pesticide transport.

MP-SPRAY-1: Conduct a Site Assessment

MP-SPRAY-2: Properly clean and calibrate all equipment to apply chemicals uniformly and in the correct quantities

MP-SPRAY-3: Follow pesticide application laws and regulations, and label directions.

MP-SPRAY-4: Apply chemicals only under favorable weather conditions

MP-SPRAY-5: Follow integrated pest management and drift reduction techniques

MP-SPRAY-6: Clean equipment and dispose of rinse water per label directions

MP-SPRAY-7: Follow appropriate product storage procedures

MP-AERIAL-1: Use appropriate aerial spray treatment procedures

MP-GROUND-1: Follow appropriate ground-rig foliar treatment procedures

MP-GROUND-2: Follow appropriate low-pressure backpack treatment procedures

MP-GROUND-3: Train personnel in proper use of pesticides

MP-GROUND-4: Enforce runoff and drift prevention

Overall, pesticide drift would not be expected to result in the indirect conversion of farmland to non-agricultural use. Therefore, no impact would occur.

Impact AG-CHEM-3: Potential for indirect effects of pesticide use on beneficial insects and pollinators to cause a reduction in agricultural production and lead to conversion of farmland to non-agricultural use. (No Impact)

Many types of plants, including fruit and vegetable crops, depend on insects and certain other species (e.g., certain species of bird) for pollination. Honeybees are California's most important pollinators, resulting in an estimated ecosystem service value of $4.4 billion a year.

Over the last 10 years, honeybees have suffered declining health, including from a phenomenon known as colony collapse disorder (CCD). CCD occurs when the majority of worker bees in a colony disappear and leave behind a queen, plenty of food, and a few nurse bees to care for the remaining immature bees and the queen. Once thought to pose a major long-term threat to bees, reported cases of CCD have declined substantially over the last 5 years. The number of hives that do not survive over the winter months—the overall indicator for bee health—has maintained an average of about 30 percent since 2008. The number of winter losses attributed to CCD dropped from approximately 60 percent of total hives lost in 2008 to 26 percent in 2012 (EPA 2013). However, honeybee colony losses in the United States continue to be high and pose a serious threat to meeting the pollination service demands for several commercial crops (USDA 2012a).

The prevailing theory among scientists in the EPA, USDA, and global scientific and regulatory community is that the general declining health of honeybees is related to complex interactions among multiple stressors including:

- pests (e.g., varroa mite), pathogens (e.g., the bacterial disease American foulbrood) and viruses;
- poor nutrition (e.g., loss of foraging habitat and increased reliance on supplemental diets);
- pesticide exposure;
- bee management practices (e.g., long migratory routes to support pollination services); and
- lack of genetic diversity.

To respond to this issue, CDFA has formed a Pollinator Working Group, made up of members of the beekeeping community, native pollinator groups, and related researchers nationwide, to focus on topics for the State that ultimately will be faced at the national level. Topics include improving forage diversity, pollinator health, and generating practical solutions for helping farmers on this issue for a wide range of crops. CDFA also has a designated liaison to the California State Apiary Board. California border stations have installed hoses that can be used by hive transporters to cool and hydrate colonies during transport. For a complete list of activities in which CDFA currently engages or proposes to engage to help protect and support pollinator populations, refer to Attachment 1 in Appendix K, Potential Effects of Pesticide Use and Other Stressors on Pollinators and Associated Biological Resources.

The use of pesticides for Proposed Program activities potentially could harm bees, other pollinators, and other beneficial organisms, including insects, mites, nematodes, fungi, bacteria, and other microorganisms that feed on or parasitize plant species (Fishel 2009). For a detailed discussion of this topic, see the impact discussion in Section 6.3, Biological Resources, and Appendix K.

Harm to honeybees, other pollinators, and other beneficial organisms related to Proposed Program pesticide use theoretically could contribute to declines in pollinator or other ecosystem services, affecting the specialty crop industry in California. However, as described in Section 6.3 and Appendix K, Proposed Program activities are not expected to result in substantial adverse impacts on pollinators, especially because such activities would be relatively minor in the context of overall agricultural pesticide use and other stressors on pollinators. In addition, pesticide use under the Proposed Program would support agricultural productivity overall. Evidence was not found during preparation of this PEIR to suggest that impacts on pollinators or other beneficial insects from past Statewide Program pesticide use has resulted in conversion of agricultural lands to non-agricultural uses, or that such conversion would be likely to occur in the future. Therefore, no impact would occur.

Cumulative Impacts

AG-CUM-1: Potential for pesticide use from Statewide Program activities to contribute to cumulative honeybee mortality and result in a conversion of farmland to a non-agricultural use. (No Impact)

International trade and travel as well as statewide land use conversion have resulted in conditions that have introduced pathogens and diseases of honeybees and have resulted in a reduced variety of forage for honeybees. Combined with historic changes in bee management and breeding practices that stress hives and have led to a lack of genetic diversity, these conditions have resulted in widespread CCD in honeybee populations in California. However, evidence was not found during preparation of this PEIR to suggest that these conditions have resulted in conversion of agricultural lands to non-agricultural uses in the past, or that such conversion would be likely to occur in the future. Indeed, acreages of specialty crops that depend on honeybee pollination (e.g., almonds) have increased over time because of their profitability. Thus, no cumulatively significant impact exists to which Statewide Program activities with effects on pollinators could contribute. Therefore, no cumulative impact would occur.

AG-CUM-2: Potential for pesticide use from Statewide Program activities to disrupt organic farming and result in a conversion of farmland to a non-agricultural use. (No Impact)

As described in Section 6.1.2, Environmental Setting, organic crop acreages have grown over time. Evidence was not found during preparation of this PEIR to suggest that this trend would change in the future. Even if speculating that organic crop acreage can decline in the future, this would be most likely because of a conversion to conventional agricultural practices, not the conversion of farmland to non-agricultural uses. Thus, no cumulatively significant impact exists to which Statewide Program activities with effects on organic farming practices could contribute. Therefore, no cumulative impact would occur.

AG-CUM-3: Potential for Statewide Program activities as a whole to contribute to conversion of farmland to a non-agricultural use. (Beneficial Impact)

As discussed in Chapter 5, Cumulative Scenario, several factors have led to, and would continue to lead to, conversion of farmland to non-agricultural uses in California. This would be a significant cumulative impact.

As described in Impact AG-GEN-1, CDFA's activities under the Proposed Program would support and benefit agriculture in California, creating an incentive against conversion of farmland to non-agricultural use. Thus, the Proposed Program's incremental contribution would be positive. Therefore, the cumulative impact would be beneficial.

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Section 6.2

Air Quality

6.2 Air Quality

6.2.1 Introduction

This section presents the environmental setting and potential impacts of the Proposed Program related to air quality. This section also summarizes detailed information provided in Appendix B, Human Health Risk Assessment and Appendix H, Air Quality and Greenhouse Gas Technical Report.

6.2.2 Environmental Setting

The following discussion describes the location, meteorology and climate, criteria air pollutants and potential health impacts, toxic air contaminants (TACs) and potential health impacts, and existing air quality relevant to the Proposed Program.

Proposed Program Location

The Statewide Program includes management activities occurring in a variety of locations in California. For this air quality assessment, the location of the Proposed Program is defined as all areas in California that could become affected by a Statewide Program pest, and therefore may be subject to Proposed Program activities.

California is divided into fifteen air basins that are managed by 35 air districts, directed at attaining and maintaining air quality within the state. Agricultural and plant systems within each air basin are unique, and pest monitoring and responses also are unique. The extent of each activity under the Proposed Program would vary throughout the air basins and would have the potential for varying air emissions. Air basins also are dissimilar in their ambient air quality and emissions standards. The existing air quality of each air basin and sub-region is described under Existing Air Quality below.

Meteorology and Climate

As the Statewide Program is effectively statewide, the meteorology and climate for the state very generally are characterized in this PEIR. Because it is such a large area, California's climate varies substantially, depending on specific locations within the state. Latitude, elevation, and proximity to the coast are the primary factors influencing specific climates. The following information on climate and meteorology were obtained from the Western Regional Climate Center (2014).

California extends between latitude 32.5 degrees and 42 degrees north and has an extensive coastline along the Pacific Ocean. The Coast Ranges in the west merge with the Cascade Range in northern California. The Cascades then extend southeastward until they merge into the Sierra Nevada. The Sierra Nevada, which parallels the coast, is located up to 150 miles farther inland. The Central Valley is a broad, flat valley between the Coast Ranges and the Sierra Nevada. The southern end of the Central Valley is closed off by the southern Sierra Nevada, joining the Tehachapi Mountains, which bend southwestward to join the Coast Ranges. Furthermore, a series of ranges continue southeastward to the southern border of California, from the point where the Tehachapi and the Coast Ranges join. These wide ranges of topography create a variety of climates in the state. In addition, the Eastern Pacific High, which is a strong persistent high atmospheric pressure over the Pacific Ocean, is the major influence on regional climate. The Eastern Pacific High moves northward in summer, attaining its greatest strength and keeping away storm tracks. Therefore, California receives little or no precipitation from this source during that period. In winter, the Eastern Pacific High often retreats southward and decreases its intensity, allowing storm centers to swing into and across California. These storms bring widespread, moderate precipitation to the state.

The coastal and southern regions of California have a predominately Mediterranean climate that is characterized by warm to hot, dry summers and cool, wet winters. The presence of the Pacific Ocean helps moderate temperatures. The northern coastal area of California is characterized as more of a maritime climate, with narrower temperature ranges and heavier rainfall. Warm winters, cool summers, small daily and seasonal temperature variation, and high relative humidity are characteristic of this area. A more continental climate is experienced further inland, resulting in wider temperature ranges during the year. The Coastal Ranges to the west form a barrier, keeping the interior from the strong flow of air off the Pacific Ocean. Therefore, further to the east, winters are colder, summers are warmer, and precipitation is relatively greater on the coastal or western side of the major mountain ranges. The low-lying inland valleys, in particular the Central Valley, normally have subtropical temperatures with a dry summer season and a cool and foggy rainy season, similar to a hot Mediterranean climate. The desert regime east of the mountain ranges in southeastern California experiences a low relative humidity and high temperatures during the summer. Death Valley and the Mojave Desert are the hottest part of California.

Because the dispersion of air pollutants is highly associated with wind speed and wind direction, the general wind pattern in California also is important. California lies within the zone of westerly prevailing wind along with a high pressure area over the northeast Pacific Ocean on the east side. The wind generally blows from the west or northwest during most of the year. However, because of the state's mountain ranges, wind direction can be deflected and often is more a product of local terrain than of this prevailing circulation. The Sacramento and San Joaquin valleys have winds from the north, caused by the compressed heating of air flowing out of the Great Basin, which creates pronounced heat waves in summer. In winter, the result usually is a rather mild temperature, accompanied by a dry, persistent wind. The Central Valley and the Southeastern Desert Basin experience a typical northwest wind of summer, reinforced by the dynamics of the thermal low-pressure area that is located over these areas. The Santa Ana Wind is the wind flowing out of the Great Basin into the Central Valley, the Southeastern Desert Basin, and the South Coast. The air typically is very dry. The winds are strong and gusty, particularly near the mouth of canyons that are oriented in the direction of the airflow. In the San Francisco Bay area, a diurnal pattern of the wind helps to carry locally produced air pollutants away from the Bay Area, but creates problems for the regions immediately to the south and east of the source area. In the Los Angeles area, the basin is almost completely surrounded by mountains on the north and east. Coupled with the inversion of the atmosphere, this topography causes a fairly regular daily reversal of wind direction, offshore at night and onshore during the day. This circulation pattern tends to cause an accumulation of air pollutants in the basin.

Criteria Air Pollutants and Potential Health Impacts

Six common criteria air pollutants are known to cause harm to human and environmental health. Ambient air concentration levels of criteria air pollutants are one metric used as an indicator of ambient air quality. A brief summary for each criteria air pollutant and its adverse health effects is presented below.

Ozone

O_3 is formed by photochemical reactions between NO_X and reactive organic gases (ROGs) in the presence of sunlight rather than being directly emitted. O_3 is a pungent, colorless gas that is a component of smog. Elevated O_3 concentrations can result in reduced lung function, particularly during vigorous physical activity. This health problem can be particularly acute in sensitive receptors, such as the sick, seniors, and children. O_3 levels peak during the summer and early fall months.

Carbon Monoxide

CO is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairment to central nervous system functions. CO passes through the lungs into the bloodstream, where it interferes with the transfer of oxygen to body tissues.

Nitrogen Oxides

NO_x contributes to other pollution problems, including a high concentration of fine PM, poor visibility, and acid deposition. Nitrogen dioxide (NO_2), a reddish-brown gas, and nitric oxide, a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to collectively as NO_x. NO_x is a primary component of the photochemical smog reaction. NO_2 can decrease lung function and may reduce resistance to infection.

Sulfur Dioxide

SO_2 is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in California. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine PM, and reduces visibility and the level of sunlight.

Reactive Organic Gases

ROGs are formed from combustion of fuels and evaporation of organic solvents. ROGs are the fraction of VOCs that are a prime component of the photochemical smog reaction. Individual ROGs can be TACs.

Particulate Matter

PM is the term used for a mixture of solid particles and liquid droplets suspended in the air. PM ranges in size from that which can be seen with the naked eye, such as dust or soot, to that which can only be seen with an electron microscope. Respirable PM of 10 microns in diameter or less is called PM_{10}. Fine particulate matter is a subgroup of $PM_{2.5}$ and is defined as particles with a diameter of 2.5 microns or less.

PM can be emitted directly from primary sources or formed secondarily from reactions in the atmosphere. Primary sources include windblown dust, grinding operations, smokestacks, and fires. Secondary formation of PM occurs from reactions of gaseous precursors within the atmosphere, such as the formation of nitrates from NO_x emissions from combustion activities.

PM can accumulate in the respiratory system and aggravate health problems. These health effects include: cardiovascular symptoms; cardiac arrhythmias; heart attacks; respiratory symptoms; asthma attacks; bronchitis; alterations in lung tissue, lung structure, and respiratory tract defense mechanisms; and premature death in people with heart or lung disease. Those at particular risk of increased health decline from exposure to PM include people with preexisting health or lung disease, children, and seniors.

Lead

Lead is a metal that can be found naturally in the environment and also is released from metal production processes and manufactured products. In the past, motor vehicles were the major contributor of lead emissions to the air. However, because of increased regulations, air emissions of lead from vehicles have declined. The major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft, operating on leaded aviation gasoline. Lead can accumulate in the bones and adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system. Lead exposure also affects the oxygen carrying capacity of the blood.

Toxic Air Contaminants and Potential Health Impacts

TACs are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. Hundreds of different types of TACs exist, with varying degrees of toxicity. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. For some chemicals, such as carcinogens, no thresholds exist below which exposure can be considered risk-free. Examples of TAC sources in the Statewide Program include pesticides and fossil fuel combustion sources.

Sources of TACs include stationary sources, area-wide sources, and mobile sources. EPA maintains a list of 187 TACs, also known as hazardous air pollutants. These hazardous air pollutants are included on CARBs list of TACs (CARB 2013a). According to the California Almanac of Emissions and Air Quality (CARB 2009), many researchers consider diesel PM to be a primary contributor to health risk from TACs because particles in the exhaust carry many harmful organics and metals, rather than being a single substance as are other TACs. Unlike many TACs, outdoor diesel PM is not monitored by CARB because no routine measurement method exists. However, using the CARB emission inventory's PM_{10} database, ambient PM_{10} monitoring data, and results from several studies, CARB has made preliminary estimates of diesel PM concentrations throughout the state (OEHHA 2001).

In addition to diesel PM, the TACs posing the greatest health risk in California, based primarily on ambient air quality monitoring data, are acetaldehyde, benzene, 1, 3-butadiene, carbon tetrachloride, hexavalent chromium, *para*-dichlorobenzene, formaldehyde, methylene chloride, and perchloroethylene. In addition, pesticides also are evaluated as potential TACs because of their potential health risks. A more detailed analysis of TACs and associated health risks, as they relate to the Proposed Program, is presented in Section 6.5, Hazards and Hazardous Materials, and Appendix B, Human Health Risk Assessment.

Ozone Depleting Substances

The ozone (O_3) layer in the stratosphere protects life on earth from exposure to dangerous levels of ultraviolet light. It does so by filtering out harmful ultraviolet radiation from the sun. When CFCs [chlorofluorocarbons] and other ozone-degrading chemicals are emitted, they mix with the atmosphere and eventually rise to the stratosphere. There, the chlorine and the bromine they contain catalyze the destruction of ozone. This destruction is occurring at a more rapid rate than ozone can be created through natural processes. The degradation of the ozone layer leads to higher levels of ultraviolet radiation reaching Earth's surface. This in turn can lead to a greater incidence of skin cancer, cataracts, and impaired immune systems, and is expected also to reduce crop yields, diminish the productivity of the oceans, and possibly to contribute to the decline of amphibious populations that is occurring around the world (U.S. EPA, 2014).

The chemicals most responsible for the destruction of the ozone layer are chlorofluorocarbons, carbon tetrachloride, methyl bromide, methyl chloroform, and halons. U.S. production of ozone-depleting gases has declined significantly since 1988, and has now reached levels (measured by their ozone depletion potential) comparable to those of 30 years ago. Because of the international agreements to decrease production and ultimately to phase out production of CFCs and halons, total equivalent chlorine (total chlorine and bromine, with adjustments to account for bromine's higher ozone depletion potential) in the troposphere peaked between 1992 and 1994 and has since decreased. Total chlorine abundance in the stratosphere is at or near peak; stratospheric bromine is likely still increasing. Increasing ozone losses are predicted for the remainder of the decade, with gradual recovery by the mid-21st century (U.S. EPA, 2014).

The Montreal Protocol and its Amendments and Adjustments have successfully controlled the global production and consumption of ODS over the last two decades, and the atmospheric abundances of nearly all major ODS that were initially controlled are declining. As a result of the Montreal Protocol, ozone is expected to recover from the effect of ODS as their abundances decline in the coming decades. Tropospheric methyl bromide abundances continued to decline during 2005-2008, as expected due to reduction in industrial production, consumption, and emission. About half of the remaining methyl bromide consumption was for uses not controlled by the Montreal Protocol (quarantine and pre-shipment applications). An evaluation of the impact of phase out of quarantine and pre-shipment emissions found that this would only accelerate the return of equivalent effective stratospheric chlorine (EESC) to 1980 levels by 1.5 years relative to a case of maintaining emissions at 2004-2008 average levels (WMO, 2011).

Existing Air Quality

Air quality impacts can occur over broad regions such as an air basin (e.g., California's San Joaquin Valley) or within local microclimates (e.g., the area surrounding a particular management activity). As noted above, Proposed Program activities could occur at locations throughout California. Therefore, this assessment discusses air quality on a regional air basin level. Monitoring stations are located throughout the state and are used to determine the air quality of each region; monitoring data from 2010 through 2012 for 1-hour O_3, 8-hour O_3, PM_{10}, and $PM_{2.5}$ for each of California's 15 air basins are provided in Tables 6.2-1 through Table 6.2-4. A basic measure of air quality is whether an air basin is meeting the NAAQS and CAAQS. Areas that are designated as attainment do not exceed these standards, areas that are designated as nonattainment exceed these standards, and areas that are designated unclassified have insufficient data for a determination and are neither attainment nor nonattainment. Table 6.2-5 presents a summary of the CAAQS attainment status for all air basins in California (CARB 2013b). In addition, Table 6.2-6 summarizes the NAAQS attainment status for all California air basins (EPA 2013). As previously mentioned, all air basins in the state are either unclassified or in attainment of the NAAQS and CAAQS for CO and SO_2. Some air basins are classified as NAAs for the NAAQS and CAAQS for O_3, PM_{10}, and $PM_{2.5}$, NO_2, and lead. In addition, a few air basins have been classified as nonattainment for H_2S under the CAAQS.

The State Implementation Plan (SIP) for pesticides requires CDPR to develop and maintain an emissions inventory, to track pesticide VOC emissions and reduce emissions by 20 percent from a base year in four out of five California NAAs, and by 12 percent in the fifth NAA (CDPR 2013). These five NAAs are defined as areas that do not meet the NAAQS for O_3, as designated in the CAA. CDPR estimates VOC emissions from agricultural and commercial structural pesticide applications in the state, focusing on the peak O_3 period between May 1 and October 31.

According to the 2011 report, VOC emissions increased in 2011 in three of the five NAAs; however, this increase did not result in an exceedance of the SIP goals (CDPR 2013). Table 6.2-7 provides the baseline data, SIP goal, and annual emissions data from 2004 through 2011 for each of the five NAAs.

Table 6.2-1. 1-Hour Ozone Air Monitoring Values for California Air Basins

Air Basin	# Exceedances (State)			Max (State)		
	2010	2011	2012	2010	2011	2012
Great Valley	-	-	-	-	-	-
Lake County	0	0	2	0.08	0.06	0.119
Lake Tahoe	-	-	-	-	-	-
Mojave Desert	46	57	44	0.137	0.132	0.119
Mountain Counties	8	14	14	0.112	0.108	0.117
North Central Coast	0	0	0	0.087	0.082	0.089
North Coast	1	0	1	0.097	0.073	0.112
Northeast Plateau	0	0	0	0.07	0.069	0.076
Sacramento Valley	15	26	22	0.124	0.123	0.125
Salton Sea	24	29	27	0.122	0.124	0.126
San Diego	7	5	2	0.107	0.114	0.101
San Francisco Bay Area	8	5	3	0.15	0.115	0.102
San Joaquin Valley	59	71	72	0.14	0.134	0.135
South Central Coast	6	4	4	0.104	0.11	0.106
South Coast	79	90	98	0.143	0.16	0.147

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Table 6.2-2. 8-Hour Ozone Air Monitoring Values for California Air Basins

	# Exceedances (National)			Max (National)			# Exceedances (State)			Max (State)		
Air Basin	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Great Valley	2	20	8	0.077	0.079	0.078	1	3	1	248	999	499
Lake County	0	0	1	0.062	0.056	0.083	0	0	3	36.1	24.4	24
Lake Tahoe	-	-	-	-	-	-	-	-	-	-	-	-
Mojave Desert	91	95	81	0.114	0.113	0.108	121	138	123	829	138.7	96.6
Mountain Counties	22	32	45	0.102	0.094	0.096	52	60	90	0.102	0.094	0.097
North Central Coast	2	0	1	0.078	0.073	0.08	7	2	10	0.078	0.073	0.08
North Coast	0	0	0	0.05	0.064	0.063	0	0	0	0.051	0.065	0.065
Northeast Plateau	0	0	0	0.067	0.061	0.071	0	0	1	0.067	0.061	0.072
Sacramento Valley	29	46	46	0.112	0.098	0.106	46	59	75	0.112	0.098	0.107
Salton Sea	63	59	58	0.099	0.098	0.1	94	81	93	0.099	0.099	0.101
San Diego	14	10	10	0.088	0.093	0.083	21	33	25	0.088	0.093	0.084
San Francisco Bay Area	9	4	4	0.097	0.084	0.09	11	10	8	0.098	0.085	0.09
San Joaquin Valley	93	109	105	0.114	0.105	0.116	115	131	134	0.115	0.105	0.116
South Central Coast	23	11	22	0.09	0.09	0.087	44	30	52	0.091	0.091	0.088
South Coast	102	106	111	0.123	0.136	0.112	124	125	140	0.123	0.137	0.112

Table 6.2-3. PM_{10} Air Monitoring Values for California Air Basins

Air Basin	# Exceedances (National)			Max (National)			# Exceedances (State)			Max (State)		
	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Great Valley	37.5	40.4	33.8	4750	13380	3972	18.4	34.8	20.3	248	999	499
Lake County	N/A	N/A	N/A	N/A	N/A	N/A	0	0	0	36.1	24.4	24
Lake Tahoe	-	-	-	-	-	-	-	-	-	-	-	-
Mojave Desert	N/A	0	N/A	96.3	143.4	181.6	0	11.8	19.1	829	138.7	96.6
Mountain Counties	0	0	0	80.9	58.5	44.6	12	N/A	0	74.3	54.3	43.8
North Central Coast	0	0	0	53	76.8	105	11.5	N/A	N/A	54	24	N/A
North Coast	0	0	N/A	64.5	61.7	47.1	6	6.1	0	67.3	65.2	48.9
Northeast Plateau	0	0	0	25.2	28.7	53.2	0	0	0	23.9	26.5	49
Sacramento Valley	0	0	0	87.4	73.5	94.6	12.2	24.4	18.7	87.4	73	96.7
Salton Sea	0	2	9.9	144.8	396.9	406.2	55	93.4	210	117.3	324	387.3
San Diego	0	0	N/A	108	125	126	136	138.5	6.1	108	126	126
San Francisco Bay Area	0	0	0	69.1	69.6	56.5	6.1	6.1	6.1	69.6	73.4	59.6
San Joaquin Valley	1	0	0	235.6	151.8	138.6	67.4	116.4	89.4	238	154	125.8
South Central Coast	1	0	2.8	167.8	134.2	180.9	45.6	69.6	71.3	144.3	140.4	186.4
South Coast	N/A	0	0	99.9	152.9	104.8	137.1	145.9	98.2	87	119.7	90.9

Table 6.2-4. $PM_{2.5}$ Monitoring Values for California Air Basins

	# Exceedances (National)			Max (National)			# Exceedances (State)			Max (State)		
Air Basin	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Great Valley	5	9	4	106.2	208	99	-	-	-	44	79	99
Lake County	0	0	0	6.4	8	15.7	-	-	-	6.4	8	15.7
Lake Tahoe	-	-	-	-	-	-	-	-	-	-	-	-
Mojave Desert	0	0	2.1	-	-	-	-	-	-	-	-	-
Mountain Counties	9.2	9.3	0	38.2	58.6	44.8	-	-	-	61	73.6	101.6
North Central Coast	0	0	0	32.8	30.4	28.6	-	-	-	9.8	15.1	9.1
North Coast	0	0	0	22	25.7	24.4	-	-	-	47.5	37.6	22.3
Northeast Plateau	N/A	0	0	17	15.8	29.9	-	-	-	17	15.8	29.9
Sacramento Valley	1.1	36.5	3.1	72.2	57	83.3	-	-	-	92.3	66	123.3
Salton Sea	6.3	6.2	13.1	50.9	80.3	119.3	-	-	-	54	103.5	119.3
San Diego	2	3	1	48.4	69.8	70.7	-	-	-	52.2	34.7	70.7
San Francisco Bay Area	3.2	6	2.1	46.5	54.2	38.4	-	-	-	41.5	50.5	38.4
San Joaquin Valley	28.7	39.3	29.4	107.8	80.3	93.4	-	-	-	112	82.8	93.4
South Central Coast	0	0	3.1	32.6	34.6	41.9	-	-	-	42.4	30.5	35.3
South Coast	8	13	10.6	54.2	94.6	58.7	-	-	-	67.8	97.4	58.7

Table 6.2-5. California Ambient Air Quality Standards - Area Designations by Air Basin

	O_3				PM_{10}			$PM_{2.5}$			CO			NO_2			SO_2			Lead			Sulfates			H_2S		
Air Basin	**N**	**NA-T**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**	**N**	**U**	**A**
Great Valley	x[1]				x					x			x			x			x			x			x			x[2]
Lake County				x			x			x			x			x			x			x			x			x
Lake Tahoe		x			x					x			x			x			x			x			x		x	
Mojave Desert	x				x			x[3]					x[4]			x			x			x			x	x[3]		
Mountain Counties	x[5]				x[6]			x[7]					x[8]			x			x			x			x	x[9]		
North Central Coast	x				x					x			x[10]			x			x			x			x		x	
North Coast				x	x[11]		x[11]			x			x[12]			x			x			x			x			x[13]
Northeast Plateau				x	x[14]					x		x				x			x			x			x		x	
Sacramento Valley	x[15]				x			x[16]					x[17]			x			x			x			x		x	
Salton Sea	x				x			x[18]					x			x			x			x			x		x	
San Diego	x				x			x					x			x			x			x			x		x	
San Francisco Bay Area	x				x			x					x			x			x			x			x		x	
San Joaquin Valley	x				x			x					x[19]			x			x			x			x		x	
South Central Coast	x				x			x[20]					x			x			x			x			x			x[21]
South Coast	x				x			x						x[22]					x	x[23]					x		x	

Notes:

N = Nonattainment; NA-T = Nonattainment-Transition; U = Unclassified; A = Attainment

1 Great Basin Valleys Air Basin is classified as N for Inyo and Mono Counties and U for Alpine County for O_3.

2 Great Basin Valleys Air Basin is classified as A for Inyo and Mono Counties and U for Alpine County for H_2S.

3 Mojave Desert Air Basin is classified as N for San Bernardino County and U for all other regions of the Air Basin for $PM_{2.5}$ and H_2S.

4 Mojave Desert Air Basin is classified as A for San Bernardino County and Los Angeles Counties and U for all other regions of the Air Basin for CO.

5 Mountain Counties Air Basin is classified as N for all counties except for Plumas County and Sierra County, which are classified as U, for O_3.

6 Mountain Counties Air Basin is classified as N for all counties within the Air Basin expect for Amador and Tuolumne Counties, which are classified as U, for PM_{10}.

7 Mountain Counties Air Basin is classified as U for all counties within the Air Basin expect for Plumas County, which is classified as N, for $PM_{2.5}$.

8 Mountain Counties Air Basin is classified as U for all counties within the Air Basin expect for Plumas and Tuolumne Counties, which are classified as A, for CO.

[9] Mountain Counties Air Basin is classified as U for all counties within the Air Basin expect for Amador County, which is classified as N, for H_2S.

[10] North Central Coast Air Basin is classified as A for Monterey County and U for San Benito and Santa Cruz Counties for CO.

[11] North Coast Air Basin is classified as N for Del Norte, Humboldt, and Mendocino Counties, and A for Sonoma County for PM_{10}.

[12] North Coast Air Basin is classified as U for all counties within the Air Basin except for Humboldt and Mendocino Counties, which are classified as A, for CO.

[13] North Coast Air Basin is classified as U for all counties within the Air Basin except for Humboldt and Sonoma Counties, which are classified as A, for H_2S.

[14] North Plateau Air Basin is classified as A for Siskiyou County and N for the remainder of the Air Basin for PM_{10}.

[15] Sacramento Valley Air Basin is classified as N for Butte, Placer Sacramento, Shasta, and Tehama Counties, and the remainder of the Air Basin is classified as NA-T for O_3.

[16] Within Sacramento Valley Air Basin, Butte and Solano Counties are classified as N, Colusa, Placer, Shasta, and Sutter Counties are classified as A, and the remainder of the Air Basin is classified as U for $PM_{2.5}$.

[17] Within Sacramento Valley Air Basin, Butte, Placer, Sacramento, Solano, Sutter, and Yolo Counties are classified as A, and the remainder of the Air Basin is classified as U for CO.

[18] Salton Sea Air Basin is classified as N for Imperial County and U for the remainder of the Air Basin for $PM_{2.5.}$

[19] San Joaquin Valley Air basin is classified as A for Fresno, Kern, San Joaquin, Stanislaus, and Tulare Counties, and the remainder of the Air Basin is classified as U for CO.

[20] South Central Air Basin is classified as A for San Luis Obispo County, N for Ventura County, and U for Santa Barbara County for $PM_{2.5}$.

[21] South Central Air Basin is classified as A for San Luis Obispo and Santa Barbara Counties, and Ventura County is classified as U for H_2S.

[22] South Coast Air Basin is classified as N NO_2. However, based on CARB proposed 2013 State Area Designations, the Air Basin would be classified as A.

[23] South Coast Air Basin is classified as N for Los Angeles County, and the remainder of the Air Basin is classified as A for Lead. However, based on CARB proposed 2013 State Area Designations, Los Angeles County would be classified as A.

Source: CARB 2013c

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Table 6.2-6. NAAQS Attainment Status by Air Basin

	O3		PM_{10}			$PM_{2.5}$		CO		NO_2		SO_2		Lead	
Air Basin	N	U/A	N	U	A	N	U/A	N	U/A	N	U/A	N	U/A	N	U/A
Great Valley		x	x[5]				x		x		x		x		x
Lake County		x		x			x		x		x		x		x
Lake Tahoe		x		x			x		x		x		x		x
Mojave Desert	x[1]		x[6]				x		x		x		x		x
Mountain Counties	x[2]			x		x			x		x		x		x
North Central Coast		x		x		x			x		x		x		x
North Coast		x		x		x			x		x		x		x
Northeast Plateau		x		x		x			x		x		x		x
Sacramento Valley	x[3]		x[7]			x[8]			x		x		x		x
Salton Sea	x		x			x[9]			x		x		x		x
San Diego	x			x			x		x		x		x		x
San Francisco Bay Area	x			x		x			x		x		x		x
San Joaquin Valley	x				x	x			x		x		x		x
South Central Coast	x[4]			x			x		x		x		x		x
South Coast			x			x			x				x	x[10]	

Notes:

N = Nonattainment; NA-T = Nonattainment-Transition; U = Unclassified; A = Attainment

[1] Mojave Desert Air Basin is classified as N for all but eastern portions of San Bernardino and Riverside Counties of O_3.

[2] Mountain Counties Air Basin is classified as N for Nevada, Placer, El Dorado, Calaveras, and Mariposa Counties and U/A for Plumas, Sierra, Amador, and Tuolumne for O_3.

[3] Sacramento Valley Air Basin is classified as N for Butte, Sutter, Placer, Sacramento, Yolo, and Solano Counties and U/A for all other areas for O_3.

[4] South Central Coast is N for the eastern portion of San Luis Obispo County and U/A for all other areas for O_3.

[5] Great Basin Valleys Air Basin is classified as N for portions of Mono and Inyo Counties and U/A for all other areas for PM_{10}.

[6] Mojave Desert Air Basin is classified as N for San Bernardino, Riverside, and portions of Kern Counties and U/A for all other areas for PM_{10}.

[7] Sacramento Valley Air Basin is classified as N for Sacramento County and U for all other counties for PM_{10}.

[8] Sacramento Valley Air Basin is classified as N for Butte, Sutter, Yuba, Placer, Sacramento, Yolo, and Solano Counties and U for all other areas for $PM_{2.5}$.

[9] Salton Sea Air Basin is classified as N for a portion of Imperial County and U for all other areas for $PM_{2.5}$.

[10] South Coast Air Basin is classified as N for a portion of Los Angeles County and U/A for all other areas for lead.

Source: EPA 2013

Table 6.2-7. May through October (Ozone Season) Adjusted Pesticide VOC Emissions and Goals

Non-Attainment Area	Emissions (tons/day)[a]									
	SIP Goal	Annual Emission Inventory								
		1990	2004	2005	2006	2007	2008	2009	2010	2011
1 Sacramento Metro	2.2	2.784	1.235	1.239	1.354	1.041	0.903	0.910	0.980	1.004
2 San Joaquin Valley	18.1	20.517	17.322	20.740	21.305	17.093	14.525	13.474	15.625	16.774
3 Southeast Desert	0.92	1.153	0.995	0.740	0.634	0.762	0.286	0.283	0.460	0.210
4 Ventura	3.0[a]	3.787	3.924	3.617	3.682	3.363	1.739	2.081	2.599	2.889
5 South Coast	8.7	10.840	1.922	1.969	1.482	1.487	1.283	1.227	1.740	1.109

Note:

[a] These numbers reflect the SIP goal for 2012 in Ventura, and they do not reflect the phase in of reductions between 2008 and 2012.

6.2.3 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze air quality. It then presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts. For this resource impact analysis, the physical, biological, and chemical management approaches were combined into one analysis since criteria air pollutant emissions will occur with all types of management approaches and the significance criteria are based on the total Proposed Program emissions in an air basin, rather than individual types of management activities.

Methodology

Criteria Air Pollutant Emission Inventory

Criteria air pollutant emissions from a given source or source category are generally calculated as the product of an emission rate, expressed as the amount of a pollutant emitted per some unit of source activity and a measure of that source's activity. These emission rates typically are known as emission factors. The following formula illustrates the basic relationship between the emissions rate and source activity that is used to calculate emissions:

Emissions = Emission Factor x Source Activity

This formula can be applied to calculate emissions from different source categories. For this analysis, emissions were calculated for activities that would use off-road equipment, aircraft, and on-road vehicles. A description of the methods, assumptions, and sources used to calculate the emissions for each of these source categories is provided in Appendix H, Air Quality and Greenhouse Gas Technical Report.

Emission factors for off-road equipment used in pesticide application activities were estimated using values from CARB's In-Use Off-Road Equipment Inventory Model (commonly known as OFFROAD2011) and OFFROAD2007 (CARB 2007, 2011). OFFROAD2007 was used for those equipment types that have not been updated by CARB with newer models of certain equipment, including agriculture equipment and small gasoline powered equipment.

CARB has developed weighted average emission factors from several types of aircraft and helicopters typically used in agricultural settings. This analysis used these weighted values in pounds per gallon of fuel (CARB 1990). To convert from acres of land sprayed to fuel consumption, a factor of 0.1053 gallons of fuel per acre was used, as recommended by BAAQMD to reflect the average fuel consumption during aerial spraying[1] (BAAQMD 1999). Emission factors for aircraft were conservatively assumed to not change over time.

[1] Aerial spraying would not occur in residential areas without conducting additional tiered CEQA analysis and associated public review.

On-road vehicle emission factors were calculated using emission factor and fuel consumption data from CARB's EMFAC 2011 model (CARB 2013d). Emission factors were estimated on a statewide basis only and aggregated over all models and speeds for a given calendar year. Emission factors were used based on specific vehicle classes listed in EMFAC 2011, such as light-duty auto (LDA), light duty trucks type 1 and 2 (LDT1 and LDT2), medium duty vehicles (MDV), and light heavy duty trucks type 1 and 2 (LHDT1 and LHDT2).

Emission factors were obtained for calendar years 2010, 2014, 2020, 2030, and 2035. To establish baseline conditions for CEQA analysis, calendar year 2010 has been used because it is the most recent full year of data before publishing the Notice of Preparation of the Draft PEIR. Calendar year 2014 represents the year that the Draft PEIR is being publically circulated. Several future dates also were evaluated to represent regulatory effects on emissions in the future.

Baseline conditions were calculated by averaging readily available information from the period 2008 through 2010. Multiple years were chosen because activities under the Statewide Program vary from year to year. Therefore, the average of these 3 years was considered to better represent a typical year under baseline conditions, as opposed to selecting one single year. It is possible that these particular years may have involved an unusually high or low amount of Statewide Program activities in a particular air basin. However, the location and intensity of Statewide Program activities is inherently highly variable from year to year, based on the locations of pest infestations and quarantines. For this reason, earlier years were considered for use in the analysis, but they were determined not to provide more representative data.

Where information was not readily available for 2008 and 2009, data from 2010 was used. Where information was not available for a given year, the average value between years that had activity was used since it was not always known if lack of information meant no activity or unavailable information.

Emissions from use of pesticide application equipment were estimated based on the application method with the highest emission intensity for a given active ingredient, and based on the annual pesticide use for a county with quarantines and eradication activities. Aircraft activity was estimated based on the number of flight hours and/or fuel consumption. On-road vehicle miles traveled for various Statewide Program activities were based on estimates from CDFA. Table 6.2-8 shows the criteria pollutant emission inventory for the baseline scenario.

For the purposes of this analysis, the initial assumption was that the Proposed Program would have the same activity levels as the baseline. Using this assumption, Table 6.2-8 presents the future criteria pollutant emissions for 2014, 2020, 2030, and 2035. These future emissions would be an overestimate in some cases, because emission factors used to estimate future Proposed Program emissions do not fully reflect emission improvements for aircraft.

For each of the future years, Table 6.2-8 also shows the percentage increase in emissions, compared to baseline, that could occur before a mass emissions threshold would be reached (further discussion of the mass emissions thresholds is provided under Significance Criteria, below). The lower the baseline emissions compared to the mass emissions threshold, the higher the percentage increase would need to be to exceed the threshold. The percentages range from a low of 10 percent (for 2014, CO emissions in the San Joaquin Valley Basin, where the 2020 baseline emissions would be 1,698 tons and the threshold is 100 tons), to a high of 136,679,517 percent (for 2020 SOx emissions in the Lake Tahoe Air Basin, where the 2020 baseline emissions would be less than 0.01 tons and the threshold is 27 tons). In general, higher percentages are associated with air basins where little Statewide Program activity occurred under the baseline years analyzed.

Exposure to Sensitive Receptors

Sensitive individuals (known as "sensitive receptors") are individuals who may have a substantially increased sensitivity or exposure to contaminants by virtue of their age, health, or proximity to the contamination (e.g., the sick, seniors, and children). Sensitive receptors may be exposed to air pollutant concentrations of both criteria air pollutants and TACs from Proposed Program activities. Exposure of sensitive receptors was evaluated by a mix of quantitative and qualitative methods. Appendix B, Human Health Risk Assessment, describes a quantitative method used for evaluating exposure to various sensitive receptors as a result of specific pesticide application scenarios that could occur under the Proposed Program. This included an evaluation of exposure resulting from inhalation, ingestion and dermal exposure of applied pesticides. In cases where the modeled risk from a baseline scenario exceeded the level of concern, an alternative application scenario was developed, which if implemented would reduce exposure so that the risk would be below the level of concern. The conclusions of the assessment are suitable for making a determination of acute exposure resulting from air pollutants, as well as chronic exposure to each particular application scenario. However, the assessment did not quantify the cumulative exposure to multiple pesticide application scenarios that may be conducted under the Proposed Program, as no information was available to determine the range of application scenarios to which a given sensitive receptor may be exposed, and the number of possible combinations would be so large as to be prohibitive to calculate. In addition, quantification of the exposure to emissions from fossil-fueled application equipment containing diesel PM or TACs contained in gasoline was beyond the scope of the assessment. Therefore, cumulative exposure and fossil-fueled application equipment exposure was evaluated qualitatively.

Odors

Odors were evaluated on a qualitative basis.

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Table 6.2-8. Total Emissions by Air Basin Compared to CEQA Significance Threshold

		Total Baseline and Estimated Emissions for Each Criteria Pollutant (tons)						CEQA Significance Threshold for Each Criteria Pollutant (tons per year)					
								100	10	10	15	10	27
								Percent Change from Baseline Activity to Reach CEQA Significance Threshold					
Calendar Year	Air Basin	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SOX	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SOX
2010	Great Basin Valleys Basin	0.05	0.00	0.00	0.00	0.00	0.00						
2010	Lake County Air Basin	0.07	0.01	0.01	0.00	0.00	0.00						
2010	Lake Tahoe Air Basin	0.02	0.00	0.00	0.00	0.00	0.00						
2010	Mojave Desert Air Basin	693.90	24.27	21.23	4.18	4.14	1.93						
2010	Mountain Counties Air Basin	1.95	0.21	0.19	0.02	0.01	0.00						
2010	North Central Coast Basin	956.17	16.03	21.64	1.55	1.54	3.97						
2010	North Coast Basin	18.94	0.57	0.69	0.09	0.07	0.06						
2010	Northeast Plateau Basin	-	-	-	-	-	-						
2010	Sacramento Valley Basin	119.48	91.57	17.50	7.93	7.85	0.11						
2010	Salton Sea Air Basin	114.47	6.13	4.94	1.48	1.45	0.03						
2010	San Diego Air Basin	15.51	1.58	0.97	0.22	0.19	0.01						
2010	San Francisco Bay Area Basin	212.27	4.81	5.88	0.65	0.60	0.76						
2010	San Joaquin Valley Basin	1,769.31	278.06	88.40	29.80	29.71	3.90						
2010	South Central Coast Basin	140.77	29.39	9.81	3.39	3.29	0.05						
2010	South Coast Air Basin	537.68	11.10	12.85	0.97	0.91	2.23						
2014	Great Basin Valleys Basin	0.03	0.00	0.00	0.00	0.00	0.00	334,008%	323,527%	322786%	3833302%	5802433%	72280370%
2014	Lake County Air Basin	0.04	0.00	0.00	0.00	0.00	0.00	227089%	219964%	219456%	2606026%	3944717%	49138939%
2014	Lake Tahoe Air Basin	0.02	0.00	0.00	0.00	0.00	0.00	628244%	608527%	607142%	7210700%	10914767%	135964336%
2014	Mojave Desert Air Basin	673.03	21.21	18.81	4.08	4.04	1.93	18%	62%	66%	370%	250%	1399%
2014	Mountain Counties Air Basin	1.30	0.14	0.13	0.02	0.01	0.00	7732%	7190%	7979%	64463%	100375%	1242543%
2014	North Central Coast Basin	951.09	16.04	21.18	1.59	1.58	3.97	11%	62%	49%	940%	629%	680%
2014	North Coast Basin	17.65	0.47	0.58	0.09	0.07	0.06	574%	2150%	1747%	16882%	13865%	48952%
2014	Northeast Plateau Basin	-	-	-	-	-	-						
2014	Sacramento Valley Basin	107.91	70.09	12.58	6.03	5.95	0.11	103%	45%	119%	280%	200%	24935%
2014	Salton Sea Air Basin	105.79	5.10	4.00	1.46	1.44	0.03	103%	216%	274%	1031%	697%	86233%
2014	San Diego Air Basin	13.23	1.21	0.76	0.21	0.18	0.01	773%	854%	1338%	7292%	5706%	377780%
2014	San Francisco Bay Area Basin	206.52	4.37	5.35	0.66	0.61	0.76	51%	239%	197%	2254%	1635%	3547%
2014	San Joaquin Valley Basin	1,698.07	218.89	70.93	24.91	24.82	3.90	10%	32%	39%	80%	60%	693%
2014	South Central Coast Basin	126.32	22.74	7.45	2.91	2.81	0.05	91%	73%	166%	533%	373%	56747%
2014	South Coast Air Basin	532.69	10.52	12.40	0.96	0.90	2.23	20%	101%	84%	1564%	1106%	1209%
2020	Great Basin Valleys Basin	0.02	0.00	0.00	0.00	0.00	0.00	614995%	599347%	528524%	3913101%	6043671%	72660570%
2020	Lake County Air Basin	0.02	0.00	0.00	0.00	0.00	0.00	418156%	407519%	359355%	2660277%	4108721%	49397414%
2020	Lake Tahoe Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	1156686%	1127246%	994069%	7360806%	11368549%	136679517%
2020	Mojave Desert Air Basin	515.37	15.95	15.10	0.93	0.89	1.93	54%	115%	107%	1968%	1494%	1401%
2020	Mountain Counties Air Basin	0.76	0.08	0.08	0.02	0.01	0.00	13305%	12376%	12880%	64948%	101823%	1244952%
2020	North Central Coast Basin	911.85	15.66	20.42	0.90	0.89	3.97	16%	66%	55%	1740%	1195%	680%
2020	North Coast Basin	14.17	0.35	0.46	0.04	0.02	0.06	739%	2881%	2241%	36121%	40206%	49006%
2020	Northeast Plateau Basin	-	-	-	-	-	-						
2020	Sacramento Valley Basin	68.81	44.10	7.07	2.76	2.68	0.11	219%	130%	289%	730%	565%	25094%

Calendar Year	Air Basin	Total Baseline and Estimated Emissions for Each Criteria Pollutant (tons)						CEQA Significance Threshold for Each Criteria Pollutant (tons per year) / Percent Change from Baseline Activity to Reach CEQA Significance Threshold					
								100	10	10	15	10	27
		CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SOX	CO	NO_x	ROG	PM_{10}	$PM_{2.5}$	SOX
2020	Salton Sea Air Basin	40.62	3.21	2.52	0.19	0.17	0.03	428%	403%	493%	8550%	6655%	89878%
2020	San Diego Air Basin	5.80	0.74	0.50	0.08	0.05	0.01	1891%	1456%	2105%	19302%	21065%	384493%
2020	San Francisco Bay Area Basin	182.95	3.75	4.70	0.28	0.23	0.76	71%	294%	238%	5,484%	4,575%	3,550%
2020	San Joaquin Valley Basin	1,194.36	142.76	48.52	8.52	8.43	3.89	57%	102%	103%	426%	371%	695%
2020	South Central Coast Basin	54.26	14.22	4.47	0.95	0.86	0.05	344%	177%	343%	1,829%	1,454%	58,409%
2020	South Coast Air Basin	512.59	9.70	11.81	0.62	0.57	2.23	24%	118%	94%	2,474%	1,828%	1,209%
2030	Great Basin Valleys Basin	0.01	0.00	0.00	0.00	0.00	0.00	1133162%	1163664%	865679%	3929055%	6096251%	72551925%
2030	Lake County Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	770502%	791250%	588614%	2671123%	4144467%	49323553%
2030	Lake Tahoe Air Basin	0.00	0.00	0.00	0.00	0.00	0.00	2131183%	2188526%	1628147%	7390815%	11467454%	136475149%
2030	Mojave Desert Air Basin	643.58	14.54	15.19	3.48	3.44	1.93	23%	136%	106%	451%	311%	1399%
2030	Mountain Counties Air Basin	0.49	0.05	0.05	0.02	0.01	0.00	20636%	20333%	18683%	64484%	100232%	1242220%
2030	North Central Coast Basin	944.13	16.09	20.55	1.61	1.61	3.97	12%	62%	54%	925%	619%	680%
2030	North Coast Basin	15.90	0.33	0.42	0.09	0.07	0.06	648%	3087%	2424%	16663%	13632%	48955%
2030	Northeast Plateau Basin	-	-	-	-	-	-						
2030	Sacramento Valley Basin	92.29	23.08	4.32	1.28	1.19	0.11	138%	340%	536%	1698%	1394%	24942%
2030	Salton Sea Air Basin	93.25	2.85	2.57	1.27	1.25	0.03	130%	465%	480%	1199%	818%	86209%
2030	San Diego Air Basin	9.57	0.49	0.41	0.17	0.14	0.01	1107%	2254%	2592%	9028%	7367%	377517%
2030	San Francisco Bay Area Basin	198.72	3.71	4.62	0.65	0.60	0.76	57%	299%	244%	2307%	1676%	3548%
2030	San Joaquin Valley Basin	1,600.85	88.57	42.72	11.69	11.60	3.90	17%	225%	130%	283%	242%	693%
2030	South Central Coast Basin	105.50	8.47	3.65	1.56	1.46	0.05	128%	365%	443%	1079%	809%	56763%
2030	South Coast Air Basin	524.97	9.40	11.68	0.91	0.86	2.23	21%	125%	96%	1656%	1176%	1209%
2035	Great Basin Valleys Basin	0.01	0.00	0.00	0.00	0.00	0.00	1362383%	1452866%	1089441%	3932438%	6107599%	72482385%
2035	Lake County Air Basin	0.01	0.00	0.00	0.00	0.00	0.00	926369%	987905%	740768%	2673423%	4152182%	49276277%
2035	Lake Tahoe Air Basin	0.00	0.00	0.00	0.00	0.00	0.00	2562270%	2732412%	2048970%	7397180%	11488800%	136344340%
2035	Mojave Desert Air Basin	643.26	14.12	15.11	3.44	3.40	1.93	23%	143%	107%	457%	316%	1399%
2035	Mountain Counties Air Basin	0.44	0.04	0.05	0.02	0.01	0.00	22907%	23728%	21197%	64423%	100027%	1241293%
2035	North Central Coast Basin	944.09	16.08	20.54	1.61	1.61	3.97	12%	62%	54%	925%	619%	680%
2035	North Coast Basin	15.81	0.32	0.41	0.09	0.07	0.06	652%	3204%	2505%	16662%	13631%	48952%
2035	Northeast Plateau Basin	-	-	-	-	-	-						
2035	Sacramento Valley Basin	91.69	20.33	3.93	1.00	0.92	0.11	139%	400%	600%	2184%	1833%	24939%
2035	Salton Sea Air Basin	93.08	2.70	2.54	1.26	1.23	0.03	130%	497%	489%	1212%	828%	86193%
2035	San Diego Air Basin	9.35	0.44	0.38	0.16	0.13	0.01	1135%	2553%	2810%	9159%	7499%	377142%
2035	San Francisco Bay Area Basin	198.41	3.65	4.57	0.65	0.60	0.76	57%	305%	247%	2313%	1681%	3547%
2035	San Joaquin Valley Basin	1,600.05	80.91	41.72	10.93	10.84	3.90	17%	256%	136%	310%	266%	693%
2035	South Central Coast Basin	104.75	7.60	3.46	1.48	1.38	0.05	130%	418%	473%	1141%	860%	56737%
2035	South Coast Air Basin	524.57	9.31	11.62	0.91	0.85	2.23	22%	127%	97%	1662%	1181%	1209%

Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact related to air quality if it would:

A. Conflict with or obstruct implementation of the applicable air quality plan;

B. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

C. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone [O_3] precursors);

D. Expose sensitive receptors to substantial pollutant concentrations; or

E. Create objectionable odors affecting a substantial number of people.

These thresholds of significance for impacts related to air quality are henceforth known as impact criteria. Each air quality impact criterion is assigned an alphabetical code, as designated in the list above. Direct, indirect, and cumulative impacts under each applicable impact criterion are analyzed under Environmental Impacts of the Proposed Program, below.

The air districts establish mass emission thresholds based on detailed analyses conducted by each air district to determine the level at which an increase in emissions from baseline, when dispersed in the atmosphere, would be likely to cause an increase in concentrations above the applicable ambient air quality standard or exacerbate an existing exceedance if the threshold is exceeded. For this PEIR, a mass emission significance threshold was developed for each pollutant, based on the most conservative values used by any air district. Impact criteria are most important for emissions of criteria pollutants and their pre-cursors (ROG and NO_X) in locations that are in non-attainment for those criteria pollutants. NAAs in California occur most commonly for PM_{10}, $PM_{2.5}$, and O_3 precursors (ROG and NO_X). Several districts in California have established significance threshold for operational emissions for CEQA projects (SJVAPCD 2012, BAAQMD 2010, SMAQMD 2009, and SCAQMD 2011). If the incremental increase in emissions for a project compared to the baseline are below these annual thresholds, the project's impacts would be less than significant. These air districts have determined that projects below the mass emission significance threshold would also not be cumulatively considerable. The lowest annual emission thresholds from the air districts that were selected to represent all air basins for the purposes of this analysis are shown in Table 6.2-9.

Table 6.2-9. CEQA Mass Emission Significance Thresholds

Pollutant	Annual Operational Threshold (tons/year)
CO	100
NO_x	10
ROG	10
PM_{10}	15
$PM_{2.5}$	10
SO_x	27

Some air districts have established quantitative thresholds for acute, chronic non-cancer, and cancer exposure to TACs. These numeric thresholds were not used in the analysis because they are designed for traditional stationary sources or mobile sources operating in a defined area or roadway that emit TACs routinely in the same location. Because Proposed Program activities would occur at different locations and with different intensities, such analysis would not be applicable. In addition, the thresholds used in the Human Health Risk Assessment generally are more conservative than the thresholds typically used by the air districts. For instance, the assessment used a cancer risk threshold of 1 in a million, whereas the air districts typically allow a threshold of 10 in a million. In addition, the Human Health Risk Assessment used a margin of exposure methodology, rather than hazard quotient methodology. Thus, a direct comparison of the acute and chronic non-cancer thresholds was not possible.

Environmental Impacts of the Proposed Program

All Management Approaches

Impact AQ-1: The Proposed Program could conflict with or obstruct implementation of applicable air quality plans and policies. (Less than Significant)

Proposed Program activities would be consistent with all applicable air quality plans, policies, and regulations. The off-road equipment, aircraft, and on-road mobile source emissions associated with Proposed Program activities would also be compliant with all federal and state regulations targeted at reducing emissions. In addition, some of the equipment that would be used under the Proposed Program would be subject to ATCM that reduce the emissions of specific types of equipment. Proposed Program activities also would follow SIP regulations, implemented by CDPR to control the VOC emissions from pesticides in non-attainment areas.

The emission inventory for the Statewide Program indicates that the baseline level of Proposed Program activities in individual air basins could increase in the future, while staying below the applicable incremental mass emission thresholds, which are designed by air districts to ensure that local air quality implementation plans are met and that ambient air quality standards are achieved and maintained. Proposed Program activities would also follow ODS regulations implemented by U.S. EPA to control the use of methyl bromide and limit its use to quarantine applications where no suitable alternatives considering human health and economic feasibility exist. Therefore, the Proposed Program would not conflict with or obstruct implementation of applicable air quality plans and policies. The impact would be less than significant.

Impact AQ-2: The Proposed Program could result in emissions of criteria air pollutants above an air basin mass emission threshold. (Significant and Unavoidable)

The Statewide Program requires the use of fossil-fueled equipment, such as trucks and aircraft, to implement many of its activities. Such equipment emits criteria air pollutants during operation. As indicated in Table 6.2-8, assuming the same level of activity as under the baseline, the mass emissions of the Proposed Program in a given air basin in the future would decrease because of existing regulations that would reduce emissions in future equipment fleets.

Table 6.2-8 also shows the percentage increase in emissions, compared to baseline, that could occur before a mass emissions threshold would be reached. The lower the baseline emissions compared to the mass emissions threshold, the higher the percentage increase would need to be to exceed the threshold. The percentages range from a low of 10 percent (for 2014 CO emissions in the San Joaquin Valley Basin, where the 2020 baseline emissions would be 1,698 tons and the threshold is 100 tons), to a high of 136,679,517 percent (for 2020 SOx emissions in the Lake Tahoe Air Basin, where the 2020 baseline emissions would be less than 0.01 tons and the threshold is 27 tons). In general, higher percentages are associated with air basins where little Statewide Program activity occurred under the baseline.

The extent to which Proposed Program activities may result in increased emissions in the future compared to baseline Statewide Program activities is unknown. New pest infestations may occur in air basins where few infestations and related pest management activities have occurred in the past, or may occur in areas that traditionally have been the location of more pest infestations. In addition, shifts in the types of activities within an air basin could lead to shifts in emissions, when the activities have different emissions intensities (e.g., use of aircraft as opposed to trucks).

New pest infestations or quarantines in a particular air basin could result in a substantial increase in pest management activities in that basin. It is reasonably foreseeable that such an increase in Proposed Program activities could lead to emissions for a particular criteria air pollutant(s) which would exceed the mass emissions threshold(s) in that basin. This would be a significant impact.

CDFA currently implements all feasible measures to minimize criteria air pollutant emissions. These include the following:

- CDFA requires its staff and contractors to use energy-efficient fossil-fueled equipment. This equipment uses the most fuel-efficient or alternative fuel equipment that is available to conduct the activity. CDFA also considers the use of after-market control devices to reduce emissions to the extent feasible.
- CDFA investigates the feasibility of and opportunities to electrify or use alternative fuel for automobiles and other equipment when making purchasing decisions.

- CDFA requires its staff and contractors to properly maintain and tune all its equipment in accordance with manufacturer's specifications.
- CDFA requires its staff and contractors to minimize idling times by shutting off equipment when not in use or by reducing the maximum idling time to 3 minutes. Clear instructional signage is provided in all CDFA vehicles and equipment.
- CDFA encourages the use of local staff and/or contractors to the extent feasible to minimize the amount of vehicle miles traveled to conduct Proposed Program activities.

In the event that a mass emissions threshold was exceeded, no additional feasible measures exist beyond those outlined above for CDFA to implement to further reduce criteria air pollutant emissions below the threshold. In particular, CDFA lacks the authority to mandate emission reductions on the equipment used by individual growers and applicators in response to CDFA quarantines; this is the responsibility of other agencies, such as CARB. Therefore, the impact would be significant and unavoidable.

Impact AQ-3: The Proposed Program's use of vehicles and equipment could result in local hot-spots of criteria air pollutant concentrations. (Less than Significant)

The Statewide Program requires the use of fossil-fueled equipment to implement many of its activities. Such equipment emits criteria air pollutants during operation. High local concentrations of some of these criteria air pollutants can cause local exceedances of air quality standards. CO, PM_{10}, and $PM_{2.5}$ are the criteria air pollutants of concern for local hot-spot analyses. NO_x and ROG emissions typically are a concern only on a regional scale because they take time to react and disperse in the environment to create O_3. Because most of the activities that occur in any given location would be of short duration and would use only one or two pieces of equipment at a time, it would be unlikely for a single activity to cause or contribute to an exceedance of an ambient air quality standard for CO, PM_{10} or $PM_{2.5}$. Use of equipment for the Proposed Program is consistent with general agricultural and pest control practices occurring throughout the state, which includes local air district regulations in many air basins that control fugitive dust from agriculture activities. The infrequent and short duration of use for Proposed Program activities would not be substantially noticeable with respect to local hot-spot air emissions from the activity that is already occurring at a specific location. The impact would be less than significant.

Impact AQ-4: The Proposed Program could expose sensitive receptors to substantial criteria air pollutant concentrations. (Less than Significant)

Sensitive receptors could be exposed to TACs through inhalation of criteria air pollutants contained in diesel and gasoline that would be emitted during combustion associated with equipment used to implement Proposed Program activities. Similarly, sensitive receptors could be exposed to airborne pesticide ingredients during pesticide application. The Human Health Risk Assessment (Appendix B) evaluated the exposure of sensitive receptors to TACs found in pesticide ingredients. For several baseline scenarios, the evaluation indicated that inhalation exposures could exceed the level of concern. In these instances, an alternative application scenario was developed, which if implemented would reduce exposure to a level that the risk would be below the level of concern. Implementation of scenarios that result in risk determined to be below the level of concern would be required as part of the Proposed Program.

The assessment also evaluated chronic and cancer exposures to multiple applications of the same application scenario; however, no combination of application scenarios was conducted for the reasons discussed in the Methodology section above. However, the significance threshold used in the assessment is 10 times more conservative than typical thresholds used by air districts in determining whether exposure of sensitive receptors to TACs would be significant. In other words, at least 10 distinct pesticide application scenarios would have to occur in a specific location to exceed the threshold, which is considered unlikely; therefore, it would be unlikely for multiple pesticide application scenarios to combine and result in a substantial exposure of sensitive receptors to TACs.

Because of the short duration for operating diesel and gasoline equipment when conducting a specific Proposed Program activity, TAC emissions from this equipment would not be likely to contribute to substantial exposure of a sensitive receptor to TACs; the exposure generally would be indistinguishable from that generated by equipment typically operating in locations where Proposed Program activities would occur.

Substantial exposure to TACs from Proposed Program fuel combustion and chemical management activities occurring in a specific location is unlikely. Therefore, exposure of sensitive receptors to TACs would be less than significant.

Impact AQ-5: The Proposed Program could create objectionable odors, affecting a substantial number of people. (Less than Significant)

Proposed Program equipment using diesel, jet, and gasoline fuel may emit objectionable odors associated with combustion of the fuel. However, these emissions would be temporary in any specific location. The preparation and application of pesticides may emit objectionable odors associated with the pesticide ingredients. However, these emissions would be temporary in any specific location and would dissipate shortly after application. Therefore, the impact would be less than significant.

Cumulative Impacts

Impact AQ-CUM-1: The Proposed Program could make a considerable contribution to cumulatively significant air quality impacts. (Significant and Unavoidable)

Air pollution is largely a cumulative impact. Ambient air quality standards are violated and approach or reach non-attainment levels because of an accumulation of various emission-generating activities, and attainment of standards could be jeopardized by increasing emission-generating activities in an air basin. Because of the current non-attainment status of certain criteria air pollutants in some of these air basins as a result of past and present projects, and the potential for additional emissions resulting from future population growth within the various air basins, air quality impacts are considered to be cumulatively significant.

Because the mass emission thresholds used in this impact analysis are considered by air districts to be applicable to cumulative impacts, and because the Proposed Program's emissions were determined to be significant, the Proposed Program's contribution to this cumulative impact would be considerable. As described under Impact AQ-2, no feasible mitigation would exist to reduce the contribution to a level that would not be considerable. Therefore, the impact would be significant and unavoidable.

Impact AQ-CUM-2: The Proposed Program could make a considerable contribution to exposure of sensitive receptors to substantial cumulative air pollutant concentrations. (Less than Significant)

Emissions of TACs typically would have localized effects; however, multiple sources of TACs may exist in a local area that collectively could potentially result in a cumulatively significant impact. Typical background cancer risk has been estimated at 1 in 2 for males and 1 in 3 for females in the United States (American Cancer Society 2013). However, the exposure of sensitive receptors to TACs as a result of Proposed Program activities would be less than significant at the individual level. Furthermore, the established individual project thresholds of significance for TACs are extremely conservative and protective of health impacts on sensitive receptors. Since impacts of TACs are largely localized, air districts feel that TAC emissions that would not have a significant health impact at the individual level would not be expected to result in a cumulatively considerable net increase in TAC. Therefore, the Proposed Program's contribution to this cumulative impact would not be considerable, and the impact would be less than significant.

Section 6.3

Biological Resources

6.3 Biological Resources

6.3.1 Introduction

This section presents the environmental setting and potential impacts of the Proposed Program related to biological resources. The biological resources include special-status plant and wildlife species, sensitive natural communities, including jurisdictional wetlands and other waters, and wildlife movement corridors. This section also summarizes information provided in the Ecological Risk Assessment (ERA, Appendix A).

6.3.2 Environmental Setting

This following discussion describes the special-status species and sensitive natural communities (including wetlands and other regulated aquatic resources) related to the Proposed Program.

Activities conducted under the Proposed Program generally would occur in locations of commercial agriculture production (including nurseries), and in residential and urban areas (including ports and airports). Proposed Program activities would not be conducted in undeveloped areas of native vegetation, although these natural areas may occur adjacent to locations of Proposed Program activities.

Special-Status Species

Special-status species are plants and animals that are considered rare, threatened, or endangered under Sections 15380 and 15125 of the CEQA Guidelines. Special status species include those species protected under the Endangered Species Act (ESA), California Endangered Species Act (CESA), the California Fish and Game Code, the California Native Plant Protection Act, the Migratory Bird Treaty Act, and the Bald and Golden Eagle Protection Act. Special status species are defined as follows:

Federal endangered (FE): species designated as endangered under the ESA. An FE species is one that is in danger of extinction throughout all or a substantial portion of its range. Incidental take of any individual of an FE species is prohibited except with prior authorization from the U.S. Fish and Wildlife Service (USFWS) or National Marine Fisheries Service (NMFS).

Federal threatened (FT): species designated as threatened under the ESA. An FT species is one that is likely to become endangered in the foreseeable future throughout all or a substantial portion of its range. At the discretion of USFWS or NMFS, incidental take of any individual of an FT species may be prohibited or restricted.

Federal proposed (FP): species that have been proposed by USFWS or NMFS for listing as endangered or threatened under the ESA. Federal proposed species must be evaluated in the Section 7 consultation for any federal action (described in Appendix O, Regulatory Setting, under "Endangered Species Act, Section 7") and normally are evaluated in the National Environmental Policy Act review of any action that may affect the species.

State endangered (SE): species designated as endangered under the CESA. These include native species or subspecies that are in serious danger of becoming extinct throughout all, or a substantial portion, of its range resulting from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease (CESA Section 2062). Take, as defined by Section 86 of the Fish and Game Code, of any State endangered species is prohibited, except as authorized by the California Department of Fish and Wildlife (CDFW).

State threatened (ST): species designated as threatened under the CESA. These include native species or subspecies that, although not threatened currently with extinction, are likely to become an endangered species in the foreseeable future in the absence of special protection and management efforts (CESA Section 2067). Take, as defined by Section 86 of the Fish and Game Code, of any State threatened species is prohibited, except as authorized by the CDFW.

State candidate (SC): species designated as a candidate for listing under the CESA. These are native species or subspecies for which the Fish and Game Commission has accepted a petition for further review under Section 2068 of the CESA, finding that sufficient scientific information exists to indicate that the petitioned action may be warranted. "Take" of any State candidate species is prohibited, as defined by Section 86 of the Fish and Game Code, except as authorized by CDFW.

State Species of Special Concern (SSC): a species, subspecies, or distinct population of a vertebrate animal native to California that has been determined by CDFW to warrant protection and management, intended to reduce the need to give the species formal protection as an SE, ST, or SC species. SSC is an administrative designation and carries no formal legal status. Generally, SSC should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined in Section 15380 of the CEQA Guidelines. However, some older lists of SSC were not developed using criteria relevant to CEQA, and the information used in generating those lists is out of date. Therefore, the current circumstances of each unlisted SSC must be considered against those criteria and not automatically assumed to be rare, threatened or endangered.

State Fully Protected (FP): species designated as fully protected under Sections 3511, 4700, 5050, or 5515 of the Fish and Game Code. FP species may not be taken at any time unless authorized by CDFW for necessary scientific research, which cannot include actions for project mitigation. Necessary scientific research includes efforts to recover fully protected, endangered, and threatened species. A notification must be published in the California Regulatory Notice Register prior to CDFW authorizing take of fully protected species. Although some species included under these statutes also are listed as threatened, endangered, or SSC, others are not.

California Native Plant Society (CNPS) Rank 1 and 2 species: The CNPS Inventory of rare, threatened, and endangered plants identifies three groups of species that are commonly recognized as special-status plants. Rank 1A plants are presumed extinct in California. Rank 1B plants are considered rare, threatened, or endangered in California and elsewhere. Rank 2 plants are rare, threatened, or endangered in California, but more common elsewhere.

A list of all special-status species that could occur in the vicinity of activities conducted under the Proposed Program is provided in Appendix I.

Sensitive Natural Communities

Sensitive natural communities include those communities identified as sensitive by CDFW (i.e., those ranked as S1, S2, S3, G1, G2, and/or G3 on CDFW's list), natural communities that are specifically regulated under Section 1600 of the California Fish and Game Code, and wetlands and other special aquatic sites regulated under Section 404 of the Clean Water Act.

Sensitive natural communities are located in every county of California. The CDFW classification uses the National Vegetation Classification hierarchy (FGDC 2008), which groups the natural communities in California into the following six major categories:

1. Mesomorphic Tree Vegetation (e.g., blue oak woodland, willow riparian forest, bristlecone pine woodland)
2. Mesomorphic Shrub and Herb Vegetation (e.g., serpentine bunch grass, vernal pools, California poppy fields)
3. Xeromorphic (Semi-Desert) Scrub and Herb Vegetation (e.g., Joshua tree woodland, giant coreopsis scrub)
4. Cryomorphic (Polar and High Montane Vegetation) Shrub and Herb Vegetation (e.g., Southern California Fell Field)
5. Hydromorphic Vegetation (Aquatic Vegetation) (e.g., seasonal wetlands, yellow pond-lily mats)
6. Lithomorphic Vegetation (Nonvascular and Sparse Vascular Rock Vegetation) (e.g., active desert dunes)

CDFW maintains a list of sensitive natural communities in California that is provided in Appendix J (CDFW 2010).

6.3.3 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze biological resources. It also presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts.

Methodology

The methods used for evaluating the impacts of the various Proposed Program activities are discussed next. Additional detail is then provided below regarding the methodology for evaluating the chemical management activities.

All Management Activities

Direct and indirect effects of physical, biological, and chemical management activities are evaluated as a function of the following factors:

- Locations of the activity;
- Intensity, frequency, and duration of the activity;
- The mechanism(s) by which the activity could reasonably impact, either directly or indirectly, sensitive biological resources; and
- The effectiveness of avoidance and minimization measures and other Proposed Program requirement (see Chapter 2, Proposed Program Description)

Selection and Review of Affected Biological Resources

The proposed management activities were evaluated to determine their potential to affect the following categories of sensitive biological resources:

- Special-status species
- Sensitive natural communities (including aquatic natural communities)

Potential effects on these resources were evaluated within geographic areas or ecoregions where Proposed Program activities may take place and biological impacts are reasonably foreseeable. The proposed physical and biological management activities would not be likely to interfere substantially with the movement of native fish or wildlife species or to impede the use of native wildlife nursery sites because the activities would be located in agricultural and developed areas. Therefore, these topics are not considered further.

Consideration of Effects on Pollinators

Appendix K provides an overview of potential effects of pesticide use and other stressors on pollinators and associated biological resources. The analysis for this PEIR focused on the potential direct, indirect, and cumulative impacts that the Proposed Program may have on special-status pollinators, and potential indirect and cumulative impacts that the Proposed Program may have on other special-status species, according to pollinator (e.g., special-status insectivores, special-status flowering plants).

Analysis of Impacts at Multiple Spatial Scales

The analysis of the Proposed Program's potential impacts on biological resources was considered at various spatial scales, depending on the characteristics and likely effects of each activity. Site specific examples are provided in this PEIR, where appropriate, that represent the range of potential outcomes. In many cases, the impacts would be limited to very specific environments rather than a specific geographic range; or by prey base and/or food source, rather than by habitat type. In other cases, Proposed Program activities may occur only in a very limited geographic range. For each activity, the limitations of the activity are described, the types of species at risk are described, and examples of special-status species and sensitive natural communities are provided to demonstrate the potential impacts.

Chemical Management Activities

This section describes the methods used to analyze the Proposed Program's chemical management activities, and also provides a summary of the ecological risk analysis approach used to model risks to wildlife from pesticide use. The ecological risk analysis did not model risks to plants because the main purpose of the program (to protect agricultural crops) would require the use of chemicals that do not adversely affect plants.

Types of Activities Analyzed and Use of the Ecological Risk Assessment

Chemical management activities are described in detail in Chapter 3, Proposed Program Activities. Five basic categories of these activities are analyzed in that chapter: chemical-based traps; foliar spray applications; soil applications; fumigation; and mating disruption. Foliar spray applications and soil applications are used for control of various pests, and they were subject to a quantitative evaluation in the ERA. The impacts described for these activities are based on the conclusions of the ERA. The general methodology of the ERA is summarized in this section as well as in Section 6.0.6, Risk Assessment Overview and Appendix A. Fumigation and chemical-based traps are evaluated qualitatively in Chapter 3 because these activities were not analyzed in the ERA. The risk of exposure of biological resources to these activities is considered extremely low, and no exposure estimates exist on which to base a risk assessment.

Identification of Surrogate Species for the Ecological Risk Assessment

To evaluate the potential for the Proposed Program's chemical management activities to affect various species of wildlife, the ERA developed chemical exposure estimates for 51 surrogate wildlife species. The 51 surrogate species were selected to represent the range of special-status wildlife species that potentially could be exposed to the proposed chemical management activities. The majority of the selected surrogate species are special-status species. However, related common species were used in instances where data is lacking for the applicable special-status species. For terrestrial invertebrates, the only soil-dwelling invertebrate with sufficient information available to support a risk evaluation was the earthworm; thus, the earthworm was selected as a surrogate for other soil-dwelling invertebrates.

To the extent feasible, species were selected to represent the geographic range of the proposed activities. Reptiles were divided into snakes, turtles and tortoises, and lizards. Amphibians were divided into frogs, toads, and salamanders. Reptiles and amphibians also were selected according to habitat features, such as desert or mesic habitats. The selection of birds and mammals related more to feeding categories than taxonomic considerations. Fish and aquatic invertebrates were selected primarily on habitat types, such as streams, lakes or ponds, and estuarine or marine.

Life history information for each surrogate species is provided in Appendix Eco-2 of the ERA (Appendix A).

Appendix L provides a table that cross-references which surrogate species represent the special-status species considered in this PEIR.

Components of the Ecological Risk Assessment

The ERA evaluated a variety of chemical application scenarios. The scenarios varied with respect to the type and amount of product(s) used, the methods of application, the setting in which the activity would occur (e.g., agriculture, residential), and the area and frequency of the activity. The acute and chronic risk associated with each application scenario were quantified by modeling the potential for adverse effects of the active and inert ingredients of the product(s) that would be used on the surrogate wildlife species, as described below. With one exception, the ERA used models developed by the U.S. Environmental Protection Agency. These models take into account the various aspects of the scenarios described above, as well as the ecological settings in which applications would occur and the wildlife that could occur in a treatment area. To evaluate all of these factors, conceptual site models (CSMs) were developed. Each CSM identified the various pathways through which ecological receptors (wildlife) could be exposed to the chemicals associated with each application scenario.

As mentioned previously, application methods would include soil applications (drench or tablet insertion) and foliar spray applications (ground or aerial spray, the latter being conducted only in agricultural and nursery environments, and not in residential areas without conducting additional tiered CEQA analysis and associated public review). Following an application, chemical residues could be present in the soil, on or in the treated crop, as well as potentially on non-target plants and animals, including insects and soil invertebrates present at the time of the application. Both target plants and other plants within the treated area may acquire residues via direct application as well as by uptake from the soil. Soil uptake would be particularly prevalent following direct soil applications. All of these exposure pathways were included in the CSMs.

Chemicals may move off-site from an application by aerial drift, surface run-off, groundwater movement, or erosion (adhesion to soil particles). Routes of chemical movement were included in the CSMs where data existed to inform models (see ERA, Appendix A for details).

Three routes of exposure exist for wildlife: ingestion, dermal (skin absorption), and inhalation. The CSMs evaluated ingestion exposure through multiple levels of the food chain where appropriate for the surrogate species in question. Although dermal and inhalation exposures may occur, practically no ecotoxicity data exist for dermal or inhalation exposures of the surrogate terrestrial species. Because of lack of ecotoxicity data, these routes of exposure were not addressed for terrestrial species. Tissue uptake by aquatic organisms was included in the CSMs.

Identification of Risk

The potential for risk to species exceeding a level of concern was determined to exist under application scenarios where the estimated chemical exposure (estimated environmental concentration [EEC]) to the species was greater than a predetermined exposure threshold (toxic reference value [TRV]). The TRVs used to represent the potential for adverse effects of each active and inert ingredients were developed based on published literature, and the methods for modeling the estimated exposure and the exposure threshold are outlined in the ERA (Appendix A). For the purposes of CEQA, either acute or chronic ecological risks exceeding the level of concern, or both, may be significant impacts.

Significance Criteria

For the purposes of this analysis, the Proposed Program would result in a significant impact related to biological resources if it would:

A. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS (special-status species);

B. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;

C. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;

D. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;

E. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or

F. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.

The Proposed Program would not have the potential for significant impacts related to criteria C and D because it would not include any activities that could result in direct removal, filling hydrological interruption, or other means to possibly affect wetlands, or interfere substantially with the movement of any species, corridors, or nursery sites. Furthermore, it would not have the potential for significant impacts related to criteria E and F because it would be required to comply with any applicable policies, ordinances, or approved habitat conservation plans, and impacts to the resources that these policiies, ordinances, and plans are designed to protect have been evaluated in the context of the other significance criteria. Therefore, these criteria are not considered further in this PEIR.

Environmental Impacts of the Proposed Program

Physical Management Approaches

Impact BIO-PHYS-1: Activities associated with implementing external quarantines would not affect biological resources. (No Impact)

As described in Section 3.1, Physical Management Activities, external quarantines would continue to be enforced through inspection activities occurring at border checkpoints, and at parcel shipping locations, such as ports and airports. These generally are industrialized areas, continually subject to the type of land use patterns, traffic, and human activity typically involved in physical inspection activities. Such activities would not affect sensitive biological resources because these resources are not expected to occur within inspection areas. In addition, these activities would be a continuation of CDFA's existing (baseline) inspection activities. Therefore, no impact would occur.

Impact BIO-PHYS-2: Disposal of infested host material within internal quarantine areas would not affect sensitive biological resources. (No Impact)

Disposal methods for infested host material and equipment use within internal quarantine areas potentially could affect sensitive biological resources if such resources occur within disposal areas. The required specific types of disposal for infested materials are detailed below. These disposal activities would occur at nurseries, in agricultural areas, in urban areas, or within landfills, and would be similar in intensity to ongoing, non-pest-related disposal of agricultural and ornamental botanical waste. Thus, they are not expected to affect sensitive biological resources. These activities would include materials that are:

- buried deeply in a landfill;
- composted within the quarantine area or at an approved receiver outside the quarantine area;
- double-bagged and disposed as trash;
- incinerated to ash;
- sterilized;
- grinded and discharged into an approved sewage treatment system;
- crush-processed grape and olive fruit within quarantine areas; or
- infected grape shipments for destruction.

Focal pests for these activities would include fruit flies, European grapevine moth, and gypsy moth, although these activities may be implemented for other pests (including future pests not currently addressed under the Statewide Program). Therefore, no impact would occur.

Impact BIO-PHYS-3: Plant observation and soil sampling would not impact sensitive biological resources. (No Impact)

Inspection activities for the Proposed Program, including travel to inspection sites, examining fruit, and soil sampling, potentially could affect sensitive biological resources if these activities occur within areas where sensitive biological resources are likely to be present. However, the Proposed Program's inspection activities would be carried out in urban, residential, and agricultural settings, where inspection activities would be conducted in locations with very low likelihood of sensitive biological resources being present and potentially affected by such activities. Therefore, no impact would occur.

Impact BIO-PHYS-4: Traps would not cause substantial mortality to non-target special-status invertebrates or substantially reduce populations of pollinating insects. (Less than Significant)

Manufacturers of traps and lures perform considerable research to lower the potential for trapping of non-target species, and traps usually have special designs and colors to focus on the target species. In addition, the majority of trapping activities would occur in urban and residential areas where special-status insects are not expected to occur. To date, CDFA has not been made aware of any special-status invertebrates caught in its traps. In locations where mortality of special-status insect species could occur, the potential for a substantial effect on the species population would be very low. Trapping also would not be anticipated to reduce insect populations to a level that would have negative impacts on special-status insectivores or pollinator-dependent, special-status plant species. Therefore, the impact would be less than significant.

Impact BIO-PHYS-5: Sweep net surveys would not cause substantial mortality of special-status species. (Less than Significant)

Pest removal by the Proposed Program's sweep net surveys may result in the capture and mortality of non-target invertebrates, including special-status invertebrates in limited instances. However, this activity would be similar to other crop monitoring and maintenance activities, and would not have a substantial effect on special-status species populations or sensitive natural communities. Therefore, the impact would be less than significant.

Impact BIO-PHYS-6: Host fruit removal and disposal practices would not substantially impact special status species or sensitive natural communities. (Less than Significant)

The Proposed Program's host fruit and flower removal activities would not be likely to result in direct and indirect impacts on special-status species or pollinating insects important to special-status plants. As described in Section 3.1.4, Host Removal, CDFA or growers often do not remove host fruit or flowers in part because of concerns regarding reduced food availability for native insects. In addition, host removal would not occur in sensitive natural communities, would mimic typical ongoing fruit harvest activities, and would be similar to existing urban and residential green waste disposal activities. Although the fruit or flowers targeted for disposal may constitute a food source for some bird, mammal, and invertebrate species, the limited area of each activity is expected to constitute only a small portion of the foraging range and potential food source options of any individual animal or insect, and the location within urban and residential areas would reduce the potential for special-status species to occur. Therefore, the impact would be less than significant.

Impact BIO-PHYS-7: Adjusted crop harvesting protocols would not affect special status species or sensitive natural communities above existing baseline crop harvesting practices. (No Impact)

For certain pests, such as the pink bollworm, planting and crop destruction dates would be adjusted to establish a "host-free" period. In the case of the pink bollworm, crop destruction protocols would require that cotton stalks be completely shredded and cotton plant roots be completely dislodged. Removal of cotton plants for control of pink bollworm would be simply timing and harvest adjustments to ongoing agricultural practices in existing cotton fields, and would not affect sensitive native communities or species above the baseline levels from standard cotton cultivation practices. Adjusted crop harvesting protocols related to other pests and crops also would not be expected to have any adverse effects. Therefore, no impact would occur.

Biological Management Activities

Impact BIO-BIO-1: Introduction of sterile insects would not substantially impact special-status species or sensitive natural communities. (Less than Significant)

The Proposed Program may include the release of sterilized male insects by the sterile insect technique (SIT). SITs have been used to control Medfly, Mexfly, and pink bollworm populations consistently in California over many years, and future releases are anticipated to be similar to this baseline. Use of SITs in California does not involve release of insects that bite, sting, or parasitize humans or animals, or carry diseases or other pests, which could harm or compete with special status or other native species. Because SITs target non-native insect species, releases would not cause direct or indirect adverse physical or ecological changes to any sensitive natural community, including riparian habitats and wetlands. Therefore, the impact would be less than significant.

Impact BIO-BIO-2: Release of sterile insects from airplanes would not substantially disturb special-status bird nesting and rookery sites. (Less than Significant)

Airplane activities under the Proposed Program would not disturb special-status species substantially, including nesting birds and rookeries. Under the Proposed Program's SIT releases, aircraft would maintain a minimum elevation of 2,000 feet above ground, except during takeoff and landing at airstrips. Special-status bird species or native wildlife nursery sites in the vicinity of the airstrips already experience disturbances from aircraft. Furthermore, the potential disturbance would be infrequent and would be of short duration, which would further minimize the potential effects on nesting migratory birds. Therefore, the impact would be less than significant.

Impact BIO-BIO-3: Introduction of biological control agents would not substantially affect special status species. (Less than Significant)

All biological control agents (BCAs) that would be used under the Proposed Program would be subject to the approval process described in Chapter 2, Proposed Program Description. This would include a pest risk assessment, for a rigorous evaluation of a BCA's potential effects related to issues such as (United Nations Food and Agricultural Organization 2006):

- Effects on endangered native plant species (including effects below species level where there is evidence of such effects being significant);
- Significant reduction, displacement or elimination of other plant species, through predation, disease, or other factors;
- Significant effects on designated environmentally sensitive or protected areas; or

- Significant change in ecological processes and the structure, stability or processes of an ecosystem (including effects on erosion, water table changes, increased fire hazard, nutrient cycling, etc.).

The pest risk assessment would conclude with a determination of the probability of adverse effects and their consequences, including an assessment of uncertainty. On that basis, an evaluation would be made as to whether the risks posed by the BCA would exceed acceptable levels, and the appropriate management options (e.g., phytosanitary standards, control of reproductive ability [e.g. male sterility]) would be selected so that risks would be within acceptable levels. The existing program safeguards would continue to be implemented. Therefore, the impact would be less than significant.

Chemical Management Activities

Impact BIO-CHEM-1: Scenarios that would result in no elevated risk for special-status species. (Less than Significant)

Table 6.3-1 summarizes the scenarios that would not have acute or chronic ecological risks exceeding the level of concern for any of the surrogate species evaluated in the ERA.

Table 6.3-1. Scenarios with No Elevated Risk for Special-Status Species

Control Target	Setting	Chemical
European Grapevine Moth	Nurseries	Spinosad
	Nurseries	Chlorantraniliprole
Fruit Fly	Nurseries	Diazinon
	Residential/ Agricultural	Spinosad
Pest Detection/Emergency Projects	Residential	Glyphosphate

The surrogate species are a representative cross-section of the special-status species that could occur in an area where Proposed Program activities would be conducted. Therefore, the impact would be less than significant.

Impact BIO-CHEM-2: Scenarios that would result in no elevated risk to special-status species with implementation of mitigation. (Less than Significant with Mitigation)

Pesticide applications have the potential to affect special-status animal species directly through chemical exposure or indirectly through ecological interactions, including predator-prey relationships and the food web. The ERA estimated that the scenarios identified in Table 6.3-2 could result in a risk that could exceed the level of concern for various surrogate species.

Table 6.3-2. Scenarios with Potentially Elevated Risk for Special-Status Species

Control Target	Setting	Chemical
Fruit Fly	Residential/Agricultural	Malathion
Light Brown Apple Moth	Nurseries	Chlorantraniliprole
		Lambda-Cyhalothrin
	Agricultural	Methoxyfenozide
	Nurseries/Agricultural	Spinosad
Pierce’s Disease Control	Nurseries	Acephate

Control Target	Setting	Chemical
Program		Bifenthrin
	Residential/Nurseries	Carbaryl
	Nurseries	Chlorpyrifos
	Residential/Nurseries/ Agricultural	Cyfluthrin
	Nurseries/Agricultural	Fenpropathrin
	Residential/Nurseries	Imidacloprid
	Nurseries	Neem oil
		Permethrin
	Agricultural	Pyrethrins
	Nurseries	Tau-fluvalinate
Pest Detection/Emergency Projects	Residential	BtK
		Carbaryl
		Cyfluthrin
		Imidacloprid
Asian Citrus Psyllid	Nurseries	Spinotetramat all combinations

Potential impacts of chemical control scenarios on special-status species populations may include chronic effects, such as decreased reproductive success, or acute effects such as mortality. Substantial adverse effects could include mortality of special-status species that could reduce populations below self-sustaining levels and cause interference with the recovery of the species.

As described in Chapter 2, Proposed Program Description, CDFA would obtain technical assistance from USFWS, CDFW and NMFS to develop treatment plans to avoid or minimize substantial adverse effects on special-status species. Implementation of the treatment plan measures would reduce the impacts on special-status species by modifying the timing, locations, and methods for chemical treatments on a case-by-case basis, including establishment of site-specific buffers. This process is designed so that no "take" authorization would be needed, concluding that the activity may affect but would not be likely to adversely affect the species. This would be consist with a conclusion under CEQA that a substantial adverse effect on any special-status species would not occur—in other words, would be a less-than-significant impact. Therefore, by using this performance standard, the technical assistance process would avoid any significant impact.

However, pending identification of these specific measures on a case-by-case basis, impacts would be potentially significant for those special-status species for which the ERA concluded that a scenario could have elevated risk. With implementation of Mitigation Measure BIO-CHEM-2, the impact would be less than significant.

Mitigation Measure BIO-CHEM-2: Obtain Technical Assistance from USFWS, CDFW and NMFS to Identify Site-Specific Buffers and Other Measures to Protect Habitats Used by Special-Status Species.

CDFA shall identify any suitable habitat for special-status wildlife species identified as having potential to (1) occur in the region and (2) be affected by the treatment scenario in question. Suitable habitat may consist of aquatic or terrestrial foraging habitat. If such habitat exists, CDFA would prepare treatment plans that will avoid or minimize substantial adverse effects on special-status species and submit them to USFWS, CDFW, and NMFS for review. This may be done on a project-specific basis (for individual applications) or for an entire quarantine area.

Treatment plan measures may include modifications in the timing, locations, and/or methods for chemical treatments on a case-by-case basis, including establishment of site-specific buffers. The technical assistance process has been designed so that no “take” authorization will be needed.

The treatment plan requirements will be provided to those implementing the treatments. In the case of quarantines, the requirements will be attached to the compliance agreement between CDFA and regulated entities (e.g., growers) affected by the requirements (e.g., those who may treat in proximity to suitable habitat for special-status species).

CDFA shall document the results of the USFWS, CDFW, and NMFS coordination, and shall maintain records of compliance with the measures to protect special-status species.

Impact BIO-CHEM-3: Effects on special-status insectivores from scenarios with elevated risk to insects. (Less than Significant)

The ERA estimated that the scenarios identified in Table 6.3-3 could result in risk that would exceed the level of concern for non-target insects.

Table 6.3-3. Scenarios with Potentially Elevated Risk for Non-Target Insects

Control Target	Setting	Chemical
Fruit Fly	Residential/Agricultural	Malathion
Light Brown Apple Moth	Nurseries	Chlorantraniliprole
	Nurseries	Lambda-Cyhalothrin
	Agricultural	Methoxyfenozide
	Nurseries/Agricultural	Spinosad
Pierce’s Disease Control Program	Nurseries	Acephate
	Nurseries/Residential/Agricultural	Acetamiprid
	Nurseries	Bifenthrin
	Residential/Nurseries	Carbaryl
	Nurseries	Chlorpyrifos
	Residential/Nurseries/Agricultural	Cyfluthrin
	Nurseries/Agricultural	Fenpropathrin
	Residential/Nurseries	Imidacloprid
	Nurseries	Neem oil
		Permethrin
	Agricultural	Pyrethrins
	Nurseries	Tau-fluvalinate
Pest Detection/Emergency Projects	Residential	BtK
		Carbaryl
		Cyfluthrin
		Imidacloprid
		Spinosad

Control Target	Setting	Chemical
Asian Citrus Psyllid	Nurseries	Spinotetramat all combinations

However, the risk to non-target insects would not result in a substantial reduction in the food base for special-status insectivores. The scenarios listed in Table 6.3-3 would be implemented in existing residential, agricultural, or nursery settings that would not provide high-quality habitat and frequently would be disturbed by human activity. These settings would be less likely to be used by special-status insectivores. Therefore, the impact would be less than significant.

Impact BIO-CHEM-4: Effects on special-status flowering plants from scenarios with elevated risk to pollinators. (Less than Significant)

Special-status flowering plants are dependent on pollinators to reproduce. Reductions in pollinator populations would have the potential to reduce the reproductive success of these plants. The ERA estimated that the scenarios identified in Table 6.3-4 could result in risk that would exceed the level of concern for pollinators.

Table 6.3-4. Scenarios with Potentially Elevated Risk for Pollinators

Control Target	Setting	Chemical
European Grapevine Moth	Nurseries	Methoxyfenozide
		Chlorantraniliprole
Fruit Fly	Nurseries	Diazinon
	Residential/Agricultural	Spinosad
		Malathion
Light Brown Apple Moth	Nurseries/Agricultural	BtK
	Nurseries	Chlorantraniliprole
		Lambda-Cyhalothrin
	Nurseries/Agricultural	Spinosad
Pierce's Disease Control Program	Nurseries	Acephate
	Nurseries/Residential/ Agricultural	Acetamiprid
	Nurseries	Bifenthrin
	Residential/Nurseries	Carbaryl
	Nurseries	Chlorpyrifos
	Residential/Nurseries/ Agricultural	Cyfluthrin
	Residential/Nurseries	Imidacloprid
	Nurseries	Permethrin
	Agricultural	Pyrethrins
	Nurseries	Tau-fluvalinate
Pest Detection/Emergency Projects	Residential	BtK
		Carbaryl
		Cyfluthrin
		Imidacloprid
		Spinosad
Asian Citrus Psyllid	Nurseries	Spinotetramat all combinations

However, CDFA would implement various avoidance and minimization measures as part of the Proposed Program (including the MPs discussed in Chapter 2, Proposed Program Description, and the pollinator measures included in Attachment 1 of Appendix K). These measures would minimize the potential adverse effects on pollinators. Therefore, the risk to pollinators from the Proposed Program would be minimal and would not substantially affect the local or regional populations of pollinators available for special-status flowering plant species. Therefore, the impact would be less than significant.

Impact BIO-CHEM-5: Effects of chemical treatments on sensitive natural communities or wetlands. (No Impact)

Proposed Program activities would not occur within wetlands and other aquatic or sensitive natural communities. Therefore, no impact would occur.

Impact BIO-CHEM-6: Potential for chemical traps to cause substantial mortality to non-target special-status invertebrates or substantially reduce populations of pollinating insects. (Less than Significant)

Manufacturers of traps and lures perform considerable research to lower the potential for trapping of non-target species, and traps usually have special designs and colors to focus on the target species. In addition, the majority of trapping activities would take place in urban and residential areas where special-status insects are not expected to occur. To date, CDFA has not been made aware of any special-status invertebrates caught in its traps. In locations where mortality of special-status insect species could occur, the potential for a substantial effect on the species population would be very low. Trapping also would not be expected to reduce insect populations to a level that would have negative impacts on special-status insectivores or pollinator-dependent special-status plant species. Therefore, the impact would be less than significant.

Cumulative Impacts

Impact BIO-CUM-1: Proposed Program activities would minimize natural area invasions. (Beneficial Impact)

Pest invasions in California are widely acknowledged to cause substantial damage to native habitats and species. Quarantines involve restrictions on the intrastate or interstate movement of plants, green waste residue, foliage, flowers, fruits/vegetables and other plant parts, timber, lumber, vehicles, appliances, machinery, and other equipment used in the cultivation or removal of host plants to prevent the spread of pests into or throughout California and areas outside the state. Quarantine regulations limit the spread of detrimental organisms and minimize the spread of pests to sensitive natural areas and biological resources.

Similarly, the eradication activities that would be conducted under the Proposed Program outside the framework of quarantines also would reduce the potential for pests to spread into or throughout California and to areas outside the state. These activities would reduce or eliminate pest populations where they are found, minimizing the spread of pests to sensitive natural areas and biological resources.

Therefore, the Proposed Program's contribution to this cumulative impact would be beneficial.

Impact BIO-CUM-2: Effects on special-status flowering plants from scenarios with elevated risk to pollinators. (Less than Significant)

Special-status flowering plants are subject to multiple stressors, including land conversion, invasive species, climate change, and reductions in pollinator populations. Impact BIO-CHEM-4 lists the scenarios for which the ERA estimated risk that could exceed the level of concern for pollinators. As described in that impact discussion, CDFA would implement various avoidance and minimization measures as part of the Proposed Program (including the MPs discussed in Chapter 2, Proposed Program Description, and the pollinator measures included in Attachment 1 of Appendix K). These measures would minimize potential adverse effects on pollinators, and with these measures, the Proposed Program would not be anticipated to have a measurable adverse effect on pollinators. The Proposed Program's contribution to cumulative impacts on special-status flowering plants would therefore not be considerable. Therefore, this impact would be less than significant.

Impact BIO-CUM-3: Effects on special-status pollinators. (Less than Significant)

Special-status pollinators are adversely affected by complex interactions among multiple stressors, including pests and pathogens, poor nutrition resulting from loss of foraging habitat, pesticide exposure, and overall habitat loss.

Impact BIO-CHEM-4 lists the scenarios for which the ERA estimated risk that could exceed the level of concern for pollinators. As described in that impact discussion, CDFA would implement various avoidance and minimization measures as part of the Proposed Program (including the MPs discussed in Chapter 2, Proposed Program Description and the pollinator measures included in Attachment 1 of Appendix K). These measures would minimize potential adverse effects on pollinators. In addition, the Proposed Program would reduce the potential for pests to have a negative impact on special-status pollinators, which is a beneficial effect. No measurable adverse effects from the Proposed Program on special status pollinators are anticipated.

Overall, the Proposed Program's contribution to the cumulative impact would not be considerable, and this impact would be less than significant.

Section 6.4

Global Climate Change

6.4 Global Climate Change

This section presents the environmental setting and potential impacts of the Proposed Program related to global climate change.

6.4.1 Environmental Setting

The following discussion describes global climate change; greenhouse gases and related emissions; and global, and national and California GHG emission inventories. This information is presented to provide the framework for understanding the impacts of the Proposed Program related to climate change.

Global Climate Change

Global warming and global climate change are terms that describe changes in the Earth's climate. Global climate change is a broader term, used to describe any worldwide, long-term change in the Earth's climate. This change could be, for example, an increase or decrease in temperatures, the start or end of an ice age, or a shift in precipitation patterns. The term global warming is more specific and refers to a general increase in temperatures across the Earth. Although global warming is characterized by rising temperatures, it can cause other climatic changes, such as a shift in the frequency and intensity of rainfall or hurricanes. Global warming does not necessarily imply that all locations will be warmer. Some specific, unique locations may be cooler even though the Earth, on average, is warmer. All of these changes fit under the umbrella of global climate change.

Global climate change is particularly important when discussing agriculture, pests, and pathogens. Agriculture, as well as other urban and natural plant systems, are highly dependent on specific climate conditions. Many pests, fungi, and pathogens benefit from warmer temperatures, wetter climates, and increased concentrations of carbon dioxide (CO_2) (EPA 2013a). In addition, pests, fungi, and pathogens are likely to be able to thrive throughout a wider geographic region (EPA 2013a). Therefore, the likelihood for infestation of plant systems is expected to increase because of global climate change.

Because GHGs persist and mix in the atmosphere, they have impacts on a global scale, rather than locally or regionally like most air pollutants. Consequently, GHG emissions that contribute to global climate change result in a worldwide cumulative impact (global warming) rather than a local or regional project-specific impact typically associated with criteria pollutants. Impacts related to GHG emissions are discussed in the context of the Statewide Program's contribution to statewide and global GHG emissions.

Although natural processes can cause global warming, general scientific consensus concurs that present-day global warming is the result of human activity on the planet (IPCC 2007, 2013). The Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report: Climate Change 2007 stated that scientific consensus concurs that the global increases in atmospheric concentrations of GHGs since 1750 mainly have resulted from human activities such as fossil fuel use, land use change (e.g., deforestation), and agriculture (IPCC 2007; IPCC 2013). This human-made, or anthropogenic, warming primarily is caused by increased

GHG emissions that keep the Earth's surface warm, known as "the greenhouse effect." The greenhouse effect and the role GHG emissions play in it are described next.

Greenhouse Gases and Related Emissions

The term "greenhouse gases" includes gases that contribute to the natural greenhouse effect as well as gases that are human-generated and are emitted by modern industrial products, such as HFCs, chlorinated fluorocarbons, and sulfur hexafluoride. These last two families of gases, although not naturally present, have properties that also cause them to trap infrared radiation when they are present in the atmosphere, thus making them GHGs. The effect each of these gases has on global warming is a combination of the volume of their emissions and their global warming potential (GWP). GWP indicates, on a pound for pound basis, how much a gas will contribute to global warming (its potential to trap heat) relative to how much warming would be caused by the same mass of carbon dioxide. Table 6.4-1 shows the six GHGs and their respective GWPs.

Table 6.4-1. Greenhouse Gas Overview and Global Warming Potential

Greenhouse Gas	GWP 100-year (IPCC 2013/SAR)[a]	Brief Description
Carbon Dioxide (CO_2)	1/1	Released into the atmosphere through burning fossil fuels (coal, natural gas and oil), solid waste, trees and wood products, agricultural crops wastes or residues, and also because of certain chemical reactions; removed from the atmosphere when it is absorbed by plants (including due to agriculture) and the ocean; remains in the atmosphere for 50 to more than 100,000 years.
Methane (CH_4)	28/21	Emitted during the production and transport of coal, natural gas, and oil; methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills; remains in the atmosphere for about 10 years.
Nitrous Oxide (N_2O)	265/310	Emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste; remains in the atmosphere for about 100 years.
Hydroflouro-carbons (HFCs)	4-12,400/650–11,700	Typically used in refrigeration and air conditioning equipment, as well as in solvents; emissions primarily generated from use in air conditioning systems in buildings and vehicles; remain in the atmosphere from 10 to 270 years.
Perflouro-carbons (PFCs)	6,630-11,100/6,500–9,200	Emitted as by-products of industrial and manufacturing sources; remain in the atmosphere from 800 to 50,000 years.
Sulfur Hexa-fluoride (SF_6)	23,500/23,900	Used in electrical transmission and distribution; remain in the atmosphere approximately 3,200 years.

Notes:

[a] As scientific understanding of global warming potentials of GHGs improves over time, GWP values are updated in the Intergovernmental Panel on Climate Change (IPCC) scientific assessment reports.

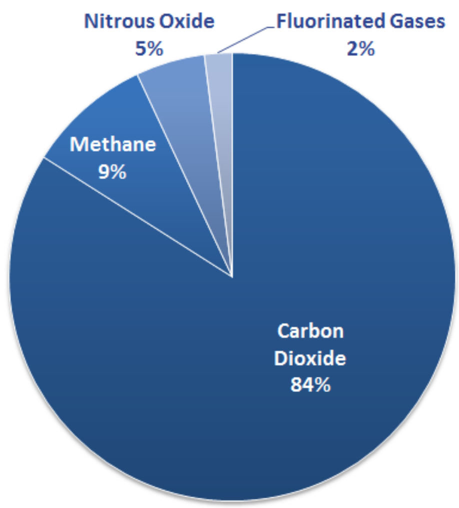
Greenhouse Gas	GWP 100-year (IPCC 2013/SAR)[a]	Brief Description
However, for regulatory consistency, the Kyoto Protocol fixed the use of GWP values to those published in the IPCC 1996 Second Assessment Report (SAR). The table above shows GWP values for 100 years from both the IPCC 2013 and SAR.		

Sources: EPA 2013b and IPCC 2007

The most important GHG in human-induced global warming is CO_2. Although many gases have much higher GWPs than the naturally occurring GHGs, CO_2 is emitted in such vastly higher quantities that it accounts for 85 percent of the GWP of all GHGs emitted by the U.S. (EPA 2006). Fossil fuel combustion, especially for the generation of electricity and powering of motor vehicles, has led to substantial increases in CO_2 emissions over time and, thus, substantial increases in atmospheric CO_2 concentrations. In 2005, atmospheric CO_2 concentrations were about 379 ppm, over 35 percent higher than the pre-industrial concentrations of about 280 ppm (IPCC 2007). In addition to the sheer increase in the volume of its emissions, CO_2 is a major factor in human-induced global warming because of its long lifespan in the atmosphere of 50 to 200 years.

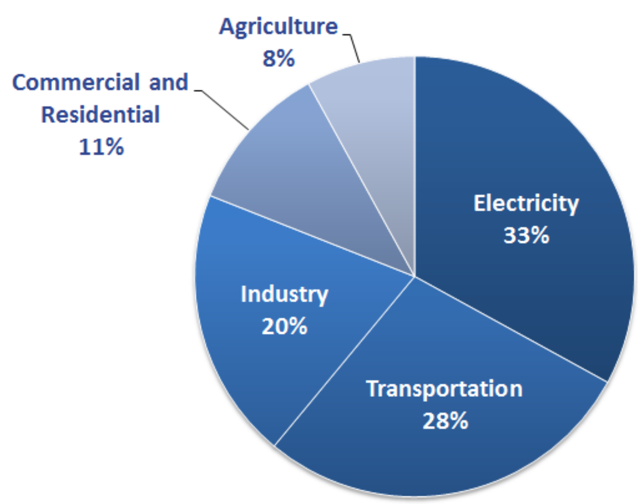
Global, National, and California GHG Emission Inventories

GHG emissions typically are measured in terms of mass of CO_2e. CO_2e is calculated as the product of the mass of a given GHG and its specific GWP. Worldwide emissions of GHGs in 2004 were over 20 billion metric tons (i.e., one metric ton being equivalent to 1,000 kilograms) of CO_2e per year (United Nations Framework Convention on Climate Change 2014). In 2013, the U.S. emitted about 6.7 billion metric tons of CO_2e, an increase of about 8.4 percent since 1990, but a reduction of about 6.9 percent from 2005 inventories (EPA 2013b). Approximately 80 percent of the GHG emissions in the U.S. are comprised of CO_2 emissions from fossil fuel combustion (EPA 2013b). Figures 6.4-1 and 6.4-2 provide an overview of relative GHG emissions in the United States by type of GHG and source, respectively.



Source: EPA 2013c

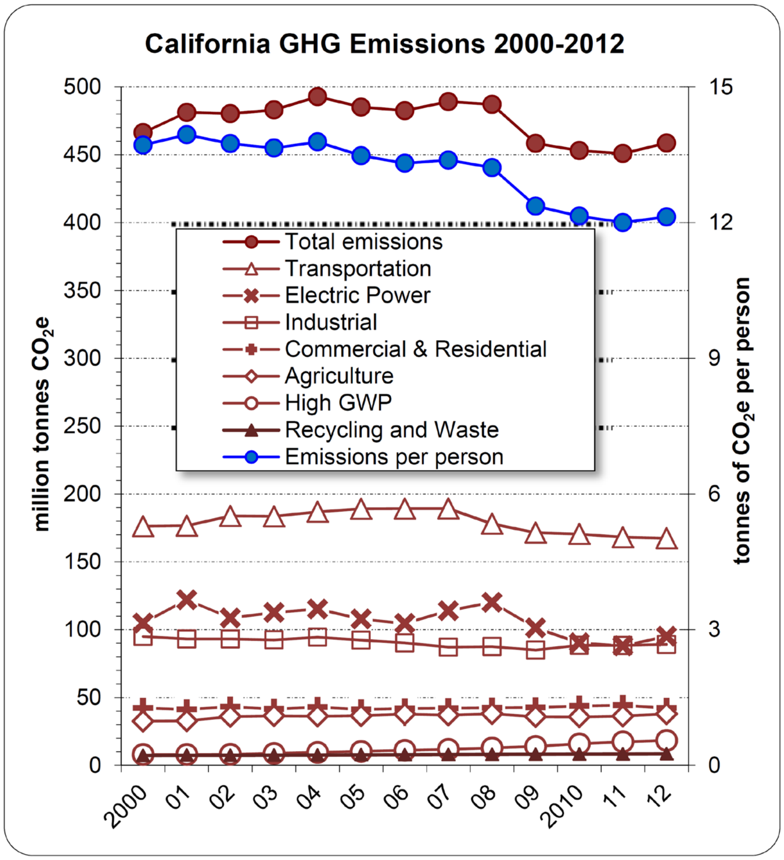
Figure 6.4-1. Greenhouse Gas Emissions by Type in U.S. (2011)



Source: EPA 2013c

Figure 6.4-2. Greenhouse Gas Emissions by Source in U.S. (2011)

In 2011, California emitted approximately 0.448 billion metric tons of CO_2e, or about 6.7 percent of the U.S. emissions; this is a reduction of about 8.4 percent since 2005, although the population grew during that time by about 5 percent. This large number primarily is because of the sheer size of California. Compared to other states, California has one of the lowest per capita GHG emission rates in the country. This low rate reflects California's higher energy efficiency standards, its temperate climate, and its reliance on substantial out-of-state energy generation. Figure 6.4-3 shows GHG emissions in California by sector and per capita.



Source: CARB 2014

Figure 6.4-3. Greenhouse Gas Emissions in California by Sector and Per Capita (2000 to 2012)

6.4.2 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze global climate change. It also presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts. For this resource impact analysis, the physical, biological, and chemical management approaches were combined into one analysis since emissions will occur with all types of management approaches and the significance criteria are based on the total Proposed Program emissions, rather than individual types of management activities. Because impacts related to global climate change are by their nature cumulative, cumulative impacts are not discussed separately.

Methodology

GHG emissions from a given source or source category generally are calculated as the product of an emission rate, expressed as the amount of a pollutant emitted per some unit of source activity and a measure of that source's activity. These emission rates typically are known as emission factors. The following formula illustrates the basic relationship between the emissions rate and source activity that is used to calculate emissions:

Emissions = Emission Factor x Source Activity

This formula can be applied to calculate emissions from different source categories. For this analysis, emissions were calculated for activities that would use off-road equipment, aircraft, and on-road vehicles. A description of the methods, assumptions, and sources used to calculate the emissions for each of these source categories is provided in Appendix H, Air Quality and Greenhouse Gas Technical Report.

Emission factors for off-road equipment used in pesticide application activities were estimated using values from CARB's In-Use Off-Road Equipment Inventory Model (commonly known as OFFROAD2011) and OFFROAD2007 models (CARB 2011a and CARB 2007). OFFROAD2007 was used for those equipment types that have not been updated by CARB with newer models of certain equipment, including agriculture equipment and small gasoline powered equipment.

CARB has developed weighted average emission factors from several types of aircraft and helicopters typically used in agricultural settings. This analysis used these weighted values in pounds per gallon of fuel (CARB 1990). GHG emissions were estimated based on the jet fuel emission factor from the Local Governments Operation Protocol (CARB 2010). To convert from acres of land sprayed to fuel consumption, a factor of 0.1053 gallons of fuel per acre was used, as recommended by the Bay Area Air Quality Management District (BAAQMD) to reflect the average fuel consumption during aerial spraying[1] (BAAQMD 1999). Emission factors for aircraft were conservatively assumed not to change over time.

On-road vehicle emission factors were calculated using emission factor and fuel consumption data from CARB's EMFAC 2011 model (CARB 2013a). Emission factors were estimated on a statewide basis only and aggregated over all models and speeds for a given calendar year. Emission factors were used based on specific vehicle classes listed in EMFAC 2011, such as light-duty auto, light-duty trucks type 1 and 2, medium-duty vehicles, and light/heavy-duty trucks type 1 and 2.

Emission factors were obtained for calendar years 2010, 2014, 2020, 2030, and 2035. To establish baseline conditions for CEQA analysis, calendar year 2010 has been used because it is the most recent full year of data before publishing the Notice of Preparation of the Draft PEIR. Calendar year 2014 represents the year that the Draft PEIR is being publically circulated. Several future dates also were evaluated to represent regulatory effects on emissions in the future.

Baseline conditions were calculated by averaging readily available information from the period 2008 through 2010. Multiple years were chosen because activities under the Statewide Program vary from year to year. Therefore, the average of these 3 years was considered to better represent a typical year under baseline conditions, as opposed to selecting one single year. It is possible that these particular years may have involved an unusually high or low amount of Statewide Program activities in a particular air basin.

[1] Aerial spraying would not occur in residential areas.

However, the location and intensity of Statewide Program activities is inherently highly variable from year to year, based on the locations of pest infestations and quarantines. For this reason, earlier years were considered for use in the analysis, but they were determined not to provide more representative data.

Where information was not readily available for 2008 and 2009, data from 2010 was used. Where information was not available for a given year, the average value between years that had activity was used since it was not always known if lack of information meant no activity or unavailable information.

Emissions from use of pesticide application equipment were estimated based on the application method with the highest emission intensity for a given active ingredient, and based on the annual pesticide use for a county with quarantines and eradication activities. Aircraft activity was estimated based on the number of flight hours and/or fuel consumption. On-road vehicle miles traveled for various Statewide Program activities were based on estimates from CDFA. CDFA does not routinely conduct host removal activities that involve large, off-road equipment. Therefore, no emissions have been estimated for host removal.

Table 6.4-2 presents the GHG emission inventory for the baseline scenario. For the purposes of this analysis, the initial assumption was that the Proposed Program would have the same activity levels as the baseline. Using this assumption, Table 6.4-2 presents the future GHG emissions for 2014, 2020, 2030, and 2035. These future emissions would be an overestimate in some cases, because emission factors used to estimate future Proposed Program emissions do not fully reflect emission improvements and low carbon fuel standards for off-road equipment and aircraft.

Table 6.4-2. Greenhouse Gas Emission Inventory

Air Basin	CO_2e Emissions by Year (Metric Tons)				
	2010	2014	2020	2030	2035
Great Basin Valleys Basin	3	3	2	2	2
Lake County Air Basin	5	5	4	3	3
Lake Tahoe Air Basin	2	2	1	1	1
Mojave Desert Air Basin	5,995	5,946	5,689	5,775	5,765
Mountain Counties Air Basin	194	178	143	129	126
North Central Coast Basin	8,551	8,540	8,483	8,508	8,506
North Coast Basin	371	351	304	288	285
Northeast Plateau Basin	-	-	-	-	-
Sacramento Valley Basin	7,986	7,881	7,622	7,558	7,540
Salton Sea Air Basin	885	860	740	769	763
San Diego Air Basin	608	573	481	449	441
San Francisco Bay Area Basin	2,481	2,416	2,255	2,213	2,202
San Joaquin Valley Basin	28,758	28,621	27,904	28,234	28,213
South Central Coast Basin	3,723	3,605	3,269	3,210	3,186
South Coast Air Basin	5,741	5,678	5,508	5,456	5,443

Air Basin	CO_2e Emissions by Year (Metric Tons) 2010	2014	2020	2030	2035
Total	65,303	64,659	62,407	62,596	62,476
Percent Reduction from Baseline		1.0%	4.4%	4.1%	4.3%

Note: CO_2e = carbon dioxide equivalent

Source: Appendix H, Air Quality and Greenhouse Gas Technical Report

Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact related to global climate change if it would:

A. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

B. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

These thresholds of significance for impacts on global climate change henceforth are known as impact criteria. Each impact criterion for global climate change has been assigned an alphabetical code, as designated in the list above.

The primary goals for statewide GHG reductions are to reduce GHG emissions initially to 1990 levels by 2020, and eventually to 80 percent below 1990 levels by 2050, to stabilize GHG levels in the atmosphere. These goals are tied fundamentally to AB 32 and Executive Orders S-03-05 and B-16-2012. The necessary steps to achieve these goals have been interpreted in various ways. The California Air Pollution Control Officers Association described many options in its 2008 CEQA and Climate Change report (CAPCOA 2008). It is widely recognized that no single project could generate enough GHG emissions to change the global climate temperature noticeably. However, the combination of GHG emissions from past, present, and future projects could contribute substantially to global climate change. Thus, project-specific GHG emissions need to be evaluated in terms of whether or not they would result in a considerable contribution to cumulatively significant impacts related to global climate change.

The significance of GHG emissions can be approached in many different ways, as represented in various air district CEQA guidelines (some of which are in draft form and/or have been legally challenged). At this time, three major approaches are used: (1) a "bright line" threshold; (2) a performance standard; or (3) a percent below Business As Usual (BAU). In addition, some air districts feel that for most projects, no simple metric is available to determine whether a single project would substantially increase or decrease overall GHG emission levels. The bright line threshold approach sets a numerical mass emission limit for the incremental increase from baseline to future. For this PEIR, CDFA would establish best performance standards for Proposed Program activities. These best performance standards would evaluate the ways that CDFA could reduce GHG emissions while still effectively conducting pest management activities that may increase as part of adaptation because of global climate change.

It is widely acknowledged in the scientific community that global climate change may lead to increased pest infestations in California. However, no reliable method exists to specifically predict how infestations will change due to global climate change. As a result, the resulting location and extent of any change to the intensity of Proposed Program activities is unknown. Therefore, while the analysis of the various resource topics in this Draft PEIR considers a general trend of potentially increased Proposed Program activities, it has not attempted to speculate further regarding the specifics of such a trend.

Environmental Impacts of the Proposed Program

All Management Approaches

Impact GHG-1: Proposed Program activities potentially could conflict with an applicable plan, policy, or regulation adopted for reducing the emissions of greenhouse gases. (No Impact)

The State has implemented AB 32 to reduce GHG emissions in California. CARB released a Scoping Plan in 2008 that detailed the initial GHG reduction measures and programs it would implement to bring California GHG emissions to 1990 levels (CARB 2011b). This included implementing a renewable portfolio standard for electricity, establishing targets for transportation-related GHG emissions, implementing measures to decrease emissions from vehicles and equipment, and measures to address high global warming potential gases. The vehicles and equipment used in the Proposed Program will be subject to applicable emission reduction regulations such as the low carbon fuel standard, clean car standards, truck and bus rules, and vehicle hybridization.

In addition, the equipment that would be used to conduct Proposed Program activities is subject to numerous regulations, aimed at reducing GHG emissions from fossil-fueled equipment and motor vehicles. Proposed Program activities would be unlikely to conflict with local climate action plans because typically they would be similar to the strategies outlined in CDFA's Ag Vision report. Therefore, the Proposed Program would not appear to have any conflict with AB 32 or other applicable climate change plans and policies. There would be no impact.

Impact GHG-2: Use of off-road equipment, aircraft, and motor vehicles for Proposed Program activities could result in greenhouse gas emissions. (Significant and Unavoidable)

The Statewide Program requires the use of equipment that releases GHGs, such as trucks and aircraft. If the level of Proposed Program activities remains the same in the future, GHG emissions will decrease compared to the baseline because of regulated emission reduction requirements for vehicles and equipment, as shown on Table 6.4-2.

The extent to which Proposed Program activities may result in changed emissions in the future compared to baseline Statewide Program activities is difficult to predict. A greater extent of pest infestations may occur in the future, in particular because of global climate change, which is anticipated to lead to increased pest infestations in California. This could result in an increased intensity of pest management activities and shifts in the types of activities that may affect emissions, such as when activities have different emissions intensities (e.g., use of aircraft as opposed to trucks). Thus, Proposed Program emissions may not be able to achieve the AB32 goals of reaching 1990 levels by 2020, and 80 percent below 1990 levels by 2050. This would be a potentially significant impact.

CDFA currently implements all feasible measures to minimize GHG emissions. These include the following:

- CDFA requires its staff and contractors to use energy-efficient fossil-fueled equipment. This equipment uses the most fuel-efficient or alternative fuel equipment that is available to conduct the activity. CDFA also considers the use of after-market control devices to reduce emissions to the extent feasible.
- CDFA investigates the feasibility of and opportunities to electrify or use alternative fuel for automobiles and other equipment when making purchasing decisions.
- CDFA requires its staff and contractors to properly maintain and tune all its equipment in accordance with manufacturer's specifications.
- CDFA requires its staff and contractors to minimize idling times by shutting off equipment when not in use or by reducing the maximum idling time to 3 minutes. Clear instructional signage is provided in all CDFA vehicles and equipment.
- CDFA encourages the use of local staff and/or contractors to the extent feasible to minimize the amount of vehicle miles traveled to conduct Proposed Program activities.

No additional feasible measures exist beyond those outlined above that CDFA could implement to further reduce GHG emissions. In particular, CDFA lacks the authority to mandate emission reductions on the equipment used by individual growers and applicators in response to CDFA quarantines; this is the responsibility of other agencies, such as CARB. Therefore, the impact would be significant and unavoidable.

Section 6.5

Hazards and Hazardous Materials

6.5 Hazards and Hazardous Materials

This section presents the environmental setting and potential impacts of the Proposed Program related to hazards and hazardous materials. This section incorporates results from the Ecological Risk Assessment and Human Health Risk Assessment conducted for the Proposed Program, provided in Appendices A and B, respectively.

Under federal and State laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such, or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). The term "hazardous material" is defined as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment (California Health and Safety Code, Chapter 6.95, Section 25501[o]).

6.5.1 Environmental Setting

The following discussion describes pesticide use in California, pesticide application and exposure, pesticide exposure incidents, pesticide drift, sensitive receptors, highly affected and socioeconomically disadvantaged communities, other hazardous materials generation and usage in California, and use of aircraft in agricultural and nursery settings (not residential), to provide context for the impact evaluation of the Proposed Program.

Pesticide Use in California

Pesticides are used throughout California—by state and local jurisdictions as well as by private growers and homeowners—for pest control around buildings and structures, protection of residential fruit trees, landscape maintenance, public health, sanitation, and commercial agriculture both within and outside CDFA's purview. Section 5.4.2, Pesticide Use in Residential, Commercial, Natural, and Agricultural Environments in California, provides an overview of the types and quantities of pesticides used, the setting in which they are used, and reporting requirements.

The pesticide products, and their ingredients, that may be used under the Proposed Program are listed in Appendix M. Many products and ingredients have multiple names, and so that appendix also includes those synonyms. Information is not available on certain ingredients included in these products because these ingredients are proprietary information to the product manufacturers.

The chemicals contained in the pesticides and studied in this PEIR can be categorized based on various regulatory restrictions or human health hazard endpoints. Section 5.4.2, Pesticide Use in Residential, Commercial, Natural, and Agricultural Environments in California lists and describes these classifications.

Pesticide Application and Exposure

Trends in pesticide use in California are informative in indicating the amount of pesticides that are used in the state that may result in hazard to the public or the environment through routine transport, use, or disposal. The potential hazard caused by use of pesticides is not necessarily directly related to the amount of pesticides used because the toxicity of the pesticide and dispersal in the environment also are important factors. Some chemicals break down quickly, while others persist in the environment for a long time. The potential exposure of a receptor depends on the dispersion pathway of the chemical (i.e., air, water, soil, vegetation). Exposure and dispersal also is influenced by the application technique. Different application techniques include infrequent aerial applications in non-residential settings, ground applications for foliar and soil treatments, and baited traps. Both EPA and CDPR review or conduct ecological and human health risk assessments before registration for use of a pesticide. Details of individual pesticide assessments can be found at the respective agency websites (EPA 2014, CDPR 2013a). EPA has recognized that cumulative effects may result from multiple pesticides that have the same mode of action. In particular, EPA has identified organophosphates, n-methyl carbamates, triazines, chloroacetanilides, and pyrethrins/pyrethroids as distinct groups of pesticides with similar modes of action, and the agency has conducted cumulative risk assessments on each of these groups. EPA has concluded that each of these groups of pesticides, when evaluated cumulatively, do not exceed EPA's level of concern when appropriate mitigation measures are implemented (EPA 2012a).

The ecological and human health risk assessments conducted by EPA and CDPR (as well as the Ecological and Human Health Risk Assessment completed for this PEIR) assume that existing laws and regulations regarding pesticide use are followed, as well as proper use of recommended personal protective equipment. The Pesticide and Pest Control Operations sections of the CCR, Cal/OSHA, and numerous federal regulations all work together to ensure the safe use and handling of pesticides, including oversight that proper methods and personal protective equipment are used, as discussed in Section N-5 of Appendix M. The next section, Pesticide Exposure Incidents, discusses incidents of pesticide exposure that have been reported, typically from improper use of pesticides.

Typical human health symptoms of acute pesticide exposure that may be experienced up to a day post-exposure include the following (CDPR 2008a):

- Flu-like symptoms, including tiredness, headache, or dizziness
- Blurred vision
- Stuffy nose, sore throat or coughing
- Eye, nose or skin irritation
- Excessive sweating
- Vomiting, diarrhea, or stomach cramps
- Nervousness, confusion, or loss of coordination
- Weakness or inability to walk
- Chest discomfort

- Pinpoint pupils
- Foam at the mouth and nose
- Difficulty breathing
- Loss of consciousness or going into a coma

Human health effects of chronic exposure to pesticide products include the following:

- Cancers
- Reproductive harm and birth defects
- Neurological disorders

Pesticide Exposure Incidents

CDPR administers the Pesticide Illness Surveillance Program that requires mandatory reporting to summarize illnesses that may be a result of pesticide exposure. The latest annual report available is for 2010 (CDPR 2013b). In 2010, CDPR identified 1,114 cases of potential health effects of pesticide exposure, which is within the range typical of recent years. CDPR concluded that pesticide exposure was a possible contributing factor to 73 percent (811) of the cases. Agricultural use of pesticides was the source of exposure in 231 of the cases, but whether any of these incidents were related to treatments under the Statewide Program is not reported and is therefore unknown. Of the 811 pesticide-related cases, 51 percent were determined to be a result of violation of safety requirements that may have been avoided if regulations were strictly followed; 27 percent of the pesticide-related cases were determined to have resulted in adverse health effects even though apparent compliance with applicable label instructions and safety regulations occurred; and 45 of these cases were related to agricultural activities; once again, whether any of these incidents were related to the Statewide Program is not reported and is therefore unknown. Of the 811 cases of pesticide exposure, 22 people were hospitalized and 98 people reported time lost from work. Most of the people who were hospitalized ingested a pesticide and several acknowledged suicide attempts. Five fatalities were reported; three of them suicides, one from accidental ingestion resulting from a prank, and one was an Alzheimer's patient who entered a home that was being fumigated. The following is a summary of major incidents that prompted further action:

- **Methyl bromide fumigation in cold storage facilities**: After two inspectors fell ill following inspection of fruit that had been fumigated, CDPR inspected fumigation practices and monitored levels of methyl bromide at the cold storage facilities and discovered excessive off-gassing of methyl bromide. In response, California cold storage facilities have installed or deployed methyl bromide monitoring systems, implemented exposure control protocols (such as ventilation and work hour restrictions), conducted pre-purging of trailers before off-loading, and educated workers about methyl bromide.
- **Agricultural pesticide drift**: In 2010, 115 field worker illnesses from 12 separate episodes were associated with pesticide drift. One large episode involved field workers arriving to harvest crops about 1,200 feet from an ongoing treatment in a

nearby field, with winds blowing between 3 and 7.7 miles per hour in the direction of the harvest crew. In addition the pesticide applicators were not familiar with the pesticide being applied. A second large episode involved a harvesting crew who unknowingly violated an active inner buffer zone when they arrived to work in a field adjacent to another field that had been treated the previous day. This incident was a result of the buffer zone having inadequate signage, the grower neglecting to warn the workers, and the grower neglecting to adhere to the restricted entry interval. More information on pesticide drift and reducing exposure is discussed in the next section, Pesticide Drift.

- **Non-agricultural pesticide drift**: In 2010, 146 illnesses resulted from pesticide drift that was associated with non-agricultural pesticide applications.
- **Schools**: In 2010, 44 illnesses were associated with pesticide exposure that occurred in schools. One incident involved an agricultural field that was undergoing fumigation about 0.3 mile from the school, where the pesticide applicator failed to comply with permit conditions.

Pesticide Drift

CDPR defines pesticide drift as the movement of a pesticide through the air, away from the intended target (CDPR 2013a). This drift can be in the form of mist, particles, or vapor (gas). Some pesticide drift is expected from aerial and other aboveground pesticide applications and cannot be completely prevented. Thus, California regulations require for pesticides to be used in a manner that prevents substantial drift to nontarget areas and prohibits applications if a reasonable possibility of harm exists to people or property. CDPR and CACs make sure that pesticide levels in the air do not pose a risk to human health and the environment through enforceable standards on how, when, and where pesticides can be applied. A study by Lee et al. (2011) suggests that common causes of pesticide drift exposure in humans include:

- Applicator inaccuracy
- Unfavorable weather conditions (e.g., high wind speed and temperature inversions)
- Poor communication between applicators and others

California residents in five agriculture-intensive counties (i.e., Fresno, Kern, Madera, Monterey, and Tulare counties) have been found to have a 69 times higher risk of pesticide poisoning from drift exposure, compared to other California counties (Lee et al. 2011). The extent to which this may be occurring as a result of Statewide Program activities, including treatments conducted in response to a CDFA quarantine, is not reported and is therefore unknown. Drift incidents can result in pesticide exposure to field workers, school children, persons traveling on public roads, and residential neighborhoods. In addition, pesticide drift may cause contamination or damage to crops in neighboring fields and may contaminate waterways and wildlife habitat. The proximity of individuals and sensitive sites to the pesticide application, the amounts of pesticide drift, and toxicity of the pesticide are important factors in determining the potential impacts from pesticide drift.

Field workers are particularly at risk from pesticide drift. In 2010, pesticide drift was responsible for 83 percent of reported pesticide illnesses among California field workers

(CDPR 2013a). The risk of pesticide exposure was determined to be even greater among migrant farm workers because of language barriers when observing pesticide warning signs, reading educational materials, and taking training classes (Cabrera and Leckie 2009). However, the extent to which this may be occurring as a result of Statewide Program activities, including treatments conducted in response to a CDFA quarantine, is not reported and is therefore unknown.

CDPR investigates all incidents of pesticide drift and actively modifies regulations and permit conditions, based on what is learned from its investigations, to minimize future exposure incidents resulting from pesticide drift. CDPR's Pesticide Drift Incident Response Policy requires the CAC to promptly investigate any incident involving pesticide drift, and to determine whether the applicator violated Section 12972 of the CFAC, 3 CCR Section 6614, or other regulations (CDPR 2000). To minimize pesticide drift, pesticide labels may direct applicators not to apply the product when environmental conditions favor drift (e.g., windy conditions) or may include specific use directions, designed to minimize pesticide drift. In addition, CACs may include additional conditions that take into account local conditions (such as protect schools or endangered species habitats), to minimize pesticide drift when issuing permits. Other methods aimed at minimizing pesticide drift include drift labeling regulations, drift reduction technology programs that encourage development and use of application technologies that are verified to reduce spray drift, and implementation of Proposed Program management practices (MPs).

Sensitive Receptors

Exposure to pesticides and other hazardous materials is of particular concern with respect to individuals considered to be "sensitive receptors." Physiologically, sensitive receptors are individuals that may have a substantially increased sensitivity or exposure to contaminants because of their age, health, or proximity to the contamination (e.g., children, fetuses, the elderly, the infirm, and farm workers). Consideration of potential health effects to these sensitive receptors are particularly important with respect to use of hazardous materials near schools, daycare centers, education-related facilities, hospitals, nursing homes, retirement homes, agricultural lands, playgrounds, athletic fields, and parks. Several statewide databases are available to assist in identifying potential sensitive receptor locations that may exist in proximity to pesticide applications. The California Department of Education has the California School Directory available online that identifies all California public schools, private schools, and nonpublic nonsectarian schools by county or zip code (CDE 2014). California Department of Social Services (CDSS) has an online listing of all community care licensed facilities that identifies child care and elderly care facilities in California (CDSS 2014). The California Office of Statewide Health Planning and Development lists healthcare facilities online (California Office of Statewide Health Planning and Development 2014).

Various sensitive receptor groups are discussed in further detail next.

Children

Children are at a greater risk for some pesticides, for a number of reasons. Children's internal organs are still developing and maturing, and their enzymatic, metabolic, and immune systems may provide less natural protection than those of an adult. In addition, children may be exposed more to certain pesticides because of the foods that typically are part of their diets may contain greater trace amounts of those pesticides (e.g., milk, applesauce, and orange juice), their physical behavior when outdoors (e.g., playing on the ground, hand-to-mouth activity, which could expose them to soil containing pesticide residues), and exposure to parents bringing pesticide residue home (particularly those parents who are farm workers). No reliable way exists to determine the incidence of pesticide exposure and illness in U.S. children; existing data systems, such as the American Association of Poison Control Centers' National Poison Data System and the National Institute for Occupational Safety and Health's Sentinel Event Notification System for Occupational Risks capture limited information about acute poisoning and trends over time (American Academy of Pediatrics 2012).

However, epidemiological studies have suggested an adverse association between organophosphate exposure and neurodevelopment (Eskenazi et al. 2007). In addition, numerous studies suggest some association between pesticide exposure and childhood leukemia and other cancers (Infante-Rivard and Weichenthal 2007, Bassil et al. 2007). The CHARGE Study (Shelton et al. 2014) also identified an association between gestational exposure to several agricultural pesticides (e.g., organophosphates, chlorpyrifos) and autism spectrum disorders (ASD). The CHARGE Study found that proximity to organophosphates at some point during gestation was associated with a 60% increased risk for ASD (Shelton et al. 2014).

Fetuses

Fetuses also are at a greater risk for some pesticides. Studies have shown that when pregnant mothers were exposed to pesticides, the fetuses subsequently were exposed (Bradman et al. 2003). The true extent and nature of pesticide exposure on adverse fetal growth and birth outcomes is unknown, despite suggestive epidemiological studies that link some of the most widely used pesticides to reduced intrauterine growth, fetal death, preterm birth, and congenital anomalies (American Academy of Pediatrics 2012). For example, recent observational studies have found correlations between exposures to various pesticides and adverse fetal conditions. Bouchard et al. (2011) found an inverse correlation between prenatal exposure to organophosphate pesticides and cognitive abilities in children at 7 years of age. Bassil et al. (2007), Turner et al. (2009), Wigle et al. (2009), Ferreira et al. (2013), and other epidemiological studies have found a positive correlation between prenatal exposure to pesticides and incidence of childhood leukemia.

Elderly

The elderly are at a greater risk of pesticide exposure for several reasons. Not only is absorption through the skin easier (caused by thinning of skin during the aging process), but aging results in reduced blood flow to the liver and kidneys, which also decrease in size as a person ages. Reduced blood flow and decreases in liver and kidney size can work together to slow the breakdown and removal of pesticides from the body. According to the National Pesticide Information Center (2011), older adults may be more likely to have health problems after a pesticide exposure and may need more time to heal for the following reasons:

- The liver and kidneys become less able to remove pesticides as a person ages. Pesticides may speed up the aging of the liver or kidneys if these organs are injured during an exposure. Older adults may become even less able to remove pesticides from the body after the liver or kidneys are affected.
- The longer a pesticide stays in the body, the more likely it is to build up to levels that may cause injury. Older adults may have health problems after a pesticide exposure simply because their bodies can no longer remove pesticides quickly.
- Chemicals such as prescription drugs or pesticides can react with each other once they are inside the body. These chemical reactions may cause unexpected health effects in older adults for two reasons: (1) older adults may take more prescription medications than younger people, and (2) chemicals stay in the bodies of adults longer, so they have more time to react. Both of these reasons increase the chance that a drug will interact with a pesticide that enters the body.

Epidemiological studies have shown a correlation between exposure to pesticides and neurological diseases in the elderly (Baldi et al. 2003).

Farm Workers

Farm workers are at particular risk of pesticide-related illness because they are more likely than many other individuals to be occupationally exposed from mixing, loading, and applying pesticides, or while performing duties not involved with pesticide application (e.g., weeding, harvesting, thinning, irrigating, or planting) (Calvert et al. 2008).

According to a survey by Aguirre International (2005), approximately 99 percent of California farm workers are Hispanic; 95 percent of California farm workers were born in Mexico, and 4 percent were born in Central America. The primary language of 96 percent of California farm workers is Spanish; only 2 percent state that English is their primary language; however, 11 percent of California farm workers were able to read English "well" or "somewhat" as either their primary or second language; 12 percent were able to speak English "well" or "somewhat." These data point to some of the health challenges associated with being a farm worker. For example, according to Das et al. (2001), cultural and language differences among the farm worker population may act as barriers to occupational health. In addition, the ability to read and understand English may be necessary for observing pesticide warning signs, reading educational materials, and training to be effective. A survey of California farm workers by Villarejo et al. (2000) indicated that only 57 percent said they had received pesticide safety training. EPA is considering a requirement for the health and safety-related portions of pesticide labels (e.g., acute toxicity information, protective equipment) to be printed in Spanish (Gayoso, pers. comm., 2013).

Assessing the pesticide-related illnesses in farm workers is difficult because such illnesses often go unreported. Affected individuals often do not seek medical help, and when they do, the health care provider may not recognize the illness as being pesticide-related, and/or the health care provider may not report the illness on the appropriate forms and submit them to the appropriate agencies (Das et al. 2001, Hansen and Donohoe 2003). Many farm workers do not seek medical help because they do not have health insurance (approximately 70 percent of farm workers) or, if they do have insurance offered to them, cannot afford to pay the premiums or co-payments; nearly one-third of male agriculture workers randomly selected in the late 1990s said they had never been to a clinic or doctor's office (Villarejo et al. 2000).

Although studying possible links between farm worker illness and pesticide exposure is difficult, some data exists regarding the health of U.S. farm workers in general. In their studies, Hansen and Donohoe (2003) pointed out the following regarding American migrant and seasonal farm workers (MSFWs):

- The average life expectancy of MSFWs is 49 years, compared to the national average of 75 years.
- MSFWs are approximately six times more likely to have tuberculosis than the general population.
- Parasitic infection rates for MSFWs are 11 to 59 times higher than in the general population.
- Migrant farm workers suffer from the highest rates of toxic chemical injuries among all groups of workers in the U.S.
- EPA estimates that 300,000 farm workers in the U.S. suffer acute pesticide poisoning each year.
- Chemical and pesticide poisoning may result from direct spraying of workers; indirect spray from wind drifts; direct dermal contact with residue on crops; bathing in, or drinking, contaminated water; or transfer of residues from contaminated hands while eating, smoking, or defecating.

Because of their close proximity to treated areas, a major cause of pesticide-related illness among farm workers is pesticide drift (Calvert et al. 2008). This is discussed in the previous section, Pesticide Drift.

Conclusion

These various types of sensitive receptors were considered in CDFA's evaluation of potential human health risks of the Proposed Program, discussed in the Human Health Risk Assessment (Appendix B). CDFA implements, and as further described in the impact analysis below, would continue to implement, precautionary measures to minimize potential for adverse health effects resulting from the Statewide Program.

Highly Affected and Socioeconomically Disadvantaged Communities

In addition to physiologically sensitive receptors, some individuals have been recognized to be at increased risk to pesticide-related illness because of a combination of physiological, social, economic, and environmental factors. Although awareness has increased that this combination of conditions needs to be factored into analyses, a standardized methodology or adopted threshold of significance with which to compare values to make a quantitative determination does not exist (NRC 2011, OEHHA 2013b). California has taken some initial steps toward informing the public and decision makers on some of these key influencers through the creation of the CalEnviroScreen Program.

The CalEnviroScreen tool, developed by OEHHA, is a science-based tool for evaluating multiple pollution sources in a community while accounting for a community's vulnerability to pollution's adverse effects (OEHHA 2013b). It maps the distribution of sensitive receptors, as well as other factors that contribute to the vulnerability of communities to pesticides and other hazardous substances. CalEnviroScreen was developed by Cal/EPA and OEHHA to help achieve their goals of environmental justice, or "the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation and enforcement of environmental laws, regulations, and policies." With respect to the Proposed Program, CalEnviroScreen provides a comprehensive look at the baseline conditions in California in terms of environmental justice.

CalEnviroScreen uses indicators such as concentration of air particulate matter (PM), amount of pesticide use, amount of toxic chemicals released into the environment, and total traffic volumes to determine the Pollution Burden of an area (by zip code). It uses indicators such as percent of population under age 10 and over age 65, percentage of the population over age 25 with less than a high school education, percentage of households in which no one age 14 and over speaks English "very well" or speaks English only, and percent of the population that is non-white or Hispanic/Latino to determine the sensitivity, or Population Characteristics, of a community (OEHHA 2013b).

For a given area, CalEnviroScreen assigns each indicator a percentile (or rank) based on its relationship to indicator values in other locations, and then the pollution burden and population characteristics groups are each assigned a score. The score for each group is a weighted average of the percentiles for all the individual indicators, with exposure indicators such as PM 2.5 (particulate matter with aerodynamic radius of 2.5 micrometers or less) concentration counting twice as much as environmental effects indicators such as number of impaired waterbodies. The overall EnviroScreen score for each zip code then is calculated by multiplying the score for the pollution burden group by the score for the population characteristics group (OEHHA 2013b).

CalEnviroScreen assesses community vulnerability and environmental justice at the zip code level; thus, it is difficult to determine trends at the county or statewide scale. However, the statewide results from the CalEnviroScreen model seem to indicate generally that areas of the state with high levels of exposure to hazardous materials, such as pesticides, also are more vulnerable to the effects of those hazardous materials. The Central Valley, for example, has high levels of air contamination (PM 2.5) and pesticide use, as well as high levels of poverty, a high proportion of non-white or Hispanic/Latino residents, and low levels of education (OEHHA 2013b). Therefore, the area has a high pollution burden score and a high population characteristics score.

Figure 6.5-1 shows the results of the CalEnviroScreen model for the entire state. On the figure, a higher score corresponds with increased vulnerability of communities to pesticides and other hazardous substances. With respect to the Proposed Program, this figure illustrates existing conditions in terms of highly impacted and socioeconomically disadvantaged communities. Several agricultural areas of the state are scored relatively high.

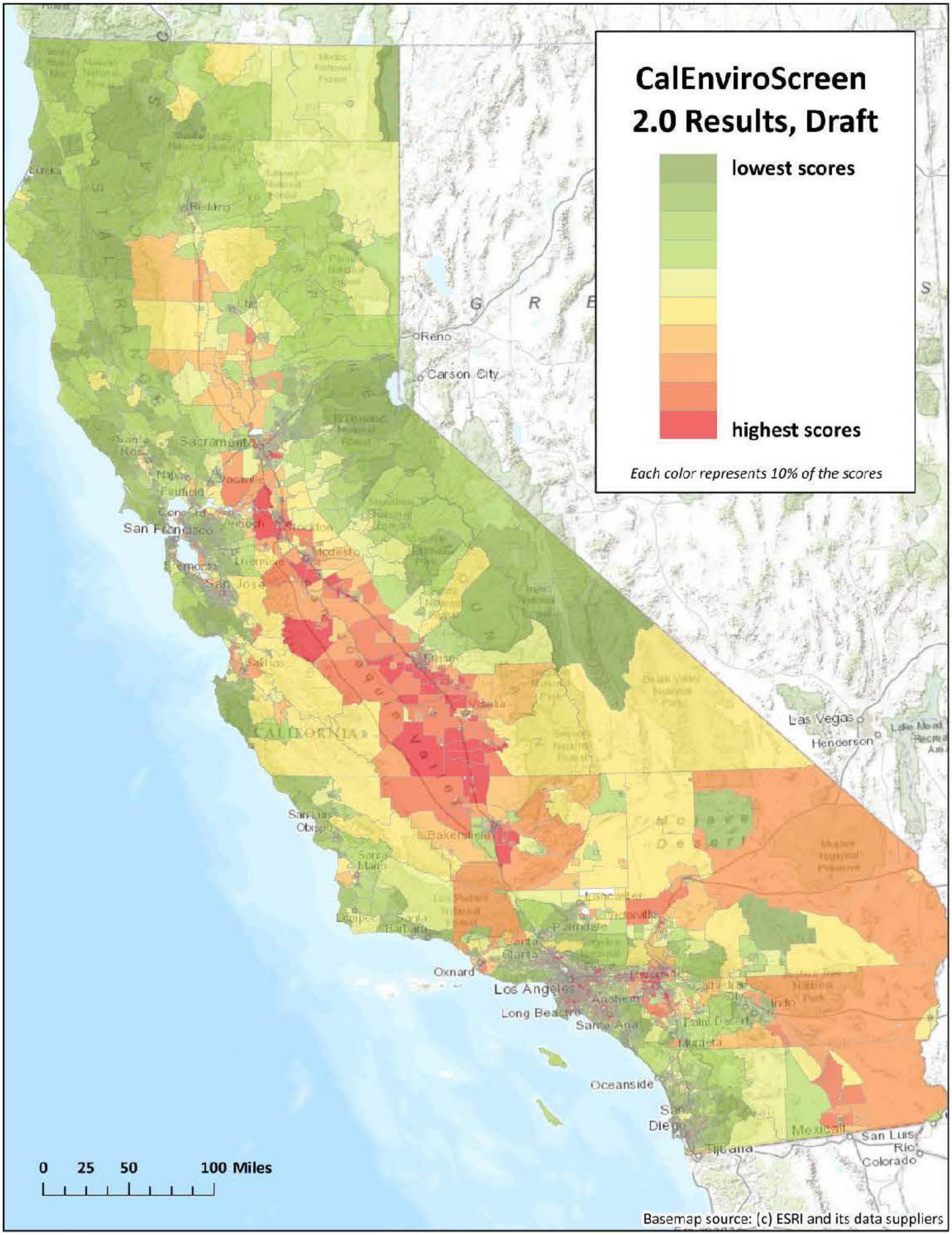
Looking at the counties that show some of the highest rank scores in CalEnviroScreen, many are in agricultural areas and in locations where CDFA has pest management activities ongoing. For instance, the Central Valley, which is a major California agricultural area, has some of the highest scores. Other areas that stand out are the agricultural areas in Imperial and Santa Cruz counties. High scores also are found in Los Angeles and Orange counties, where large number of people live and where CDFA conducts several invasive pest programs because the area is near major international ports of entry into California.

The CalEnviroScreen documentation clearly states that the scoring results are not directly applicable to the cumulative impacts analysis required under CEQA. The tool considers some social, health, and economic factors that may not be relevant when performing an analysis under CEQA. The analysis cannot predict or quantify specific health risks or effects associated with cumulative exposures that are identified for a given community or individual (OEHHA 2013b). For this reason, the CalEnviroScreen model was not used in the impact analysis conducted for this Final PEIR, but it does provide important context for the impact analysis.

Other Hazardous Materials Generation and Usage in California

Numerous other hazardous materials besides pesticides are generated and used in California. The Hazardous Waste and Substances Sites List, also known as the Cortese List or California Superfund, is a planning document used by the State and its various local agencies and developers to comply with CEQA requirements (it is required as a mitigation measure in this Final PEIR) in providing information about the location of hazardous materials release sites. Section 65962.5 of the California Government Code requires Cal/EPA to keep the Cortese List updated annually.

DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List (Cal/EPA 2012). The list is maintained via DTSC's EnviroStor database. The EnviroStor database is an online search and Geographic Information System tool for identifying sites that have known contamination or sites for which reasons may exist to investigate further. As described in the impact analysis below, under the Proposed Program, CDFA would use this database to identify potentially contaminated work sites. It also identifies facilities that are authorized to treat, store, dispose or transfer hazardous waste. Users can conduct searches using various criteria, including facility/site name, address, city, and county. The database currently contains 518 sites, including the Federal Superfund sites (DTSC 2013). It also maintains corrected sites (sites have been cleaned up), partially corrected sites, and listed Certified with Operation and Maintenance sites (sites have certified cleanup, but have ongoing operation and maintenance activities). In addition to existing hazardous waste and substances sites, 118 DTSC-permitted hazardous waste facilities are found in California (DTSC 2013).



Horizon WATER and ENVIRONMENT

Figure 6.5-1
CalEnviroScreen Statewide Results

Aircraft Safety

Aerial pesticide applications are a component of many pest management programs, and under the Proposed Program, may occur infrequently in agricultural and nursery (but not residential) settings. Aerial applications can provide more accurately timed control treatments without waiting for suitable ground conditions. This may allow treatments with minimal adverse impacts on other agricultural practices. This ability to respond quickly can allow pest managers to reduce the amount of pesticides required to manage certain pests.

Pest control pilots are certified by CDPR to make pest control applications in California, and they work in two general use settings, agricultural and nonagricultural. Typical agricultural use settings include:

- Field and row crops
- Vine and tree crops
- Grain crops
- Ornamental plants, turf, and sod production
- Forests used for recreation and commercial production, including forest nurseries
- Rangeland and pastures
- Nurseries for ornamental plants and food crops

Applications also may occur in large, nonagricultural, industrial, or commercial land use settings, such as airports or equipment storage yards. These applications generally are for weed control and vegetation management. Two other types of applications, right-of-way and vectored-disease pest control, may cross over various agricultural and nonagricultural use settings.

6.5.2 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze hazards and hazardous materials. It also presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts. For this resource impact analysis, several of the physical, biological, and chemical management activities were combined into one analysis since their potential impacts would be similar or identical. Activity-specific potential impacts are then discussed.

Methodology

Impacts related to hazardous materials were analyzed both quantitatively and qualitatively based on a review of the chemicals and equipment that may be used as part of the Proposed Program. The analysis focused on the Proposed Program's potential to create hazards to humans through the transport, use, exposure, or accidental release of hazardous materials. These were analyzed in the context of existing laws and regulations, and the extent to which these existing regulations and policies adequately address and minimize the potential impacts of the hazards associated with the Proposed Program. The analysis builds off of the evaluation conducted for the Human Health Risk Assessment (Appendix B). A detailed overview of the risk assessment approach is provided under Human Health Risk Assessment Methods in Section 6.0.6, Environmental Risk.

A traditional HHRA uses established methodologies that allow decision makers to make an assessment on the amount of risk that a project may pose to make appropriate risk management decisions and does not represent the absolute scientific risk to an individual. EPA states in its Risk Assessment Principles and Practices that EPA cannot protect every individual but rather attempts to protect individuals who represent high-end exposures and tries to protect sensitive individuals based on normal distribution of sensitivities (EPA 2004). EPA considers the most sensitive individuals where data is available, but does not necessarily attempt to protect hypersensitive individuals.

In recognition that other factors may need to be considered in making a risk-based decision, the following information on other human health considerations is presented below on multiple chemical sensitivity and interaction of physiological and socioeconomic factors with health effects. No appropriate methodology exists to incorporate this information into a risk assessment and adequate scientific knowledge, data, and understanding is not available to make a meaningful assessment. Any analysis of this information would be speculative because a lack of sufficient scientific understanding exists on these issues.

Further discussion of several key topics related to these considerations is provided below.

Multiple Chemical Sensitivity

Multiple chemical sensitivity (MCS), or Idiopathic Environmental Intolerance, or Toxicant Induced Loss of Tolerance (TILT), is an adverse physical reaction to low levels of many common chemicals, including pesticides (U.S. Department of Labor 2013). However, many recognized groups and societies, including the Centers for Disease Control and Prevention, the American Medical Association, and the American Academy of Allergy, Asthma and Immunology do not consider MCS to be a distinctive physical disorder, nor does an official definition of MCS exist because symptoms and chemical exposures are often unique and vary widely between individuals. (Cleveland Clinic Foundation 2009, Johns Hopkins Medicine 2013).

The National Institute of Health defines MCS as a “chronic recurring disease caused by a person’s inability to tolerate an environmental chemical or class of foreign chemicals” (NIEHS 2004). Many who suffer from MCS report of severe sensitivity or allergic reactions to different hazardous materials, such as solvents, diesel, and pesticides. The more common symptoms of MCS include stinging eyes, wheezing, breathlessness, nausea, extreme fatigue, headache, migraine, vertigo, poor memory and concentration, and runny nose (Heimlich 2008).

Conclusive scientific evidence does not exist to substantiate MCS as a physical disorder with physical cause(s). In addition, it is difficult to classify MCS as a true disease or illness because of the complex nature of chemicals in the environment and the interaction effects with and within the human body. Adding to this complication is the fact that these effects are not consistent among all people and are not isolated to only MCS. Most symptoms of MCS are common to other established illnesses, diseases, stress, and stimuli (Heimlich

2008). Presently, a diagnosis of MCS is based commonly on self-reported symptoms and chemical exposure histories. The symptom profile of MCS is indistinguishable from other multi-symptom disorders. No laboratory tests currently exist for diagnosing MCS (NICAS/OCSEH 2010). Different case definitions and the lack of a characteristic symptom profile and objective laboratory biomarkers for MCS have impeded recognition of the disorder as a distinct clinical entity.

Scientific investigations of MCS have concluded that there is insufficient evidence to confirm a causal relationship between low-level chemical exposure and allergy, toxic effects, and neurobiological sensitization (Magill et al. 1998). A critical review of the scientific literature on MCS concluded that (Graveling et al. 1998):

> Despite extensive literature on the existence of MCS, there is no unequivocal epidemiological evidence; quantitative exposure data are singularly lacking; and qualitative exposure data are, at best, patchy. There is also some evidence to suggest that MCS is sometimes used as an indiscriminant diagnosis for undiagnosed disorders.

Studies have concluded that although the symptoms of MCS appear to be real, the underlying causes of MCS are not understood (Magill et al. 1998, Graveling et al. 1998). Proposed theories to explain the cause of MCS include allergy, dysfunction of the immune system, neurobiological sensitization, problems with the nitric oxide and its oxidant product peroxynitrite cycle (NO/ONOOO cycle), initiation by a toxic exposure which leads to the loss of tolerance for common chemicals, and various psychological theories. Insufficient scientific evidence exists to confirm a relationship between any of these possible causes and symptoms (U.S. Department of Labor 2013). This lack of a causal relationship between exposure and health effects prevents the inclusion of MCS in an analysis of health impacts resulting from hazardous chemicals. Therefore, the Human Health Risk Assessment that was prepared for this PEIR does not include a quantitative analysis of MCS.

Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact related to hazards and hazardous materials if it would:

A. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

B. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

C. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school;

D. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Section 65962.5 of the Government Code and, as a result, create a significant hazard to the public or the environment;

E. For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area;

F. For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area; or

G. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands,

These thresholds of significance for impacts related to hazards and hazardous materials are henceforth known as impact criteria. Each impact criterion is assigned an alphabetical code, as designated in the list above. Direct, indirect, and cumulative impacts under each applicable impact criterion are analyzed below

Environmental Impacts of the Proposed Program

All Management Approaches

Impact HAZ-GEN-1: Release of hazardous materials resulting from routine transport, storage, and use of fuel and oil related to the use of automobiles, aircraft, and other equipment could pose a hazard to Proposed Program workers as well as the general public and environment. (Less than Significant)

Hazardous materials that would be used or transported to support the use and maintenance of the Proposed Program's equipment would include fuels, lubricating oil, grease, and/or hydraulic fluid. These materials would have the potential to pose a hazard to individuals implementing Proposed Program activities, as well as the general public and the environment. Accidental spills or improper use, storage, transport, or disposal of these hazardous materials could result in pollutant contamination at the location(s) of these occurrences, and could be a potential, although unlikely, hazard off-site with regard to nearby sensitive receptors and the general public. The transport of hazardous materials to the underlying soils and groundwater (particularly during storm events) also could occur.

Although these hazardous materials could pose a hazard as described above, Proposed Program activities would be required to comply with extensive federal, State, and local regulations so that substantial risks would not result. Examples of compliance with these regulations would include preparation of a hazardous materials business plan, which would include a training program for employees, an inventory of hazardous materials, and an emergency plan (Cal OES 2014). Implementation of the applicable provisions of EPA, OSHA, Cal/OSHA, Cal/EPA, Cal EMA, and CUPA permitting processes would fully address potential hazardous materials conditions. Therefore, the impact would be less than significant.

Impact HAZ-GEN-2: Proposed Program activities could create a substantial hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant)

Proposed Program activities may require the transport and use of various hazardous and toxic materials, such as pesticides, fuels, and lubricants. Accidental release of any of these materials into the air, soil, surface water, or groundwater may have a substantial effect on the environment. However, as described in Chapter 2, Proposed Program Description, the Proposed Program would incorporate MPs for safety and housekeeping, including spill prevention and response measures. Implementation of the Proposed Program is not expected to result in substantial increases in the number of spills and accidents. Therefore, the existing measures and regulatory requirements currently in place to address spills and accidents would be sufficient for the Proposed Program. Therefore, the impact would be less than significant.

Impact HAZ-GEN-3: Proposed Program activities could emit hazardous emissions or Proposed Program staff could handle hazardous or acutely hazardous materials, substances, or waste related to the use of automobiles and other equipment within 0.25 mile of an existing or proposed school. (Less than Significant)

Although generally unlikely and to be avoided when possible, Proposed Program activities may need to occur at or near existing or proposed school sites. These activities may use vehicles that operate on diesel or gasoline, whose fumes may be hazardous to school children, teachers, and others if they are exposed for long periods of time. In very limited instances, activities at schools may require that Proposed Program staff or contractors handle hazardous or acutely hazardous materials, substances, or waste related to automobiles and other equipment in the proximity of an existing or proposed school. If this becomes necessary, CDFA would attempt to conduct the activity when children would not be present. In addition, such activities would not occur for a sufficiently extended period of time to create a heightened risk to any school. Therefore, the impact would be less than significant.

Impact HAZ-GEN-4: Proposed Program activities could occur on a site that is included on a list of hazardous materials sites compiled pursuant to Section 65962.5 of the Government Code and, therefore, could create a significant hazard to the public or the environment. (Less than Significant with Mitigation)

The possibility exists that specific activities under the Proposed Program could occur on sites included on a list of hazardous materials sites, which could expose workers, the public, or the environment to a significant hazard. In addition, previously unknown or undiscovered hazardous materials could be encountered during Proposed Program activities that could pose a significant risk to workers, the public, or the environment. For certain activities, the nature and location of the activity would make it unlikely that such exposure would occur. For instance, inspection activities at existing border stations would be unlikely to result in such an exposure. However, for specific Proposed Program activities which could occur on a hazardous materials site, the impact would be potentially significant. Implementation of Mitigation Measures HAZ-GEN-4a, HAZ-GEN-4b, and HAZ-GEN-4c would reduce this impact to a less-than-significant level.

Mitigation Measure HAZ-GEN-4a: Determine Potential for Hazardous Materials Exposure.

Before conducting any activities under the Proposed Program, CDFA staff (or the entity conducting the activity) shall determine whether the potential exists for the activity, based on its characteristics and location, to result in exposure to existing sites of hazardous materials contamination.

Mitigation Measure HAZ-GEN-4b: Conduct a Hazardous Materials Records Search before Beginning Proposed Program Activities at a Given Site.

If exposure to hazardous materials contamination is determined to be a possibility, before conducting the activity under the Proposed Program, CDFA staff (or the entity conducting the activity) shall search the EnviroStor database to identify any area that may be on sites containing known hazardous materials. If hazardous sites are encountered, CDFA shall coordinate with the property owners and/or site managers, and regulatory agencies with jurisdiction over these sites for proper protocols to follow to protect worker health and safety. At a minimum, these protocols shall ensure that workers are not subjected to unacceptable health risk or hazards, as determined by existing regulations and standards that have been developed to protect human health.

Mitigation Measure HAZ-GEN-4c: Stop work and implement hazardous materials investigations/remediation for contamination health risks.

In the event that during the activity, previously unknown hazardous materials not related to the Proposed Program are encountered that may pose a health risk to those implementing Proposed Program activities, all activities will stop and CDFA (or the entity conducting the activity) shall consult the landowner and appropriate agencies to determine the extent of the hazardous material and determine what safety protocols need to be implemented to continue Proposed Program activities. At a minimum, these protocols will ensure that workers are not subjected to unacceptable health risk or hazards, as determined by existing regulations and standards that have been developed to protect human health.

Impact HAZ-GEN-5: Proposed Program activities could result in a safety hazard for people residing or working within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public use airport or within the vicinity of a private airstrip. (Less than significant)

Proposed Program activities may occur within an airport land use plan; however, such activities would not result in a safety hazard for people residing or working in the vicinity. None of the Proposed Program activities would interfere with the operation of a private airstrip or public use airport, nor would they conflict with any airport land use plan surrounding the airport or airstrip. Pest management activities may need to be conducted in the airport land use plan area or near the private airstrip, but this would only cause minimal disruption for anyone residing or working in the vicinity.

Use of aircraft for the Proposed Program to release biological control agents or conduct chemical treatments in agricultural and nursery (not urban or residential) settings would not cause harm to other airplane equipment and would not interfere with other plane landings and takeoffs. None of the Proposed Program activities would interfere with the operation of a private airstrip or public use airport, and they would not conflict with any airport land use plan surrounding the airport or airstrip.

Therefore, the impact would be less than significant.

Impact HAZ-GEN-6: Proposed Program activities would not expose people or structures to a substantial risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands. (No Impact)

Proposed Program activities would not result in the potential for wildland fires. Therefore, no impact would occur.

Physical Management Approaches

Impact HAZ-PHYS-1: Proposed Program activities could expose physiologically sensitive populations to human health hazards. (Less than Significant)

Physical management activities would not use any chemicals that pose a substantial human health hazard, and therefore they would not have a significant impact on physiologically sensitive populations. The use of diesel or gasoline equipment to conduct physical management activities may expose sensitive populations to small amounts of TACs from the combustion of these fuels. Because activities do not occur for any substantial amount of time in any one location, the amount of exposure would be negligible. Therefore, the impact on physiologically sensitive populations would be less than significant.

Biological Management Approaches

Impact HAZ-BIO-1: Biological management activities under the Proposed Program could expose physiologically sensitive populations to human health hazards. (Less than Significant)

Biological management activities would not use any chemicals that pose a substantial human health hazard, and therefore they would not have a significant impact on physiologically sensitive populations. The use of diesel or gasoline equipment to conduct biological management activities may expose sensitive populations to small amounts of TACs from the combustion of these fuels. Because activities do not occur for any substantial amount of time in any one location, the amount of exposure would be negligible. Therefore, the impact on physiologically sensitive populations would be less than significant.

Chemical Management Approaches

Impact HAZ-CHEM-1: Proposed Program activities could create a substantial hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of pesticides or related chemicals into the environment. (Less than Significant with Mitigation)

Chemical management approaches under the Proposed Program would require the transport and use of pesticides and related chemicals. Accidental release of these materials into the air, soil, surface water, or groundwater could have a significant impact. However, as described in Chapter 2, Proposed Program Description, the Proposed Program would incorporate MPs for safety and housekeeping, including spill prevention and response measures. No substantial increases would be expected in the number of spills and accidents.

Despite existing laws, regulations, and practices, pesticide-related accidents still occur under baseline conditions, which according to the Pesticide Illness Reporting in California typically are caused by lack of following the laws, regulations, and practices, or through pesticide drift. This includes recent fumigation practices that require methyl bromide monitoring systems, exposure control protocols (such as ventilation and work hour restrictions), pre-purging of trailers before off-loading, and educating workers about methyl bromide. As described in the Environmental Setting above, investigations have concluded that often a lack of communication, understanding, and education exists regarding the pesticide application. Therefore, the impact would be potentially significant. Implementation of Mitigation Measures HAZ-CHEM-1a and HAZ-CHEM-1b would decrease the incidences of pesticide-related accidents that are a result of lack of communication, understanding, and education. With implementation of this mitigation, the impact would be less than significant.

Mitigation Measure HAZ-CHEM-1a: Conduct Public Information Sessions Regarding Pesticide Safety Practices.

CDFA shall continue to work with CDPR and CACs to conduct public information sessions in the local communities where Proposed Program chemical management activities are proposed to be conducted. The focus will be on educating residents whose properties are being treated or who live in proximity to areas being treated on MPs for pesticide applications, including an emphasis on notification, signage, re-entry periods, potential adverse health effects, and how to seek proper help if an accident is suspected. As necessary, sessions will be conducted or translated in a language understood by the target audience, such as Spanish.

Mitigation Measure HAZ-CHEM-1b: Conduct Training Sessions and Prepare Educational Materials Regarding Safe Handling and Application of Pesticides.

CDFA shall continue training sessions for its staff and contractors regarding safe pesticide handling and application.

In addition, for quarantine areas, CDFA shall include materials in its compliance agreements with regulated entities (e.g., growers) with information for pesticide applicators and agricultural workers regarding MPs for pesticide applications, including an emphasis on notification, signage, re-entry periods, potential adverse health effects, and how to seek proper help if an accident is suspected. A regulated entity is defined as someone who has to comply with the quarantine requirements in order to move their products outside of the regulated area. This may include but not be limited to growers, nurseries, and commodity shippers. The compliance agreements will require that regulated entities distribute these materials to applicators and workers.

As necessary, all materials will be presented in a language understood by the target audience, such as Spanish.

Impact HAZ-CHEM-2: Proposed Program activities could result in hazardous emissions or could involve handling hazardous or acutely hazardous pesticides or other related substances within 0.25 mile of an existing or proposed school. (Less than Significant)

Although generally unlikely and to be avoided when possible, under the Proposed Program, pesticides may need to be applied at or near existing or proposed school sites. If an infestation of a potentially economically damaging pest was detected on vegetation in a school playground, for example, and physical eradication methods or biological methods were determined to be infeasible or ineffective, then that infestation may be eradicated using chemical methods. As required under the California Education Code, if such a situation were to occur, only EPA-registered pesticide products would be used; school facilities would be notified in advance of the application; records of pesticide applications would be kept and made available to the public, and warning signs would be displayed at pesticide application areas. CDFA also would attempt to conduct the activity when children are not present and with adequate reentry time before they return. None of the pesticide products proposed to be used under the Proposed Program meet the criteria specified in Section 17610, and thus they are permitted for use at school sites. Existing laws and regulations would apply to the handling of any pesticides on school property, to provide safe handling and reporting of use. CDFA will work with schools to ensure that pesticide applications occur at a time when children are least likely to present. Therefore, the impact would be less than significant.

Impact HAZ-CHEM-3: Proposed Program activities could expose physiologically sensitive populations to human health hazards. (Less than Significant with Mitigation)

The potential impact on physiologically sensitive populations was investigated in the Human Health Risk Assessment that was prepared for this Final PEIR (Appendix B). The HHRA investigated the potential acute, sub-acute, and chronic exposure of several populations to application of the specific pesticides and related products listed in Chapter 3, Proposed Program Activities. Using widely accepted methodologies and conservative assumptions, the HHRA evaluated the amount of exposure that could occur from application of a specific pesticide to remove a particular pest according to label requirements. CDFA has adopted MPs for application rates, and proper use of recommended personal protective equipment.

The HHRA's initial results indicated that in certain limited instances, some populations may have exposure above the level of concern when only product label application methods are implemented. This typically was for acute exposure of the mixer/loader/applicator and the post-application worker. The HHRA then evaluated alternative reduced exposure scenarios that included restrictions on the extent of an application area, application equipment type, and frequency of application. Under these alternative scenarios, no health impacts above the level of concern were identified for any of the specific populations investigated. The various scenarios, evaluated in the HHRA and showing risk below the level of concern, would need to be implemented to prevent health risks from becoming significant. Because these scenarios may not be widely known to pesticide applicators and post-application workers, the possibility exists that an unknown number of pesticide applications may be conducted in ways that would result in risk exceeding the level of concern. Therefore, the impact would be potentially significant. With implementation of Mitigation Measures HAZ-CHEM-1a, HAZ-CHEM-1b, and HAZ-CHEM-3, CDFA would be responsible for proper education and training and require that allowable pesticide application scenarios to be used, so that the impact would be reduced to less than significant.

Mitigation Measure HAZ-CHEM-3: Require Compliance with the Proposed Program's Authorized Chemical Application Scenarios.

CDFA shall require Proposed Program staff and contractors to conduct chemical applications in a manner consistent with the Proposed Program's authorized chemical application scenarios, resulting in acceptable human health risk as described in Chapter 2, Proposed Program Description and the HHRA (Appendix B). Deviations from the authorized chemical application scenarios may be allowed if:

(1) An evaluation is conducted pursuant to the CEQA Tiering Strategy (Appendix C), which concludes that the alternative scenario will not exceed the level of concern for any receptor; or

(2) A certified industrial hygienist concludes that the alternative scenario will not result in risk exceeding the level of concern for any potential receptor, and the scenario is implemented by a licensed or certified applicator. This conclusion may be based on site-specific factors that minimize potential for exposure, absence of a particular receptor, use of additional or different PPE, or monitoring of the exposure, such as regular blood tests to ensure blood concentrations in the exposed individuals are below the risk threshold.

When methyl bromide is used, appropriate air sampling and analysis by a qualified professional will be done for the fumigation worker and fumigation downwind bystander to evaluate the effectiveness of BMPs related to subchronic and chronic exposure.

The results of the evaluation or hygienist's conclusions will be documented, along with any monitoring results.

CDFA will conduct training for its staff and contractors on these approaches. CDFA also will require adherence to these scenarios by including requirements in contractual agreements, such as compliance agreements (for quarantines), permits (e.g., for movement of certain materials outside quarantine areas), contracts (e.g., with CDFA contractors), or other similar means.

Cumulative Impacts

Impact HAZ-CUM-1: The Proposed Program could make a considerable contribution to cumulatively significant non-chemical hazards. (Less than Significant)

Existing federal, State, and local laws and regulations would control and minimize the impacts of non-chemical hazards on the environment. However, as population growth continues and increased transport of hazardous materials occurs, increased risks of hazardous impacts would occur related to accidents. This may involve accidents of equipment used to transport materials, on public roads or private facilities. This would be a cumulatively significant impact. Under the Proposed Program, applicable regulations and policies would be followed, and these regulations and policies would be sufficient to minimize the risks of such accidents. Therefore, the Proposed Program would not contribute considerably to any increase in non-chemical hazards. Therefore, the cumulative impact would be less than significant.

Impact HAZ-CUM-2: The Proposed Program could make a considerable contribution to cumulatively significant human exposure to health hazards. (Less than Significant with Mitigation)

Humans are exposed to numerous health hazards in various ways. This includes emissions of hazardous chemicals from stationary sources such as factories and refineries, emissions of hazardous chemicals from automobiles and off-road equipment, and release of toxic chemicals into the air, water, soil, and food through the general use of chemicals. Pesticide applications are just one category of hazardous chemicals that are routinely released into the environment. Existing laws and regulations are in place to control and lead to the eventual decline in hazardous chemicals in the environment that have an impact on human health. Despite this, the overall rate of cancer in the general U.S. population is approximately 1 in every 4 people. The cancer risk from breathing current levels of pollutants in California's ambient air over a 70-year lifetime is estimated to be 760 in a million (OEHHA 2001). Human health exposure is particularly high for people who work or reside near industrial facilities, ports, and major transportation corridors. Because of past levels of contamination from hazardous chemicals in the environment, persistent levels of toxic substances are found in the soil as well as in the water and food that humans consume. Exposure and adverse health impacts are tracked by many government agencies, by assessing the concentrations of hazardous chemicals found in various environmental media through routine monitoring and reporting programs that are routinely summarized to estimate the health impacts that occur from exposure to these quantities of chemicals. Thus, a cumulatively significant impact on humans occurs from exposure to health hazards.

The Proposed Program may expose humans to hazardous chemicals during implementation of its chemical management activities. The specific health effects were evaluated in the detailed HHRA, provided in Appendix B. This HHRA concluded that implementation of the allowed chemical management activities would not result in risk exceeding the level of concern for human health, including acute, chronic, and carcinogenic effects. Quantitative thresholds were selected for these risk characterizations that are believed to represent acceptable levels of incremental increases for individuals in the context of their overall exposure to chemicals in the environment. Although exposure to other hazards also would occur, including to pesticides used for purposes other than the Proposed Program, or because of exposure of individuals to multiple chemical application scenarios associated with the Proposed Program, this exposure and related health risk could not be quantitatively evaluated in a meaningful manner because too many assumptions would be necessary regarding the frequency, quantity of material used, type of pesticide used, and application mechanisms that would occur in any of the many unique settings within California. However, EPA has recognized the cumulative exposure to pesticides is a concern in particular for those pesticide classes that have been determined to have a common mechanism of action. For these classes of pesticides, EPA has conducted detailed analyses on the potential use of multiple chemical from the same chemical family and the resulting exposure and risk characterization. These studies are detailed in cumulative exposure and risk assessments for organophosphates, N-methyl carbamates, triazines, chloroacetanilides, and pyrethrins/pyrethroids (EPA 2012b). EPA has concluded that by using recommended practices and following existing regulations, their combined use does not exceed EPA's level of concern.

The Proposed Program's estimated risk of adverse health effects would be below established thresholds, and cumulative exposure to multiple pesticides with common mechanisms of actions would be below levels of concern. With implementation of Mitigation Measures HAZ-GEN-4a, HAZ-GEN-4b, HAZ-GEN-4c, HAZ-CHEM-1a, HAZ-CHEM-1b, and HAZ-CHEM-3, the Proposed Program would not make a cumulatively considerable contribution to any impact on humans from exposure to health hazards. Therefore, the impact would be less than significant after mitigation.

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Section 6.6

Noise

6.6 Noise

This section presents the environmental setting and potential impacts of the Proposed Program related to noise. For a discussion on noise metrics and fundamentals of noise, refer to the Noise Technical Report, provided in Appendix N.

6.6.1 Environmental Setting

The following discussion describes sensitive receptors and existing noise relevant to the Proposed Program.

Sensitive Receptors

The specific area and extent of individual Proposed Program activities would depend on various factors, including the targeted pest and the management approaches available. Proposed Program activities would occur primarily in urban/residential and agricultural environments. Noise-sensitive receptors are based on land uses where sensitive receptors may be present or where noise-sensitive activities may occur. These include land uses where quiet is an essential element in their intended purpose, such as indoor or outdoor concert halls, residences and buildings where people sleep, and institutional land uses with primarily daytime and evening use, such as schools, places of worship, and libraries. Generally, commercial or industrial uses are not considered noise-sensitive because, in general, the activities are compatible with higher noise levels. For parks or recreation areas, noise sensitivity reflects how the park is used and how essential quiet is to the enjoyment of the recreation area. Vibration-sensitive land uses include residences where people sleep and other institutional uses such as laboratories where the activities within the building are particularly sensitive to vibration.

Existing Noise

Noise measurements have not been taken to establish the existing noise environment across the entire state because of the uncertainty about specific locations where Proposed Program activities would be conducted. As previously stated, activities associated with the Proposed Program could occur in various locations throughout California, in urban/residential and agricultural areas; therefore, the magnitude range (in A-weighted decibels [dBA]) and characteristics of the existing sound would vary widely and would depend heavily on natural and human-made sound emitting sources in proximity to a given location. In general, the ambient outdoor sound environment that may be measured or perceived at a given location represents an aggregate of what can be many distinct near or far sound sources combined with an underlying indistinct background of sound energy from a multitude of other distant sources.

For the purpose of the noise impact analysis, a description of the existing ambient outdoor sound level at a noise-sensitive receiver that may be exposed to noise from Proposed Program activities is important with respect to CEQA assessment criteria and other relative limits that compare future or "plus project" ambient levels with existing or baseline conditions. For reasonable comparisons appropriate in this analysis, Federal Transit

Administration (FTA) noise assessment guidance provides two methodologies to estimate existing noise exposure:

- Proximity to transportation routes based on the perpendicular distances to highways, railroad lines, and other major roadways; and
- Population density when noise from major surface transportation routes is far enough away, and ambient human-made noise is dominated by local street traffic, building operations (e.g., heating, ventilating, and air conditioning), and community activities.

Table 6.6-1 illustrates what distance ranges to major roadways and rail yield a corresponding estimated daytime, nighttime, and Day-Night Average Sound Level (L_{dn}) outdoor ambient sound level. Alternately, in the absence of such major transportation routes (i.e., if they are much greater than the indicated maxima), population density ranges may be used to estimate the same outdoor ambient sound levels.

Table 6.6-1. Estimated Existing Noise Exposure

FTA Method 1: Noise Generators	Distances from Major Noise Sources (feet)[1]							
Proximity to Interstate Highway[2]:			> 800	400–800	200–400	100–200	50–100	< 50
Rail[3]:			500–800	240–500	120–240	60–120	30–60	10–30
Other Roadway[4]:			> 400	200–400	100–200	50–100	<50	
FTA Method 2: Population Density	**people per square mile (ppsm)**							
	< 300	300 – 1,000	1,000–3,000	3,000–10,000	10,000–30,000	> 30,000		
	Estimated Sound Level (A-weighted decibels)							
Nighttime L_{eq}	30	35	40	45	50	55	60	65
Daytime L_{eq}	40	45	50	55	60	65	70	75
L_{dn}	40	45	50	55	60	65	70	75

Notes:

1. Distances do not include shielding from intervening rows of buildings. The general rule for estimating shielding attenuation in populated areas is as follows: assume one row of buildings every 100 feet provides a 4.5-decibel reduction for the first row and a 1.5 decibel reduction for every subsequent row.
2. Roadways with four or more lanes that permit trucks, with traffic at 60 miles per hour (mph).
3. Main line railroad corridors typically carry 5–10 trains per day at speeds of 30–40 miles per hour.
4. These are parkways with traffic moving at 55 miles per hour, but without trucks, and city streets with the equivalent of 75 or more heavy trucks per hour and 300 or more medium trucks per hour at 30 mph.

Source: FTA 2006

6.6.2 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze noise. It also presents the analysis of the potential environmental impacts of the Proposed Program, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts.

Methodology

Noise

The analysis of Proposed Program noise effects included the following:

1. From available CDFA information, the pieces of electro-mechanical equipment or vehicles associated with a specific type of activity were identified. This typically would include fuel-burning engines or anything powered with electric motors rated over 5 horsepower.
2. The following characteristics were determined or estimated for the equipment and vehicles under consideration:
   A. Reference maximum (L_{max}) sound power or sound pressure level (in dBA) at some specified distance (e.g., 50 feet)

   B. What the Federal Highway Administration's Roadway Construction Noise Model User's Guide (DOT 2006) refers to as the "acoustical usage factor," or the fraction of a given duration that the equipment or vehicle actually would be operating. This would include, for vehicles, when an engine would be idling—when it still would be generating noise. For aircraft, this usage factor refers to the actual time that the aircraft would be flying over a Proposed Program activity site and would be conducting its Proposed Program task (i.e., this would not include the gradual increase of noise because of the onset or the gradual decrease of noise because of the retreat of the aircraft).

   C. The approximate duration, represented as a fraction of an hour (t), that the equipment and vehicles associated with the activity under consideration would be present at the implementation site or area. For example, if an activity would require only a half-hour at the implementation site or area to complete, then t = 0.5. If an activity would be expected to take more than an hour to complete, t = 1.
3. Calculating an L_{eq} at a reference distance for each equipment piece or vehicle, applying the L_{max}, the acoustical usage factor (AUF) and activity duration value t per the following expression: $L_{eq} = L_{max} + 10*LOG(AUF) + 10*LOG(t)$. From the calculated L_{eq} in Step 3, logarithmically adding the two loudest from the roster of equipment associated with the activity. The equipment with the loudest L_{max} may not, based on its AUF or the value for t, necessarily have the loudest anticipated L_{eq}.
   A. Using the following expression, calculating a minimum distance (in feet) at which the combined L_{eq} from Step 3 would attenuate to a goal noise level criterion: L_{eq} (goal) = L_{eq} (activity) – $20*LOG(d/d_{ref}) - d/1000$. In this expression, "$d_{ref}$" is the reference distance that helps define L_{eq} (activity) and often would be 50 feet. The first term accounts for geometric divergence, and the second approximates the effect of attenuation resulting from air absorption.

This technique of using the two loudest noise-emitting sources, rather than computing an aggregate sound level from an exhaustive roster of equipment, is consistent with FTA construction noise general assessment guidance. This technique also been adopted by the U.S. Bureau of Land Management for project noise assessment (U.S. Bureau of Land Management 2005). Although the Proposed Program does not involve activities specific to construction, this technique would be applicable for calculating predicted noise from use of mechanical equipment and vehicles operating within a known and limited area or zone.

Vibration

The analysis of Proposed Program vibration effects included the following:

1. The equipment that may be used under the Proposed Program with the greatest likelihood of being a substantial source of vibration emission would be a loaded truck. The loaded truck's peak particle velocity (inches per second) at 25 feet is 0.076 (FTA 2006).
2. Using this reference vibration level, the expected minimum distance between a receiver and the loaded truck for the set of potential human annoyance and building damage risk vibration criteria that would apply to the specific Proposed Program activity (and its location) under consideration. Separate expressions exist for calculating these distances for human annoyance and building damage risk, respectively:
   A. Human annoyance, $L_v(d) = L_v(d_{ref}) - 30*LOG(d/d_{ref})$
   B. Building damage risk, peak particle velocity(d) = peak particle velocity(d_{ref}) * (d_{ref}/d)1.5

In these expressions, "d" is the distance between the receiver and a vibration source, "d_{ref}" is the reference distance that applies for the indicated vibration magnitude. All Statewide Program activities are anticipated to be infrequent (i.e., occurring less than 30 times per day).

Significance Criteria

U.S. Department of Housing and Urban Development (HUD) Guidelines, World Health Organization (WHO) Nighttime Criteria, and CEQA Significance Criteria were used to determine whether the Proposed Program would result in a potentially significant impact related to noise.

HUD Daytime Criteria

To provide a uniform system for analyzing noise impacts for anticipated Proposed Program activities throughout all jurisdictions in California, the significance criterion of 65 dBA L_{dn} from daytime project activity was used. Proposed Program activities would be temporary, with associated equipment and vehicles operating for short-term durations and at various locations. Thus, the predicted acoustical combination of these likely brief or intermittent activity-related noises occurring throughout the day, calculated as a day-night sound level that includes periods of time when no project noise would be expected, is compared with 65 dBA L_{dn} (per Section N-6, Noise Regulatory Setting in Appendix O, Regulatory Setting) that HUD considers an acceptable standard for exterior noise.

In general, local and State standards are not available for determining vibration thresholds. Therefore, for potential groundborne vibration impacts, the FTA standard for human annoyance vibration level (L_v) ranges from 75 to 83 vibration decibels (VdB) (depending on frequency of vibration event or duration) for "Category 3: Institutional Land Uses with Primarily Daytime Use" (FTA 2006). These annoyance thresholds are more stringent than the risk vibration criteria for building damage, and therefore were used for this analysis, although building damage risk also was calculated for informational purposes. Although not a universally accepted notation, the acronym VdB is used herein for vibration decibels to reduce the potential for confusion with sound decibels.

WHO Nighttime Criteria

At night (between 10 p.m. and 6 a.m.), when Proposed Program activities may need to occur beyond or outside of typical daytime periods, this noise analysis uses an 8-hour L_{eq} of 45 dBA immediately outside an occupied bedroom window as the applicable noise threshold. Alternately, an L_{max} of 60 dBA must be satisfied during this 8-hour period. These criteria are based on a typically referenced WHO guidance limit, with the intent of minimizing sleep disturbance for potentially noise-affected residential land uses and occupied dwellings (Berglund 1999). Because of it being an 8-hour metric, Table 6.6-2 shows that several ways exist to satisfy the 45 dBA L_{eq}, which would allow opportunity for a short-duration but higher than 44 dBA L_{eq} (from the perspective of the noise-sensitive receiver location) noise-producing activity to occur and still comply with this nighttime guideline.

Table 6.6-2. Options for Duration of Time that Proposed Program Noise L_{eq} May Exceed Nighttime WHO-based Threshold of 45 dBA

Allowable Portion of 8-Hour Period above 44 dBA L_{eq} (percent, cumulative minutes)	L_{eq} Not to Exceed for Allowable Portion of 8-Hour Period, when above 44 dBA (dBA)
0.5 percent (2.4 minutes)	60
2 percent (9.6 minutes)	55
8 percent (38.4 minutes)	50
22 percent (105.6 minutes)	47

Notes:

dBA = A-weighted decibels; L_{eq} = Equivalent Sound Level, dBA

Source: WHO 1999

CEQA Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact related to noise if it would:

A. Expose persons to or generate noise levels in excess of a daytime standard of 65 dBA L_{dn} over a 24-hour period (based on HUD guidance), and a nighttime standard (based on WHO guidance) of an 8-hour L_{eq} of 45 dBA, immediately outside an occupied bedroom window, or an L_{max} of 60 dBA during the 8-hour period;

B. Expose persons to or generate excessive groundborne vibration or groundborne noise levels;

C. Cause a substantial permanent increase in ambient noise levels in the vicinity of a Proposed Program activity above levels existing without the Proposed Program;

D. Cause a substantial temporary or periodic increase in ambient noise levels in the vicinity of a Proposed Program activity above levels existing without the Proposed Program;

E. For a Proposed Program activity located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, expose people residing or working in the area of the Proposed Program activity to excessive noise levels; or

F. For a Proposed Program activity within the vicinity of a private airstrip, expose people residing or working in the area of the Proposed Program activity to excessive noise levels.

To evaluate impacts relative to Criterion A and Criterion B, the anticipated noise generated by the various Proposed Program activities have been compared with applicable daytime or nighttime criteria discussed above, assuming a noise-sensitive receiver location in proximity. To evaluate impacts relative to Criterion D, the existing ambient outdoor sound estimated from receiver location characteristics (i.e., proximity to major road and rail, and surrounding population density, using Table 6.6-1) has been compared with the noise expected to be generated by the various Proposed Program activities. Because Proposed Program activities would not be permanent and would not otherwise be expected to create a substantial permanent increase in ambient noise level, Criterion C does not apply to the noise impact analysis of the Proposed Program. Criterion E and Criterion F are related specifically to the proximity of public airports and private airstrips, and were evaluated with Criterion A.

If Proposed Program activities would occur in or near a community where a local noise ordinance or similar regulation or policy exists, that ordinance, regulation, or policy may apply and may be stricter than the thresholds used in this analysis. The Proposed Program would not authorize entities to violate other applicable requirements, irrespective of the conclusions of this analysis.

Environmental Impacts of the Proposed Program

Physical Management Approaches

Impact NOISE-PHYS-1: Use of mechanical equipment during implementation of physical management activities could result in excessive noise for sensitive receptors, and/or result in a substantial temporary or periodic increase in ambient noise levels. (Less than Significant with Mitigation)

Based on the FTA general assessment methodology for calculating noise levels, Table 6.6-3 includes activities that would require the use of mechanical equipment or vehicles that would generate the highest expected reference maximum noise levels. Activity duration and the percentage of that duration when the listed equipment or vehicle would be expected to generate noise was used to determine the hourly L_{eq}. As shown in Table 6.6-3, trapping would generate an estimated combined noise level of 63.6 dBA hourly L_{eq} at 50 feet, and host removal would generate a combined level of approximately 62.7 dBA hourly L_{eq} at 50 feet. Other physical management activities, such as inspection, cleaning, and restricted movement are not expected to generate substantial noise, and therefore are not considered further.

The predicted hourly noise levels listed in Table 6.6-3 also were used to calculate L_{dn} that may be compared with the HUD-based impact criterion.

Table 6.6-3. Physical Management Noise-Generating Activities and Equipment List

Management Activity	Equipment Type	Activity Duration Per Site	Acoustical Usage Factor (percent)	Reference Level (L_{max}, dBA) at 50 feet	Combined Level (hourly L_{eq}, dBA) of up to Two Noisiest Equipment, at 50 feet
Trapping	Light Duty Truck	5 minutes	40	75	63.6
	ATV	5 minutes	40	75	
	Automobile	6 minutes	40	75	
Host Removal	Heavy Duty Truck	5 minutes	40	74	62.7
	Light Duty Truck	5 minutes	40	75	

Notes:

dBA = A-weighted decibel; Leq = equivalent sound level; Lmax = maximum equivalent sound level

Sources: CDFA 2013, FTA 2006

Table 6.6-4 shows the distance of a receptor from trapping or host removal at which the noise would comply with the HUD and WHO guidance for daytime and nighttime operation. According to Table 6.6-4, activities such as trapping and host removal could occur at distances of 9 feet and 8 feet or greater, respectively, during the daytime. This daytime distance is considered negligible because this distance is closer than the distance anyone typically would be from motorized equipment. Therefore, the impact of daytime activities would be less than significant.

Table 6.6-4. Minimum Activity-to-Receiver Distances for Physical Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Daytime, per HUD Guidance (65 dBA L_{dn})	Nighttime, per WHO Guidance (45 dBA)
Trapping	9 feet	415 feet
Host Removal	8 feet	375 feet

Notes:

dBA = A-weighted decibel; L_{dn} = Day-Night Average Sound Level

Sources: CDFA 2013, FTA 2006, WHO 1999

According to Table 6.6-4, activities such as trapping and host removal could occur at night, at distances from sensitive receptors of 415 feet or 375 feet or greater, respectively, and would comply with the established guidelines. If sensitive receptors are closer than these distances, then the impact would be potentially significant, and CDFA would implement Mitigation Measure NOISE-PHYS-1 to reduce the impact on sensitive receptors by restricting activity to daytime hours. With implementation of this mitigation measure, the impact associated with the Proposed Program's physical management activities would be less than significant.

Mitigation Measure NOISE-PHYS-1: Conduct Activities during the Daytime.

For activities that exceed the applicable nighttime noise criteria at the nearest sensitive receptor, activity operations will be scheduled to occur during the day (between 6 a.m. and 10 p.m.).

Impact NOISE-PHYS-2: Use of mechanical equipment during implementation of physical management activities could result in excessive groundborne vibration for sensitive receptors. (Less than Significant)

With respect to groundborne vibration, the "loaded truck" listed in Table 6.6-3 is expected to resemble the equipment to be used for both host removal activities and survey/trapping. Table 6.6-5 provides guidance for both building damage and human annoyance. Using reference levels from the FTA for these types of equipment, the vibration levels generated by these physical management activities were calculated using the FTA methodology. Other physical management approaches (e.g., cleaning and inspection) are not anticipated to generate substantial vibration, and therefore are not considered further.

Based on the distances shown in Table 6.6-5, the existence of any sensitive buildings located this close to the physical management activities would be unlikely. In addition, Table 6.6-5 shows that safe distances would be maintained between vibration-generating activity and buildings/residences where people normally sleep. For infrequent events such as physical management activities, the use of a loaded truck operating at 40 feet or greater would not exceed the threshold for annoyance from vibration activities. For these reasons, the vibration-generating impact associated with the Proposed Program's physical management activities would be less than significant.

Table 6.6-5. Minimum Activity-to-Receiver Distances for Physical Management Activity Vibration Sources (Compliant with Indicated Noise Criterion)

Equipment	Category 2 Human Annoyance (VdB) Infrequent Events (80)	Building Damage Risk Category (peak particle velocity)			
		Cat. 1 (0.5)	Cat. 2 (0.3)	Cat. 3 (0.2)	Cat. 4 (0.12)
Loaded Truck	40 feet	8	10	13	18

Notes:

Category 2 (Human Annoyance) refers to residences and buildings where people normally sleep.

Cat. 1 refers to building damage to reinforced-concrete, steel or timber (no plaster).

Cat. 2 refers to building damage to engineered concrete and masonry (no plaster).

Cat. 3 refers to building damage to non-engineered timber and masonry.

Cat. 4 refers to building damage to extreme susceptibility to vibration damage (e.g., historic structures).

Source: FTA 2006

Biological Management Approaches

Impact NOISE-BIO-1: Use of aircraft and equipment during implementation of biological management activities could result in excessive noise for sensitive receptors and/or result in a substantial temporary or periodic increase in ambient noise levels. (Less than Significant with Mitigation)

The primary noise-generating activity associated with biological management activities would be the use of airplanes for the sterile male release program and also light duty trucks for biological control release programs. Table 6.6-6 shows noise generation associated with use of aircraft.

Table 6.6-7 shows that the HUD daytime criterion would be achieved for use of aircraft regardless of distance from the sensitive receptor, and the minimum distance for use of aircraft corresponding with achieving compliance during nighttime periods of operation.

Table 6.6-6. Biological Management Noise Generation

Management Activity	Equipment Type	Activity Duration per Site	Usage Factor (%) (percent)	Reference Level (Lmax, dBA) at 50 feet	Level (hourly Leq, dBA) at 50 feet (horizontal distance)
Sterile Male Release	Beechcraft C90 Aircraft	20 minutes	100[a]	100	61.2[b]
Biological Control Agent Release	Light Duty Truck	5 minutes	40	75	60.2

Notes:

dBA = A-weighted decibels; Leq = equivalent sound level

[a] This assumes time for release above area while aircraft is in flight.

[b] Assumes aircraft would maintain a minimum relative altitude of 2,000 feet.

Sources: CDFA 2013, FTA 2006, FAA 2001

Table 6.6-7. Minimum Activity-to-Receiver Distances (feet) for Biological Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Daytime, per HUD Guidance (65 dBA Ldn)	Nighttime, per WHO Guidance (45 dBA)
Sterile Male Release *	0 feet	6,900 feet
Biological Control Agent Release	6 feet	280 feet

Notes:

* Assumes aircraft remains a minimum relative altitude of 2,000 feet.

Sources: CDFA 2013, FTA 2006, WHO 1999

During the daytime, no potential would exist for aircraft to exceed the criterion. For BCAs, the daytime distances are considered negligible because these distances are closer than the distance that anyone typically would be from motorized equipment. Therefore, the impact from daytime activities would be less than significant impact.

If sensitive receptors (including those in proximity to airstrips) are closer than the distance shown in Table 6.6-7 at night (e.g., if the use of aircrafts occurs less than 6,900 feet from sensitive receptors), Proposed Project activity potentially could result in exceeding the established noise levels. CDFA would implement Mitigation Measure NOISE-PHYS-1 to reduce the impact on sensitive receptors. With implementation of this mitigation measure, the impact associated with the biological management activities would be less than significant**.**

Chemical Management Approaches

Impact NOISE-CHEM-1: Use of mechanical equipment during implementation of chemical management activities could result in excessive noise for sensitive receptors and/or result in a substantial temporary or periodic increase in ambient noise levels. (Less than Significant with Mitigation)

Table 6.6-8 shows the chemical management activities that would require the use of mechanical equipment and the noise levels associated with such activities. The use of airblasts would result in the highest noise levels. Chemical management activities requiring aircraft could generate approximately 79.5 dBA from 50 feet of the activity. Aerial applications of chemicals would not occur over residential areas under the Proposed Program without conducting additional tiered CEQA analysis and associated public review.

Table 6.6-8. Chemical Management Noise Generating Activities and Equipment List

Management Activity	Equipment Type	Activity Duration per Site	Usage Factor (percent)	Reference Level (L_{max}, dBA) at 50 feet	Level or Combined Level of up to Two Noisiest Equipment (hourly L_{eq}, dBA) at 50 feet (horizontal distance)
Chemical Trapping	Light Duty Truck	5 minutes	40	75	63.6
	ATV	5 minutes	40	75	
	Automobile	6 minutes	40	75	
MAT/Sprayed Bait	SPLAT Sprayer	1 minute	1	93.3	57.5
	Light Duty Truck	1 minute	40	75	
Fumigation	Sprayer/Injector	7 hours	40	71.3	67.3
Soil Injection	Pump/Injector	5 minutes	50	81	67.1
Tablet Soil Injection	Light Duty Truck	5 minutes	40	75	60.2
Airblast	Tractor	7 hours	40	84	80.4
	Airblast Sprayer	7 hours	40	74	
Aerial Spray[1]	Aircraft (Beechcraft C90)	1 hour	100	100	79.5
Boom Spray	Tractor	7 hours	40	84	80.1
	Boom Spray	7 hours	40	69.5	
Chemigation	Water Pump	7 hours	50	81	77.9

Note:

L_{max} = maximum equivalent sound level; L_{eq} = equivalent sound level; dBA = A-weighted decibels

[1] Assumes time for release above area while aircraft is in flight.

Sources: CDFA 2013, FTA 2006, Berger 2010, Smithco 2013, FAA 2001, Jacto 2013

Table 6.6-9 shows the distances from receptors at which the various chemical management activities would be below the applicable thresholds. Using aircraft as an example, under HUD guidance and assuming that the aircraft remains at the minimum altitude of 200 feet, aerial spraying is expected to be consistent with the 65 dBA L_{dn} threshold. Nighttime restrictions are more stringent. As indicated below, using the same example for use of aircraft, if activities occur at less than 9,500 feet from sensitive receptors, the 45 dBA threshold is likely to be exceeded.

Table 6.6-9. Minimum Activity-to-Receiver Distances for Chemical Management Activity Operation (Compliant with Indicated Noise Criterion)

Management Activity	Per HUD Guidance (65 dBA L_{dn})	Per WHO Guidance (45 dBA)
Survey/Trapping	9 feet	415 feet
MAT/Sprayed Bait	5 feet	220 feet
Fumigation	36 feet	625 feet
Soil Injection	14 feet	600 feet
Tablet Soil Injection	6 feet	280 feet
Airblast	160 feet	2,300 feet
Aerial Spray[1]	500 feet	9,500 feet
Boom Spray	155 feet	2,250 feet
Chemigation	120 feet	1,850 feet

Note:

dBA = A-weighted decibels; L_{dn} = Day-Night Average Sound Level

[1] Assumes aircraft remains a minimum relative altitude of 200 feet above ground.

Sources: CDFA 2013, FTA 2006, WHO 1999

Because airblast, aerial spraying, boom spraying, and chemigation would occur only in agriculture settings and not in residential areas, the existence of any receptors located closer than the distances identified as consistent with the applicable HUD guidance for daytime operation is unlikely. All other chemical management activity daytime distances are considered negligible because these distance would be closer than anyone typically would be near motorized equipment. Therefore, the impact of daytime activities would be less than significant.

At night, if sensitive receptors are closer to the relevant chemical management activity than the distances listed in Table 6.6-9, the impact would be potentially significant. CDFA would implement Mitigation Measure NOISE-PHYS-1 to reduce the impact on sensitive receptors. With implementation of this mitigation measure, the impact associated with the Proposed Program's chemical management activities would be less than significant.

Cumulative Impacts

Impact NOISE-CUM-1: Use of mechanical equipment during implementation of Proposed Program activities, in combination with other noise generating projects, could result in excessive noise levels or groundborne vibration for sensitive receptors. (Less than Significant with Mitigation)

Noise- or vibration-generating activities under the Proposed Program could occur in locations where ambient noise or vibration levels are high. Other future projects also could generate noise or vibration in proximity to Proposed Program activities. Table N-6-2 in Appendix O, Regulatory Setting show that when the existing sound environment already is at an elevated level, the allowable increase is correspondingly narrow. Conversely, when the existing ambient sound level is quieter, the allowable increase (expressed as added dBA) widens considerably.

Although noise and/or vibration associated with these various factors may be individually below the applicable criteria, in combination, they could exceed noise and vibration criteria. In more extreme cases, ambient conditions or other projects already may exceed the criteria, with Proposed Program activities exacerbating this situation. The cumulative impact from any of these circumstances would be potentially significant.

Per the impact analysis discussed above, CDFA would implement Mitigation Measure NOISE-PHYS-1 in the event that Proposed Program activities exceeded applicable criteria, which would reduce the Proposed Program's contribution to the cumulative noise impact. It is also anticipated to be rare that noise generated under the Proposed Program would combine with other noise sources to create substantial noise effects. The contribution of the Proposed Program to the cumulative noise impact would not be considerable, and the cumulative impact would be less than significant.

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Section 6.7

Water Quality

6.7 Water Quality

6.7.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Program related to water quality.

6.7.2 Environmental Setting

The following discussion describes regional hydrology, water quality, and environmental toxicology conditions related to the Proposed Program.

Regional Hydrology

The California Department of Water Resources divided California into ten hydrologic basins. The California Water Code defines nine basins; however, the Lahontan region is divided in two. The boundaries of the basins are major river watersheds as defined by Section 13200 of the California Water Code. A brief description of each region is provided next.

North Coast Hydrologic Region

The North Coast Hydrologic Region spans approximately 12.46 million acres, encompassing all or parts of Modoc, Siskiyou, Del Norte, Trinity, Humboldt, Mendocino, Lake, and Sonoma counties. Some small portions of other counties also are included within this region. The region extends from the Oregon border south to Tomales Bay and from the Coast Ranges to the Mad River. Most of the region is sparsely populated because of the rugged terrain and high degree of forestation. Precipitation in the region varies drastically, from 100 inches annually in the Smith River drainage to 10 inches in the Klamath drainage. The primary water quality issues in the region relate to erosion and runoff from urbanized areas, logging, and grazing operations. A total of 63 groundwater basins underlie approximately 1.022 million acres of the region. (DWR 2009)

San Francisco Bay Area Hydrologic Region

The San Francisco Hydrologic Region spans approximately 2.88 million acres, encompassing all of San Francisco and parts of Marin, Sonoma, Napa, Solano, San Mateo, Santa Clara, Contra Costa, and Alameda counties. This relatively small region has 5.8 million people, the second largest population of any region in the state. A total of 28 groundwater basins underlie approximately 896,000 acres of the region. Groundwater is used for approximately 5 percent of the region's water supply demands. (DWR 2009)

Precipitation is mostly rainfall, with insignificant snowfall. Average annual precipitation is 31 inches, with greater than 50 inches in some parts. Runoff characteristics include high peak discharges because of small, steep watersheds. Local rivers are susceptible to severe flooding during high rainfall events. Some watersheds produce high sediment yields, caused by unstable rock types/soils. The primary water quality concerns in the region are legacy and emerging toxic pollutants as well as urban and rural runoff.

Central Coast Hydrologic Region

The Central Coast Hydrologic Region spans approximately 7.22 million acres, encompassing all of Santa Cruz, Monterey, San Luis Obispo, and Santa Barbara counties, most of San Benito County, and parts of San Mateo, Santa Clara, and Ventura counties. This region generally is not heavily populated. Water quality issues such as nitrate and pesticide contamination stem from agricultural use in the Salinas Valley. A total of 50 groundwater basins underlie approximately 2.390 million acres of the region. Groundwater is heavily used to meet agricultural and urban water supply demands in the region. (DWR 2009)

West of the Coast Range, the climate of the region is dominated by the Pacific Ocean and is characterized by small daily and seasonal temperature changes and high relative humidity. As distance from the ocean increases, the maritime influence decreases, resulting in a more continental type of climate that generates warmer summers, colder winters, greater daily and seasonal temperature ranges, and lower relative humidity. Between 2005 and 2008, the average annual precipitation—usually rain—in the region ranged from about 12 to 42 inches. Most of the rain occurs between late November and mid-April. The average annual precipitation near Salinas is about 14 inches; Santa Cruz and Big Sur receive almost double that amount. Average annual precipitation in most of the Santa Cruz Mountains can exceed 50 inches. The southern interior basins usually receive 5 to 10 inches per year. The mountain areas receive more rainfall than the valley floors.

South Coast Hydrologic Region

The South Coast Hydrologic Region spans approximately 6.78 million acres. The region extends from the Pacific Ocean inland to the San Jacinto Mountains and Peninsula Range. The international Mexico–U.S. border marks the southernmost boundary, extending up to the crest of the Transverse Ranges. Half of the population of California lives in this region, placing a high demand on water, half of which is fulfilled by outside sources. The relatively large number of residents has resulted in water quality issues related to wastewater and urban runoff. The hydrologic region is separated into three subregions, each under the jurisdiction of separate Regional Water Quality Control Boards (RWQCBs): Los Angeles, Santa Ana, and San Diego. (DWR 2009)

The South Coast Hydrologic Region has a Mediterranean climate with mostly dry years, interrupted by infrequent high precipitation years. It is generally characterized by warm, dry summers and mild, wet winters, although it also can experience intense subtropical storms. Precipitation generally is rainfall, with insignificant snowfall. Average annual precipitation is 18.5 inches. Locally, heavy storms have the highest 24-hour rainfall totals in the state. Rivers and streams are largely ephemeral and fed by rainfall. Rivers are susceptible to frequent flooding, resulting from high peak discharge events. Sediment yields are locally high because of intense urbanization, low vegetation cover, and unstable soils. Debris flows and mudflows are frequent in some drainages.

Sacramento River Hydrologic Region

The Sacramento River Hydrologic Region spans approximately 17.4 million acres, encompassing all or large parts of Modoc, Siskiyou, Lassen, Shasta, Tehama, Glenn, Plumas, Butte, Colusa, Sutter, Yuba, Sierra, Nevada, Placer, Sacramento, El Dorado, Yolo, Lake, and Napa counties. The region is primarily covers the Sacramento Valley and extends from the Cascades Range at the Oregon Border to the Sacramento–San Joaquin Delta. The majority of the region is rural rather than urban. A number of different climate types are found in the region. In the north is a high desert plateau that experiences cold, snowy winters with moderate precipitation of 10 to 20 inches and hot dry summers. Cold, wet winters with 40 to over 80 inches of precipitation occur in the north and east mountainous areas. The Sacramento Valley has mild winters with moderate precipitation and hot, dry summers. Surface water from this area provides water for many urban and agricultural areas in California. Water in the region is primarily high quality with a few local groundwater problems. Primary water quality concerns are increased salinity, pesticide impairments from agriculture activities, legacy mining impacts, and sedimentation and erosion. (DWR 2009)

San Joaquin River Hydrologic Region

The San Joaquin River Hydrologic Region spans approximately 9.7 million acres, encompassing all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito counties. Overall annual precipitation in the region generally increases from south to north and west to east. This region experiences a wide range of precipitation that varies from low rainfall amounts on the valley floor to extensive snowfall in the higher elevations of the Sierra Nevada Mountains. The snow that remains after winter serves as stored water before it melts in the spring and summer. The average annual precipitation of several Sierra Nevada stations is about 35 inches. The snow and rain that fall in this region contribute to the overall water supply for the entire state. The primary water quality concerns are increasing salinity in the Central Valley, pesticide impairments from agriculture activities, legacy mining impacts, and sedimentation and erosion. (DWR 2009)

Tulare Lake Hydrologic Region

The Tulare Lake Hydrologic Region spans approximately 10.9 million acres and includes all of King and Tulare counties and most of Fresno and Kern counties. Tulare Lake Hydrologic Region had 2.1 million people in 2005. About 6 percent of the state's total population lives in this region, and 72 percent of the region's population lives in incorporated cities. The mean annual precipitation in the valley portion of the region ranges from about 6 to 11 inches, with 67 percent falling from December through March, and 95 percent falling from October through April. A total of 12 groundwater basins underlie approximately 5.33 million acres of the region. Groundwater is used extensively for agricultural production and urban use, which has led to the use of groundwater recharge programs near major urban areas. Because of agricultural practices, a great deal of groundwater in the region is polluted with pesticides, nitrates, sulfates and high levels of salinity. Naturally occurring arsenic contamination also exists. (DWR 2009)

North Lahontan Hydrologic Region

The North Lahontan Hydrologic Region spans approximately 3.91 million acres, encompassing portions of Modoc, Lassen, Sierra, Nevada, Placer, El Dorado, Alpine, Mono, and Tuolumne counties. The region is bounded by the Sierras on the west and extends from the Oregon border nearly to Mono Lake. The area is sparsely populated. Precipitation ranges from more than 70 inches in the high mountain regions to 8 inches in the low valleys. Depending on precipitation each year, water supply demands are met from surface or groundwater. Overall water quality is high in the region, with a few local water quality issues. The primary concern in the Lake Tahoe portion of the region is the level of sediments and nutrients that are tributary to Lake Tahoe and the effect it has on the lake's clarity. Other streams are impaired by various pollutants from metals in mining districts to pathogens in areas where grazing takes place. (DWR 2009)

South Lahontan Hydrologic Region

The South Lahontan Hydrologic Region spans approximately 21.2 million acres in eastern California. The region extends from Mono Lake to the crest of the San Gabriel and San Bernardo mountains, bounded by the Sierra Mountains in the west. The region is sparsely populated. Precipitation is approximately 8 inches per year. Rights to a large portion of Sierra snowmelt water are owned by the Los Angeles Department of Water and Power. Water quality in this region generally is good, with a few local water quality issues. Surface water quality is affected by hydromodification, from sedimentation, erosion, and loss of riparian areas. Groundwater quality is affected by elevated concentrations of nitrates, total dissolved solids, and overdraft. (DWR 2009)

Colorado River Hydrologic Region

The Colorado River Hydrologic Region spans approximately 13 million acres in southeastern California, encompassing all of Imperial, most of Riverside, and parts of San Bernardino and San Diego counties. The region extends north from the Mexico–U.S. border to the Ord Mountain ranges, bounded by Arizona and Nevada state borders to the east and the San Bernardino Mountains to the west. The region has about 2 percent of the state's total population, with the majority of the population living in incorporated cities. The climate is arid, with only 5.5 inches of precipitation a year. Surface water quality concerns include elevated silt concentrations, elevated pathogen concentrations, nitrates, and impacts from animal feeding and dairy operations. The most serious groundwater issue in this region is high salinity. (DWR 2009)

Water Quality

The quality of surface water and groundwater varies greatly throughout California, based on the natural setting and types of anthropogenic activity. Potential sources of water quality impairment can come from point and non-point sources. Point sources emit from discrete locations, such as an industrial center, pipe, or concentrated animal feeding operation. In comparison, non-point sources are not easily identifiable locations and include such sources as runoff from roads and driveways, discharges from improperly managed construction sites, crop and forest land, mining operations, faulty septic systems, and other sources. Non-point sources also include agricultural stormwater discharges and return flows from irrigated agriculture. Pollution constituents can range from sediment to pesticides and fertilizers. During rainfall or snowmelt, these pollutants can be carried to lakes, rivers, wetlands, coastal water, and groundwater. Because of the diffuse nature of non-point sources, they are difficult to regulate and are the leading cause of water quality issues in the U.S. (EPA 2011a)

Erosion and sedimentation are two processes that can affect water quality. Erosion is the detachment and movement of soil particles by natural forces primarily water (rain events) and wind. Sedimentation is the process in which particulate matter carried from point of origin by either natural or human-enhanced processes and is deposited elsewhere on land surfaces or in waterbodies. Sediment is a natural product of erosion; however, the sediment load may be increased by human practices. The sediment load may be increased because of unvegetated streambanks and uncovered soil regions. Agriculture can be a large source of sediment load increase; however, with appropriate management practices, this can be minimized.

Surface waters, such as rivers and streams, may be affected by a large variety of pollutants, including sediments, pathogens, pesticides, trace metals, and legacy contaminants (pollutants that have been banned or replaced and are no longer supplied to the environment in large quantities, but that remain in the environment for an extended period after deposition with little degradation), such as dichlorodiphenyltrichloroethane (DDT) and other chlorinated hydrocarbon pesticides, and polychlorinated biphenyl compounds (PCBs).

Primary agricultural areas are in fertile valleys throughout California, including Salinas, Sacramento, and the San Joaquin and Imperial Valleys. Various chemicals, such as fertilizers and pesticides, are used to maintain agricultural production, ensure public health and safety, and provide pest control. Irresponsible use of these chemicals can lead to runoff into surface waters, which is widely acknowledged to negatively affect aquatic organisms and human health.

Monitoring Studies

A number of local, State, and federal agencies in California monitor water quality and develop guidelines and programs to provide environmental and public safety. These are relevant to the Statewide Program because they provide baseline information regarding water quality constituents that may be affected by the Proposed Program.

Surface Water Ambient Monitoring Program

The State Water Resources Control Board (SWRCB) developed a program in 1999 to coordinate all water quality monitoring within California, known as the Surface Water Ambient Monitoring Program (SWAMP). Statewide monitoring activities are conducted for bioaccumulation in fish, bioassessment of the health of streams and rivers, and Stream Pollution Trends (SPoT) that determines trends in sediment toxicity and contaminant concentrations. RWQCBs conduct monitoring programs to address regional water quality concerns. SWAMP conducts special studies to investigate water quality concerns not addressed by other statewide or regional monitoring programs.

An evaluation of SPoT monitoring activities between 2001 and 2010 was summarized in the 2010 report, Toxicity in California Waters, indicating the trends in chemical contamination and toxicity in the context of watershed land uses (Anderson et.al. 2010). In monitoring conducted between 2001 and 2010, more than 50 percent of collection sites showed some degree of toxicity (in fresh water and fresh water sediment samples), and more than 45 percent of the sites showed some degree of toxicity (in marine sediment samples). Statewide toxicity trends were evaluated between 2008 and 2011. The incidence of toxicity remained relatively stable over those 4 years, with a substantial amount of toxicity seen in approximately 22 percent of the sediment samples. Approximately 7 percent of the samples were identified as highly toxic. Highly toxic samples were collected from agricultural watersheds in the Central Valley's Tulare Basin, the Central Coast, urban areas of southern California, and the Tijuana River. Agricultural and urban sites showed greater water and sediment toxicity than sites in less developed areas. Although greater water toxicity was observed in agricultural sites relative to urban sites, no difference in sediment toxicity was noted between urban and agricultural sites.

Correlation analyses and toxicity identification evaluations suggest that toxicity to invertebrate test species was caused most often by pesticides (e.g., diazinon and chlorpyrifos). Recent studies also show that pyrethroid pesticides (e.g., permethrin, bifenthrin, fenpropathrin, tau-fluvalinate, and lambda-cyhalothrin) play a role in toxicity to amphipods and have shown an increasing trend in detections and concentrations in sediments. Bifenthrin was the most commonly detected pyrethroid, likely because of its being the most stable pyrethroid in aquatic environments.

Because of the evidence that pesticides are associated with ambient toxicity in California waters, emerging pesticides are to be prioritized in future SPoT monitoring activities. SPoT also will be collaborating with the California Department of Pesticide Regulation (CDPR) to evaluate the effectiveness of new label restrictions for the use of pyrethroid pesticides in urban applications. This evaluation is to include four intensive monitoring sites.

Groundwater Protection Program and Surface Water Protection Program Monitoring

In addition to the previously described Surface Water Protection Program (SWPP), CDPR operates a Groundwater Protection Program (GWPP). The Groundwater Protection List identifies seven pesticides that have been detected in groundwater or soil: atrazine, simazine, bromacil, diuron, prometon, bentazon, and norflurazon. None of these detected pesticides would be used under the Proposed Program. In addition to the detected pesticides, approximately 100 identified chemicals that have the ability to pollute groundwater are on the Groundwater Protection List (CDPR 2011). CDPR is required to produce an annual well sampling report that combines individual public agency information into one database. Between 2009 and 2010, CDPR and the California Department of Public Health (CDPH) sampled 22,999 wells, of which pesticides were detected in 5,160 wells (Cal/EPA 2011). CDPR collected and tested surface water in six agricultural regions throughout California between June 2006 and July 2007. Of the 95 water samples, 82 percent had detections of at least one active ingredient and 65 percent had detections of more than one active ingredient (Starner et al. 2011).

Other Surface Water Monitoring

The California Department of Pesticide Regulation (CDPR) and State Water Resources Control Board (SWRCB) maintain comprehensive databases of pesticides in surface and groundwater (CDPR, 2014; SWRCB, 2014b; SWRCB, 2014c). These surface and groundwater databases draw data from a variety of sources, including public, federal, state, and local agencies, private industry, and environmental groups. Examples of these sources include: U.S. Geological Survey (USGS 2011), State Water Resources Control Board (SWRCB 2014c), California Department of Public Health (CDPH) and CDPR (CDPR 2009a; CDPR 2010; CDPR 2011; CDPR 2012a; CDPR 2012b; CDPR 2012c). These databases were queried for detections of Proposed Program pesticide ingredients over the past 5 years (2009-2014) in order to assess the potential for exposure to these ingredients via the ingestion of drinking water from both groundwater and surface water sources. Reported ingredient concentrations were compared to corresponding risk-based screening thresholds to evaluate the likelihood of exposure above a level of concern. When available, risk based screening thresholds were selected based on the most health protective Water Quality Goal available from the SWRCB Compilation of Water Quality Goals (SWRCB, 2014a) or derived using the methods described by USEPA (2011w). Detection and water quality data may be reviewed in the Dashboard Database.

Among the chemicals that may be used under the Proposed Program, acephate, acetamiprid, bifenthrin, carbaryl, chlorpyrifos, cyfluthrin, DDVP, diazinon, fenpropathrin, tau-fluvalinate, glyphosate, imidacloprid, lambda-cyhalothrin, malathion, methamidophos, methyl bromide, methyl chloride, naled, naphthalene, permethrin, pyrethrins, thiamethoxam, and xylene surface water concentrations are monitored and reported in one or more databases. For the majority of the listed ingredients, surface water concentrations are below detection limits in California surface water. Of these chemicals, five were detected above their risk-based screening threshold.

The chemicals detected above their risk-based screening threshold were acephate, chlorpyrifos, DDVP (dichlorvos), diazinon, and methamidophos. Note that the use of DDVP within the Proposed Program is limited to trap and splat application methods to trees and telephone poles. These methods involve highly targeted applications to very small areas. Thus, it is not likely that the Proposed Program's use of DDVP will result in substantial, if any, transport to water. However, there exists the potential for the other four chemicals to reach surface waters. The maximum detected chemical concentrations exceeding the established risk-based screening thresholds in surface waters for both CDPR (2014) and SWRCB (2014b) data sources are 13.5 ppb for acephate, 2.4 ppb for chlorpyrifos, 0.169 for DDVP, 61.9 ppb for diazinon, and 1.3 ppb for methamidophos. The risk based screening threshold for these chemicals is 2.8 ppb for acephate, 2 ppb for chlorpyrifos, 0.1 ppb for DDVP, 1 ppb for diazinon and 0.35 ppb for methamidophos.

Other Groundwater Monitoring

With respect to groundwater, the following chemicals that may be used under the Proposed Program were monitored in groundwater and reported in one or more databases listed above under "Other Surface Water Monitoring." Of the Proposed Program chemicals, acephate, carbaryl, chlorantraniliprole, chlorpyrifos, cyhalothrin, DDVP, diazinon, dinotefuran, ethylene, glycol, glyphosate, imidacloprid, lambda-cyhalothrin, malathion, methyl bromide, naled, naphthalene, permethrin, thiamethoxam, 1,2,4-trimethylbenzene, and xylene groundwater concentrations were monitored and reported in one or more databases. Only methyl bromide and the inert ingredients 1,2,4-trimethylbenzene, naphthalene, and xylenes were detected in groundwater above their respective risk-based screening threshold. The maximum detected chemical concentrations exceeding the established risk based screening thresholds in groundwater for both CDPR (2014) and SWRCB (2014c) data sources are 30,000,000 ppb for 1,2,4-trimethylbenzene, 490 ppb for methyl bromide, 6,000,000 ppb for naphthalene, and 71,000,000 ppb for xylenes. The risk based screening threshold for these chemicals is 140 ppb for 1,2,4-trimethylbenzene, 9.8 ppb for methyl bromide, 0.29 ppb for naphthalene, and 1,400 ppb for xylene.

Methyl bromide is a fumigant that may be used under the Proposed Program in aboveground fumigation chambers and sea vans. This activity is unlike soil fumigation practices that inject methyl bromide directly into the subsurface soil to control soil-borne pathogens. Soil injection, under certain site-specific circumstances, may result in transport of methyl bromide from soil to groundwater, but will not occur in fumigation chambers and sea vans. Thus, this soil to groundwater transport phenomenon would be absent under the Proposed Program.

Ingredients present in Proposed Program pesticide formulations include 1,2,4-trimethylbenzene, naphthalene, and xylenes, typically at concentrations less than 5 percent. These chemicals are more typically constituents of gasoline and diesel fuel. California has remediated numerous leaking underground storage tanks that have affected groundwater (Cal/EPA 2011). Accordingly, these three chemicals in groundwater are most likely traceable to leaking underground storage tanks.

Integrated Section 303(d) and 305(b) Report

Because of the accumulation and/or persistence of certain chemicals or conditions in natural waterways, a number of natural watersheds and tributaries have been listed as impaired for those chemicals or conditions. The impairments indicate that those waterbodies have no further assimilative capacity for the listed chemicals, and any discharges would further impair conditions. The listing also indicates that the waterbodies cannot adequately meet goals set by the applicable RWQCB, EPA, or other regulatory agency for the purpose of protection of beneficial uses.

The 2010 State Water Resources Control Board Integrated Report for Sections 303(d) and 305(b) of the Clean Water Act reported a total of 3,507 impaired waterbody listings throughout California, out of some 190 hydrologic units, over 211,000 miles of rivers and streams, more than 10,000 lakes spanning 1.6 million acres, more than 600,000 acres of bays and estuaries, and a coastline stretching more than 1,000 miles. The report included 1,464 new listing and 195 delistings since previous 303(d) listings in 2006. The new listings primarily resulted from extensive new water quality data. The 303(d) list still may under-represent the total number of impaired waterbodies in California because of a lack of data, particularly for rural or remote areas where no active data collection program exists. A variety of pollutant types may necessitate adding a waterbody to the 303(d) list, including metals (in particular mercury), nutrients, sediments, and pesticides. Impairments of particular relevance to the Proposed Program include sediment, pesticides, and toxicity. For these relevant impairments, a summary of the number of listed impairment by region and type of impairment is shown in Table 6.7-1. Water bodies with identified pesticide impairment are located primarily in the Sacramento and San Joaquin valleys and associated watersheds leading into the Bay Area, as well as a few waterbodies along the southern Californian coast and in the Imperial Valley. (SWRCB 2010a and 2010b)

Table 6.7-1. Numbers of 303(d) Listings for Water Quality Constituents Relevant to the Proposed Program by Region (2010)

Pollutant Type	Regional Water Quality Control Board Number									Total
	1	2	3	4	5	6	7	8	9	
Pesticides	0	58	36	73	90	0	7	7	17	288
Toxicity	0	7	31	34	99	3	1	7	41	223

Source: SWRCB 2010b

For impaired waterbodies, a specific water quality limit for those waterbodies may have been developed as part of the TMDL process. Such limits are used as applicable (i.e., as the basis for evaluating potential impacts of Proposed Program activities that may contribute to further impairment of those waterbodies).

6.7.3 Impact Analysis

This section describes the methodology and significance criteria that were used to analyze potential environmental impacts of the Proposed Program on water quality. It then presents the impact analysis, including cumulative impacts, and presents mitigation measures to be implemented for potentially significant impacts.

Methodology

Potential impacts on water quality from implementation of the Proposed Program were evaluated by comparing baseline conditions to the conditions which may result from implementation of Proposed Program activities. Potential impacts on water quality from the Proposed Program were assessed either quantitatively or qualitatively, depending on the activity, based on available information and the degree to which the Proposed Program could result in violations of water quality standards, impairment of beneficial uses, or water quality conditions that could be harmful to aquatic life or human health.

In the context of the Proposed Program, potential impacts on surface water quality could occur if runoff, drift, or erosion of soils into surface water, including soils containing pesticides and other chemicals (e.g., pheromones, adjuvants, microorganisms, oil from equipment) that may be used under the Proposed Program were to occur. However, the analysis assumed that Proposed Program activities would be implemented in accordance with applicable permits and the relevant MPs described in Chapter 2, Proposed Program Description, which are designed to reduce the potential for drift, runoff and erosion. Specific, applicable MPs and permit requirements are identified in the impact discussions below.

The Proposed Program's activities may occur in agricultural, nursery, and urban/residential settings in various locations throughout the state. The exact locations of Proposed Program activities would be determined in the future in response to specific pest infestations.

Therefore, site-specific analysis was not possible. Key methods used to assess the impact of Proposed Program activities on water quality included assessment of erosion and sedimentation potential, assessment of fate and transport mechanisms of chemicals, assessment of narrative water quality standards, and comparison to established numerical thresholds. Pesticides were classified into five groups based on the type of evaluation which was performed (qualitative versus quantitative) and the types of standards which exist for each (narrative versus numeric). These classifications are discussed in detail below.

The methodologies below first describe common fate and transport mechanisms that influence the type and quantity of pesticides which may reach waterbodies. The use of the Human Health and Ecological Risk Assessment (Appendix A) then is discussed. This is followed by a discussion of narrative and numerical standards. Next, a characterization of all chemicals which may be used under the Proposed Program relative to their potential to impact water quality is presented. Finally, a discussion of other considerations related to water quality, as well as impaired waterbodies in the context of cumulative impacts, is discussed.

Fate and Transport of Chemicals

Besides the amount of chemical that is applied to a plant or soil, the impact of chemicals on water quality depends on the fate and transport mechanisms of a particular chemical. When evaluating Proposed Program activities that would use pesticides containing various chemicals, the first part in assessing their potential impact is to determine whether a potential exists for any chemical to reach surface water or infiltrate groundwater. This would be governed by both the location of a given waterbody with respect to the activity and the fate and transport properties of the particular chemical(s), namely how the chemical(s) would move through different environmental media such as air, soil, and water, and how they may degrade during transport.

The relevant transport processes for Proposed Program activities include the following:

- Aerial drift to waterbody
- Movement from plant foliage to water or soil
- Movement through soil to waterbody via either of two mechanisms:
  - Adsorption to soil particles reaching water through erosion or sedimentation
  - Direct transport from water flowing through soil

With implementation of applicable MPs for the Proposed Program (as identified in the impact discussion below), the transport of pesticide via aerial drift or runoff to waterbodies would be unlikely to occur. When necessary, these MPs would limit application of pesticides from occurring when rain events are forecasted, when wind speed is optimal to minimize drift, and avoid spraying in close proximity to a waterbody. Therefore, the main concern with transport would be the pesticide moving from the plant or soil to a waterbody. As discussed in more detail below, using conservative models, the Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively) evaluated the potential concentration of pesticides drifting and infiltrating directly from the soil or foliage applications to waterbodies. This analysis took into account physical characteristics of the chemical when interacting with soil and water.

In addition to the mechanism of transport, the environmental fate of a chemical also is important. Environmental fates are processes related to the breakdown, inactivation, or environmental availability and persistence of a chemical in the environment. Key types of fate of chemicals include the following:

- Absorption/adsorption: processes by which a chemical becomes associated with a surface of a particle such as soil.
- Biodegradation: a process by which microbial organisms transform (through metabolic or enzymatic action) to alter the structure of chemicals introduced into the environment.
- Hydrolysis: the breakdown of a chemical resulting from reaction with water.
- Photolysis (also known as photodegradation): the breakdown of a chemical caused by exposure to light.
- Solubilization: a process by which a chemical is dissolved in water.
- Volatilization: the conversion of a chemical substance from a liquid to a gaseous or vapor state.

Depending on the specific chemical, these environmental fate processes occur at different rates. Furthermore, some of these processes occur in environmental media before reaching water, such as in soil. The impact of fate and transport processes can mean a chemical that could have toxic effects if directly exposed may not have potential for such effects if and when it reaches water.

Use of the Ecological Risk Assessment and Human Health Risk Assessment

The Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively) modeled concentrations of pesticides in waterbodies that could result from implementation of various pesticide use scenarios for the Proposed Program. This modeling took into account some, but not all, fate and transport mechanisms, and absent regulatory requirements such as the MPs identified in Chapter 2, Proposed Program Description. In agricultural settings where chemicals would be applied (e.g., field nurseries, greenhouses, in farmed fields [row and field crops], or orchards), MPs or label restrictions would be likely to prevent chemicals from reaching waterbodies. Even if chemicals reached a waterbody, greater dilution and/or reduced concentrations would be likely, compared to the simulated concentrations in the Ecological Risk Assessment and Human Health Risk Assessment. This is because the assessment assumed that chemicals would go directly from a treated field or other area into the waterbody; real-life conditions would be likely to include varying soils conditions (affecting adsorption), heterogeneous terrain (as in the case of row crops), dilution from irrigation, buffer zones from waterbodies, and other measures intended to reduce potential for discharges. A local waterway or drainage also potentially would have a greater existing volume of water and flow-through than the modeling assumes, and this also would result in a greater dilution of any chemical concentrations in runoff.

In the Ecological Risk Assessment, the concentration of active and inert ingredients in surface water resulting from drift, runoff, or erosion during and after pesticide applications was estimated using the PE5 model (PRZM EXAMS Model Shell, Version 5.0) (EPA 2006). The modeled worst-case surface water concentrations have been used as the proxies for potential water quality impacts, because they represent the maximum potential water quality concentrations that could occur as a result of the Proposed Program for a given chemical use scenario. Focusing on such "worst-case" scenarios builds in a margin of error so that any conclusions reached are anticipated to overstate the actual impacts; in other words, if applications are shown to not have significant impacts under these conditions, significant impacts under real-world conditions would be exceptionally unlikely. In using such conservative assumptions, the analysis adds an additional measure of protection.

The Human Health Risk Assessment assumed that human ingestion of water that may have been directly exposed to a Proposed Program chemical application would be very unlikely, and therefore potential concentrations of Proposed Program chemicals in surface water and groundwater, or the exposure and subsequent risk to human receptors were not assessed. For this reason, the PEIR analysis uses the Ecological Risk Assessment's evaluation of water quality in comparison to drinking water standards to provide conservative conclusions related to these standards.

The Ecological Risk Assessment's evaluation of water quality impacts focused on exposure to ecological receptors. The Ecological Risk Assessment accordingly used a standard PE5 scenario for chemical exposure assessments (Wild and Jones 1992). Limnetic or water column concentrations in a hypothetical waterbody were used as representative chemical concentrations. The model assumes that discharges from a 10-hectare (24.7-acre) agricultural field are released into a 1-hectare (2.47-acre) waterbody that is surrounded by the field, is lentic (i.e., has no inflows or outflows), and is 2 meters (6.56 feet) deep, equaling 20,000 cubic meters (706,293 cubic feet). This scenario is unlikely to be the case under actual conditions, as many locations where the chemical application may take place would not be located in the proximity of a waterbody, and for those that are, the characteristics of the waterbody may be different. For example, the waterbody could be lentic (e.g., a stream), which would allow for additional dilution/flushing compared to the modeled concentrations. The results of the Ecological Risk Assessment's evaluation are discussed in the impact analysis below.

Types of Water Quality Standards

Water quality standards can be divided into two types: narrative and numerical. Narrative standards provide general descriptions of water quality goals, but do not specify quantitative measures of achievement of these standards. In contrast, numerical thresholds provide a specific measurable value such as a concentration in water that determines if the water quality goal is achieved. These types of standards are discussed in detail below.

Narrative Standards

Narrative standards provide a general description of water quality goals without specifying a specific quantitative value to define the standard. These are typically established by RWQCBs in Basin Plans. Table N-7-2 in Appendix O, Regulatory Setting, lists several types of narrative standards.

Proposed Program activities would be unlikely to affect narrative standards related to water coloration, taste, or odor. Some of the chemicals contain various oils that, if they reached water, may cause a visible film on the surface; however, this would be unlikely because of the MPs to be implemented as part of the Proposed Program that would minimize potential for discharge of pesticides or other substances to water,. All pesticide wastes would be controlled appropriately by following applicable regulations and appropriate waste disposal protocols. The narrative standards related to toxicity (acute and chronic) and bioaccumulation are addressed in the Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively) and are described in more detail in other sections of the methodology. All narrative standards besides these two have been dismissed from further analysis. Where numeric taste and odor standards exist, these were used to determine whether Proposed Program activities could cause potentially significant impacts.

Numerical Thresholds

Regulatory numerical thresholds have been developed by various agencies to meet human health, ecological and other water quality goals. Several sources were searched for numerical standards of chemicals included SWRCB Compilation of Water Quality Goals, RWQCB Basin Plans, and TMDLs (SWRCB 2013a). The numerical standards focused on freshwater standards, because the likelihood of saline waterbodies being directly affected would be low and would be subject to substantial dilution that would greatly decrease any potential chemical concentrations.

Some chemicals have multiple applicable regulatory enforceable numerical standards. For the purposes of this analysis, the most stringent applicable standard was used (i.e., lowest concentration) to evaluate potential to exceed water quality standards. In the case of TMDL standards, they would only apply to the impaired waterbody for which the standard was developed (see more discussion of TMDLs in the paragraph below). The acute exposure threshold often was representative of the lowest concentration. As an acute standard, this also was determined to be the most representative comparison/metric for the Proposed Program activities, which would occur on a short-term basis at any given location in response to a pest infestation or quarantines, and generally would not be sustained in the same location over longer periods of time (which would be more accurately reflected using a chronic exposure threshold).

For some chemicals, no numerical thresholds currently exist, but thresholds are under development (e.g., for DDVP and various pyrethroids). Several TMDLs are in the process of being developed for these emerging pesticide active ingredients.

Classification of Chemicals for Purposes of this Analysis

A hierarchy has been developed of chemicals that may be used under the Proposed Program, corresponding to their characteristics, types of standards, and approach to the analysis. Table 6.7-2 shows the list of chemicals and the classification used in this analysis. The levels of classification include the following:

1. Generally regarded as safe
2. No numerical thresholds exist

3. Numeric thresholds exist, but the Ecological Risk Assessment did not model the concentration
4. Ecological Risk Assessment modeled concentration of chemical is below the numerical threshold
5. Ecological Risk Assessment modeled concentration of chemical is at or above the numerical threshold

Table 6.7-2. Classification of Proposed Program Chemicals for Water Quality Impact Analysis in the Final PEIR

Chemical Name	CAS Number
Generally Regarded as Safe	
Alpha-pinene	80-56-8
Bacillus thuringiensis, subsp. Kurstaki	68038-71-1
Beta-pinene	127-91-3
Calcium silicate	1344-95-2
Geraniol	106-24-1
Hydrolyzed corn gluten meal	66071-96-3
kaolin clay	1332-58-7
mineral oil	
modified vegetable oil	
Quartz	14808-60-7
Starch	

Chemical Name	CAS Number
No Numerical Threshold Exists	
(cis)-1-methyl-2-(1-methylethenyl) cyclobutaneethanol	30820-22-5
(E)-(3,3-dimethylcyclohexylidene)-acetaldehyde	26532-25-2
(Z)-(3,3-dimethylcyclohexylidene)-acetaldehyde	26532-24-1
(Z)-2-(3,3-dimethylcyclohexylidene) ethanol	26532-23-0
(Z,E)-5,7-dodecadien-1-ol	73416-71-4
(Z,E)-5,7-dodecadienal	75983-34-58
1(R,Z)-5-(1-Decenyl)dihydro-2(3H) Furanone	64726-91-6
1,2-propanediol	57-55-6
2-Phenethyl propionate	122-70-3
4-[4-(acetyloxy)phenyl]-2-butanone	3572-06-3
acephate	30560-19-1
acetamiprid	135410-20-7
Aliphatic hydrocarbons C9-C16	64742-47-8
Alkyl biphenyl mixture	69009-90-1
Butylated hydroxytoluene	128-37-0
chlorantraniliprole	500008-45-7
DDVP	62-73-7
Diatomaceous earth	61790-53-2
Dimethyl ether	11510-6
Dimethylpolysiloxane	63148-62-9
dinotefuran	165252-70-0
Dipropylene glycol	25265-71-8
D-limonene	5989-27-5
Dodecylbenzene sulfonate	27176-87-0
Eugenol	97-53-0
Fenpropathrin	39515-41-8
Glycerin	56-81-5
Heptyl acetate	90438-79-2
Hydrated aluminum-magnesium silicate	12174-11-7
Imidacloprid	138261-41-3
Methamidophos	10265-92-6
methoxyfenozide	161050-58-4
methyl eugenol	93-15-2
Methyl Bromide	74-83-9
Methyl chloride	74-87-3
Naled	300-76-5
Naphthalene sulfonic acid polymer with formaldehyde (sodium salt)	9084-06-4
Neem oil	8002-65-1
Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-	25973-55-1
propylene carbonate	108-32-7

Chemical Name	CAS Number
pyrethrins	8003-34-7
silica gel	63231-67-4
Sodium lignosulphonate	8061-56-1
Sodium xylene sulfonate	1300-72-7
Spinosad	168316-95-8
Spirotetramat	203313-25-1
tau-Fluvalinate	102851-06-9
Thiamethoxam	153719-23-4
Threshold Exists but Not Modeled	
Copper(II)- sulphate pentahydrate	7758-99-8
POE Nonylphenol	26027-38-3
Concentration Below Threshold	
1,2,4-Trimethylbenzene	95-63-6
Cumene	98-82-8
Cyclohexanone	108-94-1
diazinon	333-41-5
ethanolamine	141-43-5
ethylene glycol	107-21-1
Glyphosate	38641-94-0
Isopropyl alcohol	67-63-0
malathion	121-75-5
Naphthalene	91-20-3
Xylenes	1330-20-7
Concentration Above Threshold	
bifenthrin	82657-04-3
carbaryl	63-25-2
chlorpyrifos	2921-88-2
cyfluthrin	68359-37-5
lambda-cyhalothrin	91465-08-6
permethrin	52645-53-1

Chemicals Generally Regarded as Safe

Chemicals in this classification were determined to be generally environmentally safe and would not pose a water quality concern. Proposed Program chemicals that would be environmentally safe are shown in Table 6.7-2. Despite the fact that under the Proposed Program, CDFA would implement measures to prevent any chemicals from reaching waterbodies, no information was found during preparation of this PEIR to indicate that these chemicals would need to be limited in their discharge into surface waters to protect aquatic life or human health. These chemicals tend to be naturally occurring (although in less concentrated forms) in the environment, easily degrade in the environment, and/or have properties that make them inert in the environment. The chemicals in this list fall under the following categories:

- Minerals (e.g., quartz, calcium silicate, kaolin-clay)
- Oils (e.g., geraniol, mineral oil, vegetable oil)
- Considered safe for human use in food or cosmetics (e.g., corn gluten, mineral oil, starch, vegetable oil)
- Other naturally occurring chemicals (e.g., Bacillus thuringiensis, pinene)

Minerals in this category would not pose a concern because they generally would settle to the bottom or would wash out of aquatic environments and would not be considered toxic to aquatic life. The oils in this category are ones that typically are used in products designated as safe for human contact or consumption. These oils also typically degrade rapidly in the environment. The remaining chemicals are naturally occurring and typically are found in agricultural or other processes, degrading via normal organic degradation processes. Many, but not all, naturally occurring products tend not to cause harm if used for anthropogenic purposes. Several of these naturally occurring products are bacteria that normally are found in the environment and a natural residue secreted by pine trees. Increased concentrations would not degrade water quality.

Chemicals with No Numerical Threshold

Chemicals in this category do not have specific numerical standards, but could present a hazard to aquatic organisms or humans if released into the environment at high concentrations. Based on available research, these chemicals generally break down quickly in the environment and do not last in the environment long enough for harmful concentrations to build up.

These chemicals would not be used in sufficient frequency and/or quantities to cause concern to regulatory agencies when manufacturer's specifications and the Proposed Program MPs are implemented. In addition to the MPs, aquatic organisms would be further protected by the mitigation measures discussed in Section 6.3, Biological Resources. A brief description of each of these chemicals, based on information contained in the Dashboard for the Ecological Risk Assessment and Human Health Risk Assessment (Appendices A and B, respectively), is as follows:

1,2-propanediol: This chemical is highly volatile when released and is likely to enter the air on application. In soil and water, it undergoes biodegradation. Based on the slow transport to waterbodies and biodegradation in soil and water, it would be unlikely to cause any substantial water quality concerns.

2-Phenethyl propionate: This chemical naturally occurs in waxes and oils of roses, eucalyptus guava, and peanut plant. It would be used in low quantities in traps as an attractant. It would be unlikely to be transported from a trap to any waterbodies. Therefore, it would be unlikely to cause any water quality concerns.

Acephate: This chemical has slow degradation by hydrolysis in water. However, it does not persist in soil and degrades rapidly under both aerobic and anaerobic conditions. It would degrade substantially before reaching any waterbodies. Therefore, it would be unlikely to cause any substantial water quality concerns.

Acetamiprid: This chemical undergoes rapid biodegradation in soil. Thus, acetamiprid concentrations would be low by the time they would be transported to any waterbodies. In addition, acetamiprid undergoes photodegradation and biodegradation in water. Therefore, it would be unlikely to exist in concentrations that could cause a water quality concern.

Aliphatic hydrocarbons C9-C16: These chemicals are inert ingredients. When released into the air, they quickly volatilize and degrade. They also degrade in soil. Information on water fate is not available. They are expected to be hydrophobic. Because of the slow transport to water and degradation that would occur in other media before reaching water, these chemicals would be unlikely to cause any substantial water quality concerns.

Alkyl biphenyl mixture: This chemical undergoes volatilization when in soil or water. In addition, it is not expected to be mobile when in soil. Therefore, it would be unlikely to be transported to any waterbodies and would not cause any substantial water quality concerns.

Butylated hydroxytoluene: This chemical is used in small quantities as an antioxidant in pheromone-based pesticides. Because of the small quantities, it would be unlikely to result in any substantial concentrations in waterbodies and would be unlikely to cause any substantial water quality concerns.

Chlorantraniliprole: This chemical strongly adsorbs to soil and sediment particles. It would not have high concentrations in the water column. Thus, it would be unlikely to be available to substantially affect the water quality of drinking water.

DDVP: This chemical is an organophosphate pesticides and also is the degraded product of naled. DDVP breaks down rapidly in humid air, water, and soil. It also is rapidly lost from leaf surfaces by volatilization and hydrolysis. Therefore, it is not expected to persist in the environment for any considerable amount of time. In addition, the Proposed Program would use DDVP and naled in trapping, further decreasing the likelihood of environmental transport of the chemical to any waterbodies. Currently, DDVP is being examined for potential issues in waterbodies because it has been seen at low concentrations in some water monitoring studies in California. New research may change the existing understanding of the environmental fate and transport of this chemical.

Diatomaceous earth: Diatomaceous earth is made from the skeletons of diatoms. It is not soluble in water. It would be unlikely to cause any water quality concerns.

Dimethyl ether: This is used as an inert ingredient in fumigations. It is expected to rapidly volatilize in any media. Therefore, it would be unlikely to be found in substantial concentration in any waterbodies and would not be a water quality concern.

Dimethylpolysiloxane: This chemical is used as an antifoaming agent in small quantities. It strongly binds to soil particles. Therefore, it would be unlikely to be transported in a substantial quantity to any waterbodies.

Dinotefuran: This chemical is highly soluble in water and degrades under aqueous photolysis. Therefore, it would be unlikely to occur in high concentrations in any waterbodies and would not substantially affect water quality.

Dipropylene glycol: This is used as an inert ingredient in pesticides. It typically is volatilized when released. Therefore, it would be unlikely to cause a water quality concern.

D-limonene: This is a naturally occurring substance found in fruits, vegetables, meats, and spices. D-limonene has a high affinity to bind to soil particles, making it unlikely to be transported to any waterbodies. Thus, it would be unlikely to cause water quality concerns.

Dodecylbenzene sulfonate: This chemical is an inert ingredient in antifoaming agents and is used in small quantities. Based on the small quantities of use and the dilution that would occur in waterbodies, it would be unlikely to cause any water quality concerns.

Fenpropathrin: When released to water, this chemical is expected to bind to suspended solids and sediment rather than stay in the water column. It undergoes some volatilization, hydrolysis and photolysis, dependent on environmental characteristics. Fenpropathrin has a high affinity for binding to soil particles, making it relatively immobile in soil and unlikely to result in any substantial transport to waterbodies. Therefore, it would be unlikely to cause water quality concerns.

Glycerin: Glycerin is used as a wetting agent in pesticides. It undergoes rapid biodegradation in soil and water. Therefore, it would be unlikely to occur in any substantial concentration in waterbodies and would not cause water quality concerns.

Heptyl acetate: This chemical is used as a solvent. It undergoes some degradation in water, and soil and also undergo some volatilization. Because of the amount of dilution that would occur before entering a waterbody, this chemical would be unlikely to cause water quality concerns.

Hydrated aluminum-magnesium silicate: This chemical naturally occurs in mineral clay deposits and is used in bait stations. Because it is a natural component of clays, it would be unlikely to cause any water quality concerns.

Imidacloprid: This chemical is soluble in water and degrades rapidly by photolysis in water. It does not degrade well in soil and is highly mobile in soil. However, because the amount of dilution that would occur before it entered a waterbody, this chemical would be unlikely to cause water quality concerns.

Methamidophos: This chemical only weakly binds to soil particles and may reach waterbodies. It undergoes biodegradation in soil, at a moderate rate. When methamidophos enters water, it does not volatilize and undergoes moderate hydrolysis and a little photolysis. Methamidophos only would be used in ground applications in nursery settings for quarantine purposes, and therefore it would not be likely to be located in close proximity to surface water. Proposed Program MPs are designed to minimize the potential transport to waterbodies. Therefore, it would be unlikely for methamidophos to substantially affect water quality.

Methoxyfenozide: This chemical has low solubility in water and does not rapidly breakdown by hydrolysis or photolysis. However, methoxyfenozide has low mobility in soil. Therefore, the transport of methoxyfenozide to waterbodies would be slow and would be unlikely to occur. Thus, this chemical is not expected to exist in high concentrations in waterbodies and would likely be subject to high dilution rates because of its slow transport.

Methyl bromide and Methyl chloride: These chemicals are used as fumigants and are highly volatile. Therefore, they would be unlikely to be found in waterbodies, and any that reached water would rapidly volatilize into the air. Furthermore, the Proposed Program use of these chemicals would be in above-ground fumigation chambers and sea vans, which is unlike soil fumigation practices that inject methyl bromide directly into the subsurface soil to control soil-borne pathogens. Soil injection, under certain site-specific circumstances, may result in transport of methyl bromide from soil to groundwater. However, this soil to groundwater transport mechanism would not have the potential to occur under the Proposed Program.

Methyl eugenol and Eugenol: These chemicals are naturally occurring food additives and are primarily used in traps and lures. They typically are transported to the air because of volatilization. Because of the small quantities that would be used in traps and lures, and because of their tendency to be volatilized, these chemicals are not anticipated to occur in any substantial concentrations in water.

Naled: This chemical rapidly degrades to DDVP in the environment. Thus, it is not anticipated to pose any concern to water quality.

Naphthalene sulfonic acid polymer with formaldehyde: This chemical is used in small quantities as a defoamer and emulsifier. Because of the small quantities and amount of dilution that would occur before entering a waterbody, this chemical would be unlikely to cause water quality concerns.

Neem oil: Neem oil is derived from seeds of the Neem tree. Neem oil is not expected to accumulate in drinking water when used in accordance with EPA-approved labeling, based on its use as only a foliar application on food commodities (EPA 2009b).

Phenol, 2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylpropyl)-: This chemical is used in small quantities as a stabilizer in a pheromone-based pesticide. Because of the small quantities, it would be unlikely to result in any substantial concentrations in waterbodies and would be unlikely to cause any water quality concerns.

Pheromones: This class of chemicals includes (cis)-1-methyl-2-(1-methylethenyl) cyclobutaneethanol, (E)-(3,3-dimethylcyclohexylidene)-acetaldehyde, (E,Z)-7,9-Dodecadien-1-yl acetate, (Z)-(3,3-dimethylcyclohexylidene)-acetaldehyde, (Z)-2-(3,3-Dimethylcyclohexylidene) Ethanol, (Z,E)-5,7-dodecadien-1-ol, (Z,E)-5,7-dodecadienal, 4-[4-(acetyloxy)phenyl]-2-butanone, and 1(R,Z)-5-(1-Decenyl)dihydro-2(3H) Furanone. Pheromones would be used in small quantities and would be released naturally by organisms in the environment. Therefore, they will be unlikely to be found in any substantial quantities or cause harm to water quality.

Propylene carbonate: This chemical is used as an inert ingredient. This chemical would volatilize when it is released and also would volatilize from soil. Therefore, it would be unlikely to reach any waterbodies or cause water quality concerns.

Pyrethrins: Pyrethrins are naturally occurring in Chrysanthemum flowers. Pyrethrins degrade rapidly in soil by photolysis and biodegradation. Thus, the concentration of pyrethrins would be substantially lower before it would reach waterbodies. In addition, pyrethrins break down rapidly by photolysis and hydrolysis in water. Therefore, pyrethrins would be unlikely to be present in any substantial concentrations in water to affect water quality.

Silica gel: The Food and Drug Administration recognizes this chemical to be generally safe as an anti-foaming agent. No evidence exists of any aquatic toxicity. Therefore, it would be unlikely to cause any water quality concerns.

Sodium lignosulphonate: This chemical is used as a dispersant in low concentrations. No evidence exists of any aquatic toxicity. Because of the low concentrations and lack of toxicity information, it would be unlikely to cause any water quality concerns.

Sodium xylene sulfonate: This chemical is an inert ingredient in anti-foaming agents and is used in small quantities. Based on the small quantities of use and the dilution that would occur in waterbodies, it would be unlikely to cause any water quality concerns.

Spinosad: This chemical adsorbs strongly to soil particles and undergoes photodegradation in soil. This causes the chemical to move to water slowly and dilution in water to occur. The chemical degrades by photolysis in water. Because the chemical would be slow to transport to waterbodies, would undergo some degradation, and dilution would occur, it would be unlikely to cause any water quality concerns.

Spirotetramat: This chemical undergoes rapid biodegradation in soil. In water, this chemical under goes both rapid hydrolysis and photolysis. Because of the degradation processes in both soil and water, it would be unlikely for any substantial concentrations to occur in waterbodies.

Tau-Fluvalinate: This chemical undergoes some hydrolysis with rates dependent on pH. It has a high affinity for binding to soil particles, making it relatively immobile in soil and unlikely to result in any substantial transport to waterbodies. When released to water, it is expected to bind to suspended solids and sediment rather than stay in the water column. Therefore, it would be unlikely to cause water quality concerns.

Thiamethoxam: This chemical undergoes photolysis in both soil and water. Therefore, it would be unlikely to occur in any substantial concentrations in waterbodies.

Chemicals for which Thresholds Exist, but Concentration Was Not Modeled

Chemicals in this category have a numerical water quality standard, but the Ecological Risk Assessment did not determine concentrations in water. The following discussion describes chemicals in this category as well as the fate and transport mechanisms that explain why these chemicals would break down in the environment and would be unlikely to pose a concern to water quality impacts.

Copper (II) sulphate pentahydrate: This chemical is highly soluble in water and dissolves to form copper ions in water. Therefore, copper is used as a surrogate. Copper (II) sulphate pentahydrate binds strongly to soil particles and would be unlikely to migrate substantially to waterbodies. Additionally, based on the concentrations of product to be applied, assuming all product reached a waterbody, the concentrations would be less than the threshold for copper. This would be an extremely conservative assumption because it would be highly unlikely that all of the product would reach water and also that no additional dilution would occur. Therefore, copper (II) sulphate pentahydrate used in the Proposed Program would be unlikely to pose a concern to water quality.

POE nonylphenol: This chemical is used as an adjuvant and is highly soluble in water. It undergoes rapid biodegradation in aerobic aquatic environments. Because this chemical would be used only as an adjuvant in small concentrations and would undergo rapid biodegradation in aquatic environments, it would be unlikely to pose a concern to water quality.

Chemicals for which the Modeled Concentration Was Below the Threshold

Chemicals in this category have a numerical water quality standard, and the modeled concentration from the Ecological Risk Assessment for these chemicals was less than the available numerical water quality standard.

Table 6.7-3 compares various regulatory thresholds to the conservatively modeled concentrations that could occur in surface water based on a drift or runoff scenario with the assumption that the discharge of runoff or aerosol drift is directly into a waterbody. As discussed above, the direct discharge scenario would not be expected to occur for various reasons, and concentrations would be expected to be less than modeled. Regardless, the worst-case scenario concentrations would not exceed numeric regulatory thresholds designed to protect drinking water, aquatic life, and taste and odor of surface water. Therefore, it can be safely concluded that the actual circumstances surrounding use of these chemicals under the Proposed Program would not pose any water quality concerns.

Chemicals for which the Modeled Concentration Was Above the Numeric Threshold

Chemicals in this category have conservatively modeled concentrations that may exceed numerical water quality thresholds. Table 6.7-3 shows those chemicals which, if they were to reach the hypothetical waterbody after application, were estimated to exceed water quality standards/thresholds. These chemicals could be applied using a variety of methods, and the modeled concentrations represent the highest possible acute concentrations in surface water using the conservatively modeled conditions. The chemicals that have modeled concentrations above the threshold include carbaryl, chlorpyrifos, and four pyrethroids (bifenthrin, cyfluthrin, lambda-cyhalothrin, and permethrin). With the exception of cyfluthrin and permethrin, all of the standards that were modeled to be exceeded are specific to standards which apply to a particular waterbody and would not apply elsewhere. All four pyrethroids would be likely to have similar fate and transport properties. Therefore, they are discussed as a group.

CDFA's NPDES Permit for Biological and Residual Pesticide Discharges addresses carbaryl and cyfluthrin. The permit stipulates that a PAP must be prepared in accordance with the permit requirements and thresholds. Adherence to this permit and an approved PAP would avoid discharge of these pesticides into surface waterbodies, or would require monitoring if discharge is unavoidable.

The following discussion describes the chemicals that were modeled to be above the threshold. The discussion focuses on the fate and transport mechanisms and Proposed Program safeguards that were not modeled. Two important aspects of this analysis are degradation that would occur in soil and water, and dilution that would occur because direct discharge to waterbodies would be unlikely to occur after implementation of the MPs applicable to these Proposed Program activities.

Carbaryl: Carbaryl is moderately mobile in soil and undergoes some biodegradation in soil. It is soluble in water and undergoes some hydrolysis and photodegradation. Some potential degradation could occur that was not considered in the model, as well as dilution that would occur in many waterbodies; even if these factors had been possible to incorporate into the model, they may not have resulted in concentrations below numeric thresholds. However, carbaryl is covered under CDFA's NPDES Permit for Biological and Residual Pesticide discharges. This requires CDFA to prepare a PAP that reduces the amount of chemical that is discharged to surface waterbodies. The manufacturer's specifications (for Sevin SL™, Carbaryl 4L) specifically state that the chemical should not be applied directly to water, to areas where surface water is present, and similar situations. The pesticide label instructions and permit conditions combined with the Proposed Program MPs that encourage avoidance of waterbodies would be likely to not cause carbaryl concentrations from Proposed Program activities to exceed regulatory thresholds despite the conservative model estimates.

Chlorpyrifos: Chlorpyrifos is likely to bind to soil particles and not reach waterbodies very quickly. In soil, chlorpyrifos undergoes biological degradation, although not at rapid rate. When chlorpyrifos enters water, it is expected to volatilize into the air. It undergoes some hydrolysis and photolysis but not at a rapid rate in water. Although chlorpyrifos also would potentially exceed the threshold concentrations in the Sacramento and San Joaquin Rivers' TMDLs, in addition to the general standard, it is only proposed for use in ground applications in nursery settings for quarantine purposes, and therefore would not be likely to be used in close proximity to surface water. Reflecting typical Proposed Program activity locations and implementation of MPs to avoid waterbodies, it would be unlikely for concentrations to be as high as the conservatively modeled concentrations, once dilution and degradation processes are accounted. Therefore, chlorpyrifos concentrations from Proposed Program activities would be unlikely to exceed regulatory thresholds despite the conservative model estimates.

Pyrethroids (Bifenthrin, Cyfluthrin, Lambda-cyhalothrin, and Permethrin): Four pyrethroids could be applied under the Proposed Program in areas where specific local waterbodies are listed as impaired, and modeled concentrations of the pesticides would exceed these waterbody-specific TMDL numeric thresholds. However, these simulated conditions were conservative; modeled concentrations resulting from direct discharge into surface water would be likely to be higher than actual applications. These pesticides would be applied in ground or foliar applications using direct spray methods and most typically would occur in nurseries, greenhouses, and/or shadehouses where potential runoff would most likely encounter a buffer of some distance or dilution in a storm drainage system before entering surface water used by aquatic life or humans. All of these pyrethroids would adsorb strongly to soil particles and would be unlikely to be transported from soil into waterbodies. In addition, degradation mechanisms would occur in both soil and water that were not accounted in the model. Because transport from soil would be unlikely to occur, the main concern with these pyrethroids reaching waterbodies would be related to aerial drift. Implementation of Proposed Program MPs would minimize the potential for aerial drift. Therefore, under Proposed Program activities, it is unlikely that these pyrethroids would reach waterbodies in any substantial concentrations because of their strong adsorption to soil and adherence with MPs to minimize aerial drift.

Table 6.7-3. Water Quality Standards for Chemicals that May be Used under the Proposed Program

CAS Number	Chemical Name[14]	Water Quality Standard		Notes[15]	Modeled Concentration[16]		Exceed Threshold?
95-63-6	1,2,4-Trimethylbenzene	330	ug/L	1	5.25	ug/L	No
82657-04-3	bifenthrin	0.6	ng/L	2	0.58	ug/L	Yes
63-25-2	carbaryl	2.53	ug/L	3	130.8	ug/L	Yes
2921-88-2	chlorpyrifos	0.014	ug/L	4	15.67	ug/L	Yes
		0.083	ug/L	13			
7440-50-8	Copper	5.7	ug/L	15	Not modeled	ug/L	NA
		4.1	ug/L	15			
		200	ug/L	5			
		300	ug/L	6			
		1000	ug/L	7			
98-82-8	Cumene	0.8	ug/L	8	0.26	ug/L	No
		770	ug/L	1			
108-94-1	Cyclohexanone	8300	ug/L	8	0.72	ug/L	No
68359-37-5	cyfluthrin	0.3	ng/L	9 (acute)	25.13	ug/L	Yes
		0.05	ng/L	9 (chronic)			
333-41-5	diazinon	0.05	ug/L	4	0	ug/L	No
141-43-5	Ethanolamine	20	g/L	8	2.13989	ug/L	No
107-21-1	ethylene glycol	14000	ug/L	1	1.86	ug/L	No
38641-94-0	Glyphosate	700	ug/L	10	0.15	ug/L	No
67-63-0	Isopropyl alcohol	160,000	ug/L	8	2.39	ug/L	No
91465-08-6	lambda-cyhalothrin	1	ng/L	11 (acute)	0.108	ug/L	Yes
		0.5	ng/L	11(chronic)			
121-75-5	malathion	0.1	ug/L	3 (max)	0	ug/L	No
		0.43	ug/L	3 (1hr)			
91-20-3	Naphthalene	17	ug/L	1	13.51	ug/L	No
52645-53-1	permethrin	30	ng/L	3	0.58	ug/L	Yes
		10	ng/L	12 (acute)			
		2	ng/L	12 (chronic)			

CAS Number	Chemical Name[14]	Water Quality Standard		Notes[15]	Modeled Concentration[16]		Exceed Threshold?
26027-38-3	POE Nonylphenol	28	ug/L	3	Not modeled	ug/L	NA
		6.6	ug/L	4			
1330-20-7	Xylenes	17	ug/L	8	0.39	ug/L	No

Notes:

1. California Department of Public Health Notification Level for drinking water
2. Oxnard Drain No. 3 Pesticides, PCBs and Sediment Toxicity TMDL (EPA 2009b)
3. California Department of Fish and Wildlife Fresh Water Quality Criteria (1hr average)
4. California Department of Fish and Wildlife Fresh Water Quality Criteria (4 day average)
5. Agricultural Water Quality Goals
6. California Public Health Goal
7. California Department of Health Secondary MCL
8. Taste and Odor Threshold
9. Santa Maria Watershed TMDL (Central Coast RWQCB 2012)
10. California Department of Health Primary MCL
11. Santa Maria Watershed TMDL (Central Coast RWQCB 2012)
12. Water Quality Criteria Report for Permethrin. Initial study in support of future TMDLs (UC Davis 2011)
13. Region 5 San Joaquin River 1005 TMDL (Central Valley RWQCB 2005)
14. Copper was used for copper (II) sulphate pentahydrate because it dissociates in water to copper ions. Lambda cyhalothrin used cyhalothrin. POE nonylphenol used nonylphenol. Tau-fluvalinate used fluvalinate.
15. California Toxics Rule (U.S EPA)
16. Source unless specified is SWRCB 2013b.
17. Source is Dashboard Database and Appendices A and B.

Other Considerations and Assumptions Used in the Analysis

Many of the applications of the various pesticides under the Proposed Program would involve observing buffers stipulated by manufacturer specifications or simply those typically occurring between application sites and surface water. As discussed above, many of the chemical application scenarios would occur in nursery, greenhouse, or residential settings, with setbacks from surface water and aquatic organisms. For instance, many nurseries are contained semi-isolated areas, with setbacks/buffers that would attenuate the concentrations of the chemicals during and after applications. This typically would occur either through adsorption into soils, dilution of runoff water, flushing of the waterbody, or by containing runoff water in a storm drainage system. Therefore, the acute concentrations simulated and summarized above should be considered conservative or overestimated, based on the scenarios used for the simulation compared to actual conditions.

Additionally, for chemicals modeled to exceed standards, or in locations where waterbodies have a relevant impairment, the analysis assumes that MP-SPRAY-1 through MP-SPRAY-7, MP-GROUND-1 through MP-GROUND-4, and MP-AERIAL-1 would be implemented to provide proper application based on site-specific conditions, setback buffering, minimization of aerial drift, and proper handling and storage. These MPs would be implemented so that chemicals are not used within 48 hours of an anticipated rainfall event, thus giving the chemical time to degrade in soils before potentially being eroded or captured in runoff. Buffer zones also would need to be used to protect sensitive areas, such as waterbodies, critical aquatic habitat, and other sensitive areas, which would increase transportation time, dilution, and degradation.

For aerial applications of pesticides, implementation of MP-AERIAL-1, which specifies the use of 200-meter (656-foot) buffer zones to protect sensitive areas, such as waterbodies, critical habitat, and other sensitive areas, would not allow applications when wind speed is 5 miles per hour or less, would not allow applications when rain is forecasted, and would reduce the potential for aerial drift to settle onto/enter surface waterbodies near or adjacent to treated areas.

Consideration of Impaired Waterbodies

Under the Clean Water Act, over 288 listed impairments exist for pesticides, with an additional 119 listings for unknown toxicity (which is often linked to human-made chemicals including pesticides). A portion of those waterbodies are impaired for the same chemicals that would be used under the Proposed Program. Therefore, this analysis compares those impairments and related discharge limits to the modeled instantaneous (acute) discharge concentrations under the Proposed Program. The acute discharge concentrations are considered to be a conservative (worst–case) scenario based on conservative modeling assumptions and because they would experience dilution or degradation before reaching waterbodies. Table 6.7-3 shows the modeled results that exceed waterbody-specific numeric standards from TMDLs; discharges to other non-listed waterbodies would not be of concern.

The potential for discharges to impaired waterbodies is considered as part of the cumulative impact analysis (discussed below), as any incremental discharge to such waterbodies (even if very minor) could contribute to their cumulative impairment.

Significance Criteria

For the purposes of this analysis, based on Appendix G of the CEQA Guidelines, the Proposed Program would result in a significant impact related to water quality if it would:

A. Violate any water quality standards or waste discharge requirements;

B. Create or contribute runoff water which would provide substantial additional sources of polluted runoff;

C. Otherwise substantially degrade water quality; or

D. Contribute considerably to cumulatively significant water quality impacts.

These thresholds of significance for impacts related to water quality are known henceforth as impact criteria. Each water quality impact criterion has been assigned an alphabetical code, as designated in the list above. Direct, indirect, and cumulative impacts under each applicable impact criterion are analyzed next.

Environmental Impacts of the Proposed Program

All Management Approaches

Impact WQ-ALL-1: The Proposed Program could result in incidental or accidental release of fuels, oil, or grease associated with vehicle use for physical, biological, and chemical management activities. (Less than Significant)

Various Statewide Program activities involve the use of vehicles and other equipment. As described in Chapter 3, Proposed Program Activities, these activities would include but are not limited to:

- Physical Management: inspection, trapping, pest removal, host removal, and cleaning;
- Biological Control Program: transport and release of biological control agents and sterile insects;
- Chemical Control Program: transport and installation of chemical-based traps, twist ties, bait stations, soil-, ground-, and foliar-based pesticide applications, and disinfection.

These activities may involve driving vehicles and equipment on established roadways, agricultural dirt roads, at Border Protection Stations, other inspection stations, in agricultural areas, and infrequently, flying small aircraft over agricultural areas. These vehicles may be commercial, passenger, or industrial vehicles designed to hold the necessary amounts of traps, biological agents, or chemicals for transport or installation/application at sites of known or potential future pest infestation. Use of mechanized vehicles of all kinds has the potential to release small amounts of fuels, oils, grease, and other mechanical fluids, which can be deposited on paved roads or bare ground (e.g., in the case of agricultural areas). These substances can be carried by stormwater or other runoff into nearby storm drains, agricultural drains, and natural drainages, particularly during "first flush" events associated with the first rainstorm of a season. These circumstances have the potential to result in degradation of water quality.

Vehicles and other equipment used under the Proposed Program may be regulated by the MS4 program (most typically in residential/urban settings). As described in Appendix N, Regulatory Setting, Phase I and Phase II MS4 permits are required for municipalities with populations greater than and less than 100,000 people, respectively. The MS4 Permits require municipalities to design and manage their stormwater systems and implement measures intended to reduce the contamination of nearby surface waters from vehicle traffic under typical storm conditions. The municipal discharger is required to develop and implement a Storm Water Management Plan/Program to reduce contamination to the maximum extent practicable.

Under baseline conditions in the locations covered by MS4 permits, motorized vehicles are used on and off of roadways, with related nonpoint source runoff into storm drainage systems and/or waterbodies. The number of vehicles that would be used under the Proposed Program would be a small fraction of this overall vehicle use in any given area, and therefore Proposed Program activities are not expected to contribute a substantial amount of vehicle traffic relative to baseline environmental conditions on paved or unpaved roads.

Similarly, in areas not covered by an MS4 permit, Proposed Program vehicle and equipment use is unlikely to result in substantial changes in the incidental releases of oils, greases, fuels, and other substances compared to baseline conditions.

Furthermore, many locations, such as airports, would be covered by the General Industrial Permit, which would include implementation of a SWPPP designed to minimize discharge of contaminated runoff to waterbodies. This would further minimize the potential for impacts in these locations.

In conclusion, use of vehicles and equipment under the Proposed Program is not anticipated to result in a substantial increase in nonpoint source pollution that would be likely to result in exceedances of water quality standards. This impact is considered less than significant.

Chemical Management Approaches

Impact WQ-CHEM-1: The Proposed Program may include applications of environmentally safe chemicals. (Less than Significant)

This impact discussion focuses on those chemicals that may be used under the Proposed Program which generally are considered environmentally safe and to not pose any water quality concerns. These chemicals are listed in Table 6.7-2 under the section, "Classification: Generally Recognized as Safe." As discussed above under Methodology, no information has been found during the preparation of this PEIR indicating that these chemicals would need to be limited in their discharge into surface waters to protect water quality. Furthermore, Proposed Program activities involving use of many of these chemicals are not expected to result in concentrations substantially different from background conditions, and many would rapidly break down, and/or settle out of the water column. Because no numeric thresholds exist for these chemicals, no violation of numeric water quality standards would occur. Because of the relatively small amount of these chemicals that may be used under the Proposed Program in any given location, these chemicals also are not expected to cause a violation of narrative standards, such as visible oil sheens, impairments of taste and odor, or concentrations great enough to be detrimental to aquatic life. Therefore, the impact would be less than significant.

Impact WQ-CHEM-2: The Proposed Program may include applications of chemicals with no numeric water quality standard, which could violate narrative standards or future numeric standards. (Less than Significant with Mitigation)

This impact discussion focuses on those chemicals that are not necessarily considered environmentally safe but for which no applicable numeric water quality standards exist. The impact discussion evaluates their potential to violate narrative water quality standards, or numeric standards should they be established in the future. These chemicals are listed in Table 6.7-2 under the section, "Classification: No Numerical Threshold Exists." Based on available research, these chemicals generally break down quickly in the environment and do not last in the environment long enough for harmful concentrations to build up. Further chemical-specific details are provided above in the Methodology section.

Some of these chemicals may have the potential to degrade water quality if the chemical reaches surface water through runoff or drift. Implementation of MP-SPRAY 1 through 7, MP-AERIAL-1, and MP-GROUND 1 through 4 would minimize the likelihood of these chemicals reaching surface water through runoff or drift. With implementation of these MPs, and because of the relatively small amount of these chemicals that may be used under the Proposed Program in any given location, these chemicals are not expected to cause a violation of narrative standards, such as visible oil sheens or impairments of taste and odor. Therefore, the impact would be less than significant.

However, numeric standards for some of these chemicals may be developed in the future. One example is DDVP, for which a numeric standard is being developed. Depending on the standards that are developed, the potential exists that Proposed Program activities could result in exceedances of these standards. The impact would be potentially significant.

CDFA would implement Mitigation Measure WQ-CHEM-2 so that future water quality standards would not be exceeded. This mitigation measure would involve tracking water quality standards to determine whether any of these chemicals in the future have had numerical standards established. If numerical standards have been established, CDFA would evaluate whether the concentrations modeled in the Ecological Risk Assessment exceed the adopted standard. In such cases, Impacts WQ-CHEM-5 would apply, and Mitigation Measure WQ-CHEM-5 would be implemented. With implementation of these mitigation measures, the impact would be less than significant.

Mitigation Measure WQ-CHEM-2: Track Emerging Water Quality Standards and Implement Additional Mitigation as Appropriate.

CDFA will track whether new applicable numerical water quality standards have been adopted. If new numerical thresholds are established, CDFA will evaluate whether the estimated concentrations modeled in the Ecological Risk Assessment exceed the adopted standard. In these cases, Impact WQ-CHEM-4 or WQ-CHEM-5 would apply (including implementation of appropriate MPs as described in those impacts), and Mitigation Measure WQ-CHEM-5 would be implemented related to quarantine activities.

Impact WQ-CHEM-3: The Proposed Program may include applications of chemicals with numeric water quality standards, but which were not modeled. (Less than Significant)

This impact discussion focuses on two chemicals that are not necessarily considered environmentally safe but for which concentrations were not modeled, specifically copper (II) sulphate pentahydrate and POE nonylphenol. The impact discussion evaluates their potential to violate either narrative or numeric standards. Based on available research, these chemicals either bind strongly to soil such that transport to waterbodies is extremely unlikely (copper [II] sulphate pentahydrate), or generally break down quickly in the environment and do not last in the environment long enough for harmful concentrations to build up (POE nonylphenol). Further chemical-specific details are provided above in the Methodology section.

In addition, the Proposed Program would implement MP-SPRAY 1 through 7, MP-AERIAL-1, and MP-GROUND 1 through 4 to minimize the likelihood of these chemicals reaching surface water through runoff or drift. Given the properties of these chemicals, the relatively small amount of these chemicals that may be used under the Proposed Program in any given location, and with implementation of these MPs, these chemicals are not expected to exceed narrative or numeric standards. This impact is considered less than significant.

Impact WQ-CHEM-4: The Proposed Program may include chemical applications modeled to be below applicable numeric or narrative water quality standards. (Less than Significant)

This impact discussion focuses on those chemicals for which the conservatively modeled surface water concentrations from the Ecological Risk Assessment would not exceed applicable numeric standards. These chemicals are listed in Table 6.7-2 under the section, "Classification: Concentration below Threshold."

Conservative modeling indicates use of these chemicals under the Proposed Program would not result in any violations of numeric water quality standards. In addition, because of the relatively small amount of these chemicals that may be used under the Proposed Program in any given location, these chemicals also are not expected to cause a violation of narrative standards, such as visible oil sheens, impairments of taste and odor, or concentrations great enough to be detrimental to aquatic life. Therefore, the impact would be less than significant.

Impact WQ-CHEM-5: The Proposed Program could include chemical applications modeled to exceed applicable numeric water quality standards. (Less than Significant with Mitigation)

This impact discussion focuses on those chemicals for which applicable numerical water quality standards exist, and the modeled surface water concentrations from the Ecological Risk Assessment exceeded those standards. These chemicals are listed in Table 6.7-2 under the section "Classification: Concentration above Threshold." The Methodology section describes fate and transport mechanisms for these chemicals in detail. Based on these mechanisms, the concentrations of these chemicals in waterbodies from Proposed Program activities are expected to be substantially lower than the estimated concentrations modeled in the Ecological Risk Assessment. Implementation of Proposed Program MPs would further reduce concentrations. Implementation of MP-SPRAY 1 through 7, MP-AERIAL-1, and MP-GROUND 1 through 4 would minimize the likelihood of these chemicals reaching surface water through runoff or drift. Therefore, the Proposed Program is not expected to exceed water quality standards.

As an additional safeguard, CDFA would implement Mitigation Measure WQ-CHEM-5, requiring that compliance agreements with regulated entitles (e.g., growers) include a requirement that growers implement the MPs. With implementation of this measure and the resulting adherence to the MPs, the impact would be less than significant.

Mitigation Measure WQ-CHEM-5: Require Implementation of Proposed Program MPs as Part of Compliance Agreements.

For quarantine areas where chemicals may be used that were modeled to exceed standards, or where impaired waterbodies exist which could be affected by Proposed Program chemical use, CDFA shall include a requirement in compliance agreements that regulated entities (e.g., growers) are to implement relevant Proposed Program MPs, or shall show proof that participation in the Ag Waivers Program or another program to protect water quality contains measures which are equivalent to or more protective than the Proposed Program MPs.

Cumulative Impacts

Impact WQ-CUM-1: The Proposed Program could include chemical applications modeled to exceed applicable numeric water quality standards or otherwise degrade water quality in impaired/303(d) listed waterbodies. (Less than Significant with Mitigation)

As shown in Table 6.7-4, over 288 listed impairments exist for pesticide contamination, and another 223 listed impairments exist for toxicity (which may be partially the result of pesticide contamination). Of the listed pesticide impairments, approximately 172 are listed as impaired for specific pesticides that may be used under the Proposed Program, as shown in the table. Another 15 impairments are designated for pesticides in general and may be related to pesticides that may be used under the Proposed Program.

Table 6.7-4. Number of Listed Impairments by Region and Specific Proposed Program Pesticide

	Regional Water Quality Control Board Number					
Pesticide	2	3	4	5	7	9
Bifenthrin				1		
Chlorpyrifos		26	9	63	3	6
Cis-permethrin				1		
DDVP				1		
Diazinon	38	13	12	46	2	3
Malathion				3		
Organophosphorus Pesticides			1	1		
Pyrethroids	1			13		

Source: SWRCB 2010b

These waterbodies would have no additional assimilative capacity for a specific pesticide(s) that may be used under the Proposed Program (where the impairment is specific to that pesticide[s]), pesticides in general (where the impairment is not specific to a particular pesticide), or any sort of toxic substance (for waterbodies impaired for toxicity). Therefore, any additional contribution by the Proposed Program to an impairment would be a considerable contribution to a cumulatively significant impact.

Proposed Program activities in locations where relevant pesticides could reach an impaired waterbody would be required to implement Proposed Program MPs so that discharges to these waterbodies would not occur or would be minimized. To ensure that this occurs, CDFA would implement Mitigation Measure WQ-CUM-1, requiring CDFA to identify whether a treatment location or quarantine area contains or is in proximity to any waterbodies impaired for relevant pesticides, pesticides in general, or toxicity, and to implement Proposed Program MPs during treatments. For quarantine areas where impaired waterbodies are present, CDFA would implement Mitigation Measure WQ-CHEM-5 so that those parties required to comply with the quarantine would implement Proposed Program MPs appropriately. With implementation of these measures, the Proposed Program's contribution to the cumulatively significant impact would *not* be considerable, and the impact would be less than significant.

Mitigation Measure WQ-CUM-1: Identify whether Proposed Program Pesticide Applications May Occur in Proximity to Impaired Waterbodies, and Implement Appropriate MPs.

Before conducting a treatment or implementing a quarantine, CDFA shall identify whether a treatment location or quarantine area contains or is in proximity to any waterbodies impaired for relevant pesticides, pesticides in general, or toxicity. For those treatments where impaired waterbodies are present, CDFA shall implement relevant Proposed Program MPs. For quarantines where impaired waterbodies exist, CDFA shall implement Mitigation Measure WQ-CHEM-5.

Chapter 7
ALTERNATIVES ANALYSIS

7.1 Introduction

This chapter describes the regulatory requirements related to evaluation of alternatives in an EIR, presents the alternatives development process for the Proposed Program, describes the alternatives considered and those considered but dismissed from detailed analysis, provides environmental impact analysis of the alternatives considered, presents a comprehensive comparison of alternatives, and identifies the environmentally superior alternative.

7.2 Regulatory Requirements

CEQA requires that an EIR evaluate a reasonable range of alternatives to a proposed project, including a No Project (or in the case of this PEIR, a No Program) Alternative. The No Project (or No Program) Alternative allows decision-makers to compare the impacts of approving the proposed action against the impacts of not approving the action. Although no clear rule exists for determining a reasonable range of alternatives to a proposed project, CEQA provides guidance that can be used to define the range of alternatives for consideration in the environmental document.

The range of alternatives under CEQA must meet most of the basic project objectives, should reduce or eliminate one or more of the significant impacts of the proposed project (although the alternative could have greater impacts overall), and must be potentially feasible. In determining whether alternatives are potentially feasible, lead agencies are guided by the general definition of feasibility: "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors" (CEQA Guidelines Section 15364). In accordance with Section 15126.6(f) of the CEQA Guidelines, the lead agency should consider site suitability, economic viability, availability of infrastructure, general plan consistency, other regulatory limitations, and jurisdictional boundaries in determining the range of alternatives to be evaluated in an EIR. An EIR must briefly describe the rationale for selection and rejection of alternatives and the information that the lead agency relied on in making the selection. It also should identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reason for their exclusion (CEQA Guidelines Section 15126[d][2]). These guidelines were used in developing the alternatives and their evaluation, as described next.

7.3 Alternatives Development Process

Alternatives to the Proposed Program were developed by first requesting and evaluating public feedback during the Draft PEIR scoping process. Alternatives suggested by the commenting public were evaluated for their feasibility, their ability to meet most of the basic program objectives, and their ability to reduce the severity of one or more significant impacts of the Proposed Program. Additional alternatives were developed by assessing the potentially significant impacts of the Proposed Program, and making modifications to particular attributes of the Proposed Program to reduce one or more of these potentially significant impacts. Alternatives that were determined to be infeasible, that failed to meet most of the basic program objectives, or that failed to reduce at least one of the potentially significant impacts of the Proposed Program were removed from further evaluation. The remaining alternatives were evaluated in detail. Statewide Program objectives and significant impacts of the Proposed Program are presented next, because these factors were fundamental to the evaluation of alternatives.

7.3.1 Program Objectives

The Proposed Program has the following objectives:

- Exclude invasive or harmful plant pests from California and prevent or limit the spread of newly discovered pests within the state;
- Protect California from damage caused by the introduction or spread of harmful plant pests;
- Minimize the impacts of pest management approaches on human health and urban and natural environments;
- Promote the production of a safe, healthy, secure food supply;
- Support CDFA's goal of rapid response by streamlining project-level implementation activities, addressing new pests as they are detected, and integrating new pest management approaches as they are developed;
- Implement a program that is broad enough to apply to a wide range of pest management methods and types of pests in California;
- Be consistent with existing CDFA permits, protocols, and policies, including the National Pollutant Discharge Elimination System Permit issued to CDFA by the State Water Resources Control Board;
- Coordinate CEQA compliance for the multiple, interrelated pest prevention and management programs under the Statewide Program; and
- Develop a checklist evaluation tool to assess the potential environmental impacts of proposed activities that can be understood and reviewed by the public.

7.3.2 Significant Environmental Impacts of the Proposed Program

The following resource topics have impacts that have been identified as potentially significant, but they would be mitigated to a less-than-significant level by implementation of mitigation measures:

- Biological Resources
- Hazards and Hazardous Materials
- Noise
- Water Quality

The following resource topics have impacts that have been identified as significant and unavoidable:

- Air Quality
- Global Climate Change

7.4 Alternatives Considered

The following alternatives were considered because they are required by statute or would meet most of the Proposed Program objectives, are potentially feasible, and would avoid or substantially reduce one or more potentially significant impact of the Proposed Program:

- No Program Alternative
- No Pesticide Alternative
- U.S. Department of Agriculture (USDA) Organic Pesticide Alternative
- No Eradication Alternative

These alternatives are discussed next.

7.4.1 No Program Alternative

Characteristics of this Alternative

The No Program Alternative would occur if the Proposed Program is not authorized through this PEIR process. Under the No Program Alternative, CDFA would continue to establish and enforce interior quarantines to prevent the spread of invasive pests, would continue to carry out statewide detection and survey programs, and would continue pest exclusion management activities. Rapid response/eradication activities would continue to be conducted, often on an emergency basis. Past and present plant pest prevention and management activities under CDFA's authority would continue into the future using an IPM approach. CDFA would consider appropriate CEQA review and documentation for any new plant pest programs that are proposed in the future. Coordination of CEQA compliance across multiple interrelated pest prevention and management programs would not be achieved.

7.4.2 No Pesticide Alternative

Characteristics of this Alternative

Under the No Pesticide Alternative, CDFA would continue to generate a list of high priority pests, would continue its biological control program, would continue to release sterile insects, and would continue developing and enforcing State quarantine regulations and requiring that they result in use of pesticides. CDFA also would develop a tiering strategy for future CEQA compliance. However, CDFA would no longer conduct rapid response/eradication activities involving pesticides and would not use pesticide products in detection and delimitation surveys. Rapid response/eradication activities would use physical and biological management approaches; examples of such approaches include host removal, non-pesticide bait stations and trapping, and targeted releases of sterile insects. Eradication and control of many pests would not be anticipated to be achievable (for more discussion of which pests can and cannot be effectively controlled using physical and biological management approaches, refer to the pest-specific discussions under Section 7.4.3, USDA Organic Pesticide Alternative). Growers, packers, and shippers would continue to make individual decisions regarding private on-farm pesticide use, but they would be restricted from using pesticides in response to an interior quarantine regulation. Because CDFA does not have the authority to regulate pesticide use outside the state, out-of-state growers, packers, and shippers would continue to make individual decisions regarding pesticide use, to maintain pest-free crops in compliance with exterior quarantine regulations.

CDFA would continue to use the IPM approach in developing a management strategy for each pest infestation, in an attempt to eradicate or control that pest. Development of biological control agents (BCAs) and sterile insect releases would continue as a part of the IPM approach under the No Pesticide Alternative. Because the development of effective BCAs and sterile insects requires a long lead time for research and development, some pest populations could be expected to increase during the development phase. In the event that effective BCAs are released, the expected outcome would be control of the target pest, rather than eradication. Therefore, on-farm cultural practices may change, and on-farm pesticide use could increase over the short term and may be sustained in the long term. For growers to comply with interior quarantine regulations, a substantial increase in removal of host material in quarantine areas would be expected, resulting in a large amount of produce, nursery stock, soil, and entire orchard trees removal and disposal.

7.4.3 USDA Organic Pesticide Alternative

Characteristics of this Alternative

Under the USDA Organic Pesticide Alternative, CDFA would continue to generate a list of high priority pests, would continue pest detection surveys, would continue implementing the Biological Control program, would continue to release sterile insects, and would continue developing and enforcing State quarantine regulations. However, Proposed Program activities would only employ natural pesticide products or synthetic pesticide products that are specifically allowed under Title 7, Part 205.601 (Synthetic Substances Allowed for Use in Organic Crop Production) of the Code of Federal Regulations. Proposed Program pest management activities would continue to use horticultural oil, sticky traps, synthetic pheromones and bait stations, sulfur, pyrethrum, kaolin clay, *Bacillus thuringiensis*, insecticidal soaps, and spinosad, among others, as allowed by USDA Organic regulations.

Under the USDA Organic Pesticide Alternative, eradication and control of certain priority pests, including the Asian citrus psyllid (ACP), Japanese beetle, exotic fruit flies, and glassy-winged sharpshooter (GWSS), would not be expected to be achievable. These pests have been shown to respond poorly (or their potential response is speculative) to physical, biological, and USDA organic chemical treatment methods, as described in more detail below. Eradication and control of the remaining priority pests are expected to be achievable with only the use of physical, biological, and USDA organic-approved chemical management approaches. Under the USDA Organic Pesticide Alternative, populations of GWSS, ACP, exotic fruit flies, and Japanese beetle are expected to grow and spread within the state. Individual growers may choose to use conventional pesticides for these four priority pests, outside the framework of the Proposed Program.

Because conventional pesticide use under the Statewide Program only includes a very small amount of conventional pesticide use for agricultural and for other purposes throughout the state, this alternative would not be anticipated to lead to widespread conversion of conventional farms to organic practices.

Physical Management Approaches

- **ACP Pest Removal**: ACP nymphs attach themselves to developing leaves and stems via their proboscis. Therefore, physical removal of the nymphs would entail removal of growing shoots, effectively stunting trees and reducing fruit production. Pest removal at the nymph stage would be possible for this pest, although it would result in crop damages. Adult ACPs are mobile daytime fliers, and adults theoretically could be netted or collected from foliage. However, because of their ability to fly when disturbed and the laborious and time-prohibitive task of collecting these very small insects by hand, it is unlikely that all adults or nymphs could be captured and removed. Therefore, the effectiveness of this method for eradication and control would be moderate for nymphs and very low for adults.
- **ACP Host Removal**: Removal of host plants would include the large-scale destruction of plants and their roots by physical removal and burial or burning. The soil then would require tarping to prevent sprouting of new plants. Host removal would remove the food source for female ACPs, but it also could inadvertently promote dispersal of female psyllids in search of hosts outside of the treatment area, thus spreading the infestation. Therefore, the effectiveness of this method for eradication and control would be low.
- **Japanese Beetle Pest Removal**: Japanese beetle grubs live in the soil in and around plant roots, so all potentially infested plant roots and associated soil would require removal and disposal to remove larvae from the treatment site. Adult Japanese beetles are mobile daytime fliers, and adults theoretically could be netted or collected from foliage. However, because of their ability to fly when disturbed and the laborious task of plant root and soil removal and collecting small insects by hand, it is unlikely that all adults and larvae could be captured and removed.

Therefore, the effectiveness of this method for eradication and control would be moderate for grubs and very low for adults.

- **Japanese Beetle Host Removal**: Host removal would include the same treatment methods as described for ACP. Like the treatment for ACP, host removal inadvertently could promote dispersal of female beetles in search of hosts outside the treatment area, thus spreading the infestation. Therefore, the effectiveness of this method for eradication and control would be low.
- **Exotic Fruit Fly Pest Removal**: Exotic fruit fly larvae live inside fruit, so all potentially infested fruit in the entirety of the eradication area would require removal and disposal by burial to eliminate larvae from the treatment area. In addition, larvae leave the fruit and pupate in the soil, and thus soil removal and disposal also would be required to eliminate pupae. Adult flies are mobile daytime fliers, and adults theoretically could be netted or collected from foliage. However, because of their ability to fly when disturbed and the laborious task of collecting small insects by hand and removing soil, it is unlikely that all adults could be captured and removed, nor all pupae removed from the site. Therefore, the effectiveness of this method for eradication and control would be moderate for larvae and very low for adults and pupae.
- **Exotic Fruit Fly Host Removal**: Host removal for exotic fruit fly eradication would include physical removal and burial of all suitable fruit from the host plant and the ground to eliminate developing eggs and larvae. Fruit removal currently is performed in addition to mass trapping within a 100-meter radius of exotic fruit fly detection sites to prevent the development of additional adults. Fruit removal would be feasible for small treatment areas, but it would be highly laborious for large treatment areas and would not ensure removal of pupae. It also may promote the dispersal of female flies in search of egg-laying sites, thus spreading the infestation. Therefore, the effectiveness of this method for eradication and control would be low.
- **Pierce's Disease Pest (Vector) Removal**: The physical removal of GWSS by vacuum or hand picking is a means of eradicating this pest. Physical removal would require that sufficient GWSS be removed to effect a reduction in the population of the pest to a level of non-detect. Although vacuuming may have some effect in rows with plants of equal height, it would be very unlikely that sufficient numbers of the highly mobile GWSS could be captured to effect a substantial population reduction. GWSS are easily disturbed and quickly move away from the source of the disturbance. In addition, GWSS feed in the tops of trees and shrubs that are difficult to reach and search. It may be possible to remove sufficient egg masses to effect a population reduction, if all the leaves can be effectively searched, such as on potted plants in a nursery setting. However, GWSS readily deposit eggs in leaves in the tops of trees and shrubs, making their discovery difficult at best. In most cases, it would be unlikely that sufficient GWSS life stages could be physically removed to effect a meaningful reduction in their population. No data exist to support the efficacy of these techniques. Therefore, the effectiveness of this method for eradication and control would be low (or is unknown because of lack of data).
- **Pierce's Disease Host Removal:** Infected vines may be removed to reduce vine-to-vine transmission of Pierce's disease. However, host removal would not prevent

infection of vines by vectors of Pierce's disease, including GWSS. Therefore, the effectiveness of this method for eradication and control would be very low.

- **Exotic Fruit Fly Fruit Bagging**: Fruit bagging would include individually enclosing each developing fruit in a bag, preventing exotic fruit flies from laying eggs. To be effective, frequent monitoring of the bagged fruit would be required to identify and repair damage. Fruit bagging would be feasible for small treatment areas, but it would be highly laborious for large treatment areas. It also may promote the dispersal of female flies in search of egg-laying sites, thus spreading the infestation. Therefore, the effectiveness of this method for eradication and control would be low.

Biological Management Approaches

- **ACP Biological Control Agents**: Two parasites have been released in Florida against ACP, but only one of these, *Tamarixia radiata*, is considered even somewhat successful there. This insect also has been released into the environment in southern California. CDFA is now actively working with the citrus industry to pursue options for incorporating this parasite into treatment programs statewide. It is too early to know how potentially effective these BCAs may be against ACP populations. Therefore, evaluating the effectiveness of this method for eradication and control would be speculative.
- **ACP Sterile Insect Releases**: Sterile insect techniques have not been researched or developed for ACP or any other psyllid; therefore, the technique's effectiveness is unknown and unavailable. Similar to GWSS sterile insects, sterile ACP possibly may transmit HLB. Evaluation of the potential effectiveness of this method for eradication and control of ACP would be speculative.
- **Japanese Beetle Biological Control Agents**: Two nematodes, *Herterorhabditis bacteriophora* and *Steirnema glaseri*, are used throughout the U.S. against Japanese beetle grubs. Success of these nematodes is highly dependent on soil type, moisture, and temperature. Nematodes require loose textured soils, moist soils, and a narrow soil temperature range, and thus they are ineffective in many locations. Twenty-four parasites have been released in the U.S. against Japanese beetle, but only five have become established and only three are considered somewhat successful. Parasites would not be an effective standalone eradication method because their success would be density dependent; they would be more effective against dense Japanese beetle populations, and their effectiveness would decline with decreasing beetle populations. Therefore, the effectiveness of these nematodes for eradication and control would be moderate to low.
- **Exotic Fruit Fly Biological Control Agents**. No single-celled microorganisms or nematodes have been shown to be effective in controlling exotic fruit flies. Parasitic wasps have been investigated as potential BCAs against exotic fruit flies in suppression programs only. Parasites would not be an effective standalone eradication method because their success would be density dependent; they would be more effective against dense fruit fly populations, and their effectiveness would decline with decreasing fruit fly populations. Therefore, although this method initially may be effective against dense populations, the longer-term effectiveness of this method for eradication and control would be moderate to low.

- **Pierce's Disease (Vector) Biological Control Agents**: Seven BCAs have been reared previously and released for the control of GWSS. This treatment has resulted in a substantial decline in GWSS populations in southern California (Hoodle 2010); however, pest populations continue to persist and have not been eradicated through release of BCAs. Remaining GWSS are capable of spreading Pierce's disease. Therefore, the effectiveness of this method for eradication and control would be low.
- **Japanese Beetle Sterile Insect Releases:** Research on the production and release of sterile Japanese beetle adults was done in the 1960s and 1970s, but it has not been pursued further and has never been developed as a control technique. An evaluation of the effectiveness of this method for eradication and control would be speculative.
- **Exotic Fruit Fly Sterile Insect Releases**: Sterile insect releases frequently are performed successfully in Mediterranean and Mexican fruit fly eradication activities; however, this technique has not been developed for Oriental fruit fly, olive fruit fly, melon fruit fly, white striped fruit fly, cherry fruit fly, or Caribbean fruit fly. Evaluation of the effectiveness of this method would be speculative for other exotic fruit flies.
- **Pierce's Disease (Vector) Sterile Insect Releases**: The ability to mass rear GWSS would be necessary to produce the sterile adults needed for release. To date, mass rearing operations for sterile GWSS have not been successful. Therefore, this method would not be available. In addition, sterile GWSS would still be capable of spreading Pierce's disease, so releasing large numbers would exacerbate the disease problem, rendering this method unacceptable.

USDA Organic Chemical Management Approaches

- **ACP Mass Trapping**: Mass trapping of adult ACPs would include placing a high density of traps in an area in an attempt to remove them physically before they could reproduce. The current available trapping system for ACP relies on short-distance visual stimulus, and it would not be effective for use in a mass trapping program. No commercially available pheromone lure is available for ACP. CDFA is participating in research to develop a plant volatile attractant to enhance the trap, but the results are preliminary and currently are under review. Therefore, evaluating the effectiveness of this method for eradication and control would be speculative.
- **Japanese Beetle Mass Trapping**: Mass trapping with a pheromone lure has been shown to reduce Japanese beetle numbers substantially in isolated populations. However, mass trapping is not effective in chemical eradication measures against established Japanese beetle populations because trap capture can be low, and studies indicate that only a 40 percent to 50 percent drop in population numbers exists at high trap densities (1 per acre). Therefore, the effectiveness of this method for eradication and control would be very low.
- **Exotic Fruit Fly Mass Trapping**: Mass trapping is a widely used method for exotic fruit fly eradication and is known to be highly successful for certain species of exotic fruit fly. Trapping is considerably enhanced when a conventional insecticide is

added to the lure to provide capture of adults (Vargas et al. 2009). Organic insecticides generally have very short periods of effectiveness, requiring reapplication of bait stations every few days to maintain effectiveness. Therefore, this method would require a substantial increase in the labor needed to conduct effective mass trapping, rendering this method of fruit fly eradication more labor intensive but possible for eradication efforts. Research shows that the USDA Certified Organic pesticide spinosad may be substituted successfully for naled in a mass trapping eradication activity for oriental fruit fly and melon fly (Vargas et al. 2003), although more field trials are needed to confirm this conclusion. However, when spinosad was substituted for naled in a detection activity, flies tended to escape before dying because spinosad is slow acting (Vargas et al. 2003). This feature of spinosad would not allow for a successful detection system because even though the fly responding to the trap would die, it may escape before its death, precluding its detection. This may allow the infestation to grow larger before it finally is detected. The failure of spinosad to contribute to a successful detection system would increase the response time to a fruit fly introduction, which could result in a longer duration eradication activity.

- **Pierce's Disease (Vector) Mass Trapping**: Mass trapping has been shown to be effective only when a pheromone lure is used to attract and kill insects. GWSS, like other leafhoppers, use acoustic signals transmitted through the plants on which they reside to attract mates (Claridge 1985). Therefore, pheromone lures could not be developed for GWSS, and mass trapping would not be effective as an eradication or control strategy for this pest.
- **ACP PyGanic™ Treatment**: PyGanic, an organic formulation of a pyrethrin, is registered for use on all host plants. However, PyGanic alone is not effective in eradicating ACP. Research has shown that without the addition of a conventional insecticide, piperonyl butoxide, environmental conditions may degrade the PyGanic before an effect on ACP can occur. Therefore, the effectiveness of this method for eradication and control would be moderate to low. Organic insecticidal additives are evaluated for potential effectiveness by CDFA as they become available, but to date, none has proven to be effective in providing ACP eradication.
- **Pierce's Disease (Vector) PyGanic and Other Organic Pesticides Combination Treatment**: Field trials of the use of PyGanic with a combination of other USDA organic approved pesticide products have shown that these combinations are largely ineffective at controlling GWSS populations (Akey et al. 2004; Redak and Bethke 2004). Therefore, the effectiveness of this method for eradication and control would be low.
- **ACP Biopesticides**: No single-celled microorganisms, such as bacteria, currently are available to control ACP. One species of entomopathogenic fungus, *Isaria fumosorosea*, has been shown to be effective at suppressing ACP populations, but it is not yet registered for use on food crops, including citrus, in California. CDFA is cooperating with the University of California at Davis in pursuing authorization to conduct research in California on this fungus, for use against ACP. This fungus is expected to achieve approval under USDA organic standards, but currently it is not available.

- **Japanese Beetle Biopesticides**: No products containing these biopesticides currently are registered in California because of their lack of effectiveness.

7.4.4 No Eradication Alternative

Characteristics of this Alternative

This alternative was suggested during the Draft PEIR scoping process. Under the No Eradication Alternative, CDFA would establish a goal of managed pest population control rather than eradication for all high-priority pests. CDFA would continue to conduct activities to manage pest populations at the established population thresholds. Eradication efforts may continue outside CDFA's jurisdiction. As with the Proposed Program, under this alternative, CDFA also would develop a tiering strategy for future CEQA compliance.

To understand the likely outcome of this alternative, consideration of the Proposed Program's approach is warranted first. Under the Proposed Program, eradication of priority pests would be achieved using the most effective combination of chemical and non-chemical practices, and chemical use would be performed using the smallest effective dose over the smallest effective area to achieve eradication. Evidence from eradication efforts compared with control efforts in other geographic areas provide substantial evidence that eradication is both economically and environmentally beneficial, compared with control for high-priority pests. For example, the gypsy moth has been successfully eradicated 28 times at a total cost of just under $1 million in California. In contrast, in the eastern U.S., where eradication efforts have been abandoned in favor of control efforts, annual expenditures have exceeded $35 million to maintain population control. Many pounds of pesticides continue to be used to fight gypsy moth populations throughout the eastern U.S., whereas continuous treatments are unnecessary in California, where eradication has been achieved. Eradication activities are short duration, highly localized, and use the smallest amount of pesticide possible to maintain effectiveness. The pesticide used in gypsy moth eradication efforts is a USDA organic-certified product (see Chapter 3, Proposed Program Activities, for a more detailed description of gypsy moth eradication activities).

Therefore, under the No Eradication Alternative, CDFA's control of priority pest populations at an acceptable level would be expected to increase use of pesticides overall (both under the Statewide Program and otherwise), because pesticide use would occur over a larger geographic area and over a longer duration (into the foreseeable future) compared to more targeted pesticide use for eradication activities at their anticipated frequency under the Proposed Program.

7.5 Alternatives Considered and Dismissed

The following alternatives were considered early in the planning process but were dismissed from further evaluation for one or more of the following reasons: (1) they were not substantively different from one of the considered alternatives; (2) they would not sufficiently meet most of the program objectives; (3) they were determined to be infeasible; or (4) they would not avoid or substantially reduce one or more potentially significant impacts under the Proposed Program:

- Public Decision-Making Process Alternative
- No Pesticides, Synthetic Lures, or Synthetic Attractants Alternative
- No Biological Control Agents Alternative
- Lower Risk Pesticide Alternative
- Reduced Pesticide Use Intensity Alternative
- Pesticide Phase-Out Alternative
- Host-Free Zone Alternative

These alternatives and the reasons for their rejection are further described next.

7.5.1 Public Decision-Making Process Alternative

This alternative was suggested during the Draft PEIR scoping process. Under the Public Decision-Making Process Alternative, CDFA would undertake a process in which the public would be given decision-making power to determine the appropriate means by which California should conduct pest management. However, pursuant to the California Food and Agricultural Code (CFAC), CDFA is required to prevent the introduction and spread of pests in California, and the CFAC gives the director of CDFA the decision-making authority to conduct pest prevention and control programs to achieve the pest management goals set forth in the CFAC. Therefore, such decision-making power could not be transferred to a public group, rendering this alternative legally infeasible. In addition, CDFA already uses a notice/comment process to gather public input for determining the appropriate means of pest prevention and management, providing the public with a method of participating in the decision-making process. CDFA would continue to use this process under the Proposed Program.

7.5.2 No Pesticides, Synthetic Lures, or Synthetic Attractants Alternative

This alternative is similar to the No Pesticide Alternative, but it also would restrict CDFA's use of synthetic pheromones and attractants. This alternative was not considered for full evaluation because it would not reduce any of the potentially significant impacts of the Proposed Program beyond those evaluated under the No Pesticide Alternative.

7.5.3 No Biological Control Agents Alternative

Under the No Biological Control Agents Alternative, CDFA would discontinue the Biological Control program in California. CDFA would not release BCAs for ACP, olive fruit fly, olive psyllid, and cereal leaf beetle, which would be imminent or ongoing under the Proposed Program. Pesticide use authorized by the Statewide Program would continue under this alternative, and CDFA would continue undertaking rapid response/eradication activities. This alternative ultimately was eliminated from full evaluation because it would not reduce or eliminate any of the potentially significant impacts of the Proposed Program.

7.5.4 Reduced Pesticide Use Intensity Alternative

Under the Reduced Pesticide Use Intensity Alternative, the same pesticide products would be used as under the Proposed Program; however, the intensity of pesticide use (geographic extent, amount of pesticide used, and/or frequency of treatments) in any given time period would be conducted at the minimum level necessary to exclude pests and prevent or limit their spread. Under the Proposed Program, pesticide use intensity would already be at the minimum level necessary to meet Program objectives. Therefore, this alternative is not considered substantively different from the Proposed Program, and was therefore eliminated from further evaluation.

7.5.5 Pesticide Phase-Out and Replacement Alternative

Under the Pesticide Phase-Out and Replacement Alternative, the Proposed Program activities would continue, including detection, eradication, and quarantine programs, but pesticide use would be phased out, which for the purposes of this alternative is assumed to continue for a period not to exceed 20 years. In contrast to the Proposed Program, this alternative would entail immediate increased investment in research and development of alternatives to pesticides, such as BCAs, for all priority pests currently addressed by the Statewide Program. BCAs developed and released would not be intended to eradicate a pest; they would be focused on controlling the pest and reducing the pest's potential to cause unacceptable economic damage. This would likely be the case for other alternatives' management approaches as well.

CDFA already uses all feasible and effective management approaches, and expects to use newly developed management approaches in the future, to the extent they also are feasible and effective. Accordingly, this alternative was dismissed from further evaluation because the development and use of alternative management approaches would be substantially similar to what is being contemplated under the Proposed Program, and the extent to which the alternative could meet many of the Proposed Program objectives would be speculative.

7.5.6 Host-Free Zone Alternative

Under the Host-Free Zone Alternative, CDFA would continue to generate a list of high-priority pests, would continue pest detection surveys, would continue developing and enforcing State quarantine regulations, and would continue implementing eradication and control activities. However, instead of chemical treatments for eradication and control activities and for grower compliance with quarantine regulations, this alternative would require removal of all host material in a treatment or quarantine area, including on farms, in nurseries, and in residential areas. This alternative would require destruction of hundreds of square miles of orchards, row crops, nursery plants, and host plants in residential areas. This alternative would be devastating to agriculture and natural areas in California because it would require destruction of agricultural crops and plants over large areas every year. CDFA does not have the legal authority to implement this alternative. In addition, this alternative would not meet a majority of the Proposed Program objectives.

7.6 Alternatives Impact Analysis

7.6.1 No Program Alternative

Agricultural Resources and Economics

Under the No Program Alternative, past and present plant pest prevention and management activities would continue. In general, CDFA's activities support and benefit agriculture in the State, creating an incentive against conversion of farmland to non-agricultural use. This would be a beneficial impact, similar to the Proposed Program.

Air Quality

The No Program Alternative would not conflict with any applicable air quality plans, policies, or regulations. The No Program Alternative would have similar emissions compared to the Proposed Program and could exceed ambient air quality mass emission thresholds in the future, depending on changes in pest management activities resulting from changes in the location and extent of pest infestations. The No Program alternative would not generate any substantial quantities of odors beyond the short-term odors associated with fossil-fueled equipment and the chemical pesticide product that dissipate shortly after use.

Biological Resources

Under this alternative, the avoidance, minimization, and mitigation measures identified within this PEIR for protection from biological impacts would not be included. This alternative would protect biological resources to the extent that existing permits, protocols, and policies would provide protection, but without the additional protection, or mitigation, provided herein.

Global Climate Change

Under the No Program Alternative, GHG emissions will be similar to those estimated for the Proposed Program. The No Program Alternative would not conflict with any applicable plan, policy, or regulation. The No Program Alternative could result in substantial increases in GHG emissions in the future because of changes in pest management activities resulting from changes in the location and extent of pest infestations.

Hazards and Hazardous Materials

Under the No Program Alternative, little difference would occur in hazardous impacts compared to the Proposed Program. However, the No Program Alternative would not necessarily implement pesticide applications consistent with the scenarios evaluated for the Proposed Program, and therefore could expose physiologically sensitive populations to different levels of human health hazards.

Noise

Under the No Program Alternative, similar activities as identified for the Proposed Program would occur, and they would have similar potential to result in a potentially significant impact as the Proposed Program.

Water Quality

Under the No Program Alternative, the mechanisms for potential water quality impacts would be similar to those of the Proposed Program and generally would be less than significant. However, additional safeguards identified for the Proposed Program, such as requirements that growers implement MPs in quarantine areas, would not be implemented. Instead, the No Program Alternative would rely on growers' compliance with existing water quality regulations and requirements, so that their activities would not adversely affect water quality. In some cases, water quality programs exist for growers (e.g., Ag Waivers Program), but this is not universal. Therefore, the No Program Alternative would have the potential to result in greater impacts on water quality in quarantine areas compared to the Proposed Program.

7.6.2 No Pesticide Alternative

Agricultural Resources and Economics

Under the No Pesticide Alternative, CDFA would not use pesticides to eradicate introduced pest populations and would require that growers do not use pesticides in response to CDFA quarantines. Individual growers would continue to use pesticides outside of CDFA's jurisdiction. Exotic pests would be expected to become more established in California and could have a substantial enough effect on agricultural productivity to either result in growers raising alternative crops that could be grown economically despite these pests, or in a worst-case scenario, could lead to conversion of farmland to non-agricultural uses.

Air Quality

The No Pesticide Alternative would not conflict with any applicable air quality plans, policies or regulations. Under the No Pesticide Alternative, a change in the distribution of activity types is expected, and criteria pollutant emissions may either increase or decrease depending on the specific amount that activities change compared to the criteria pollutant emission intensity. The No Pesticide Alternative potentially could result in a substantial increase in criteria pollutant emissions because of activities used as alternatives to pesticides that may be more criteria pollutant intense, such as sterile insect release or those that require increased efforts to achieve the same result.

The No Pesticide Alternative would entirely avoid any potential for exposure to TACs associated with pesticide use. The No Pesticide Alternative would not generate substantial quantities of odors beyond the short-term odors associated with fossil-fueled equipment that dissipate shortly after use. The No Pesticide Alternative would likely result in a cumulatively considerable impact on air quality, similar to the Proposed Program.

Biological Resources

Because pesticide use would no longer occur under this alternative, all potential impacts on biological resources associated with pesticide use would be avoided.

Under this alternative, the pests currently controlled through use of pesticides may temporarily or permanently increase in both number and range, to the extent that physical and biological approaches would not be immediately implemented or may not be effective ultimately. The majority of priority pests addressed under the Proposed Program are primarily agricultural pests, and direct impacts on native biological resources from an increase in these pests may not be significant. For several pests that do infect native plants, increases in populations could cause substantial ecological effects. For instance, no known cure exists for trees infested by Asian long-horned beetle, and increased infestations in natural woodlands could cause significant impacts on forest and riparian ecosystems. Similarly, increased infestations of palm weevils could destroy California fan palm oases, a sensitive natural community, with indirect impacts on a variety of desert and palm-dwelling special status species.

In response to increases in pest populations, on-farm cultural practices may change, and on-farm pesticide use (outside of the framework of the Statewide Program and CDFA's authority) could increase. The farming community in California is large and diverse, and pesticide application practices by farmers encompass a wide range of knowledge, training, and caution in applying pesticides, and in using appropriate practices and safety controls. Therefore, pesticide impacts on natural areas adjacent to agriculture may increase, with an increase in potential impacts on biological resources. The increase in potential impacts on biological resources from increases in on-farm pesticide use may would outweigh the impacts avoided by the cessation of Statewide Program pesticide use under this alternative.

Global Climate Change

Under the No Pesticide Alternative, a change in the distribution of activity types is expected, and GHG emissions may increase or decrease, depending on the extent to which specific activities change compared to baseline conditions. The No Pesticide Alternative would not conflict with any applicable plan, policy, or regulation. The No Pesticide Alternative potentially could result in substantial GHG emissions related to activities used as alternatives to pesticides that may be more GHG emission intense, such as sterile insect release or those that require increased efforts to achieve the same result.

Hazards and Hazardous Materials

Impacts related to hazards and hazardous materials under this alternative would be similar to the impacts discussed for the Proposed Program's physical and biological management activities, and would avoid potential impacts related to chemical management activities. This alternative would not result in any substantial new releases of hazardous materials resulting from routine transport, storage, and use of fuels, and oil related to the use of automobiles, aircraft, and other equipment. No substantial increase would occur in any upset or accident conditions including the release of hazardous materials and may represent a decrease in accident conditions with the elimination of the use of pesticides. No potential would exist for release of hazardous materials at schools, outside of minor amounts of TACs associated with fuel combustion of vehicles and equipment. The No Pesticide Alternative would entirely avoid any potential human health impacts associated with pesticide use, except to the extent that individual growers would continue to use pesticides outside CDFA's jurisdiction to address Statewide Program pests. Exposure of sensitive populations to human health hazards from the Statewide Program would be limited to TACs released by combustion of fuel for vehicles and equipment. The amount of TACs associated with most physical and biological control activities would not be likely to substantially affect human health.

Noise

The No Pesticide Alternative would be similar to the Proposed Program except that the chemical management approaches would not be used, and greater reliance would be placed on alternative control methods. Therefore, the No Pesticide Alternative would have similar impacts on noise environments as those discussed under the Proposed Project with respect to physical and biological control methods. The potential impacts would be similar overall to the Proposed Program.

Water Quality

The No Pesticide Alternative would eliminate any potential impacts on water quality resulting from the use of chemical pesticides and related adjuvant chemicals under the Statewide Program because no such use would occur. However, under this alternative, on-farm pesticide use (outside the framework of the Statewide Program and CDFA's authority) could increase, which may result in overall impacts similar to those identified for the Proposed Program, or perhaps greater because such activities would not be regulated under CDFA's NPDES permit.

Use of vehicles for personnel and cargo transport would be likely to increase somewhat, compared to the Proposed Program, because of the need for increased inspection, exclusion management, host removal, bait station installation, other trapping methods, sterile insect release, and quarantine activities. This could lead to an increase in nonpoint source vehicle pollution in urban and rural environments. However, this increase would be anticipated to be small in the context of overall levels of existing vehicle use (both Program-related and otherwise).

7.6.3 USDA Organic Pesticide Alternative

Agricultural Resources and Economics

Under the USDA Organic Pesticide Alternative, the effectiveness of eradication and control for ACP/Huanlongbing disease, GWSS/Pierce's disease, exotic fruit flies, and Japanese beetles would decrease greatly. The likely increase in populations of these pests in California would result in adverse effects on the specialty crop industry. These effects could be substantial enough to result either in growers raising alternative crops that could be grown economically despite these pests, or in a worst-case scenario, could lead to conversion of farmland to non-agricultural uses.

Air Quality

The USDA Organic Pesticide Alternative would not conflict with any applicable air quality plans, policies or regulations. This alternative would be likely to result in increases in activity associated with BCAs, sterile insect releases, host removal, and organic pesticide applications, and a corresponding decrease in emissions associated with non-organic pesticide application. Because a change would occur in the distribution of activity types, criteria pollutant emissions may increase or decrease, depending on the specific extent to which activities change compared to baseline conditions. The USDA Organic Pesticide Alternative potentially could result in substantial criteria pollutant emissions because of activities that may be more criteria pollutant intense than conventional pesticides, such as sterile insect release, or those that require increased effort to achieve the same result..

The USDA Organic Pesticide Alternative would result in less potential for exposure to TACs for some activities compared to the Proposed Program, because many organic pesticides are less toxic to humans than non-organic pesticides. The USDA Organic Pesticide Alternative would not generate any substantial quantities of odors beyond the short-term odors associated with fossil-fueled equipment that dissipate shortly after use. The USDA Organic Pesticide Alternative would likely result in a cumulatively considerable impact on air quality, similar to the Proposed Program.

Biological Resources

Because conventional pesticide use would no longer occur under this alternative, all potential impacts on biological resources associated with such pesticide use under the Statewide Program would be avoided.

Under this alternative, pests currently controlled through use of conventional pesticides may increase in both number and range, to the extent that alternative approaches ultimately may not be effective. This particularly would be the case for ACP/Huanlongbing disease, GWSS/Pierce's disease, exotic fruit flies, and Japanese beetles, the eradication and control of which would not be effective without the use of conventional pesticides. These are primarily agricultural pests, and direct impacts on native biological resources from an increase in these pests may not be significant.

In response to increases in pest populations, on-farm cultural practices may change, and on-farm conventional pesticide use (outside the framework of the Statewide Program and CDFA's authority) could increase. The farming community in California is large and diverse, and pesticide application practices by farmers encompass a wide range of knowledge, training, and caution in applying pesticides, and in using appropriate practices and safety controls. Therefore, pesticide impacts on natural areas adjacent to agriculture may increase, with an increase in potential impacts on biological resources. The increase in potential impacts on biological resources from increases in on-farm conventional pesticide use may outweigh the impacts avoided by the cessation of Statewide Program conventional pesticide use under this alternative.

Global Climate Change

The USDA Organic Pesticide Alternative would be likely to result in increases in activity associated with BCAs, sterile insect releases, host removal, and organic pesticide applications, and a corresponding decrease in equipment used to apply conventional pesticides. Because a change would occur in the activity types, GHG emissions overall may either increase or decrease, depending on the extent to which activities change compared to baseline conditions. The USDA Organic Pesticide Alternative would not conflict with any applicable plan, policy, or regulation. The USDA Organic Pesticide Alternative potentially could result in substantial GHG emissions because of activities that may be more GHG emission intense than conventional pesticides, such as sterile insect release or those that require increased effort to achieve the same result..

Hazards and Hazardous Materials

This alternative would be similar to the Proposed Program in terms of potential for releases of hazardous materials resulting from routine transport, storage, and use of fuels, and oil related to the use of automobiles, aircraft, and other equipment, as well as the potential for upset or accident conditions including the release of such hazardous materials.

With respect to effects on physiologically sensitive populations, all potential human health effects of Statewide Program conventional pesticide use would be avoided. In addition, the evaluation of organic pesticides in the Human Health Risk Assessment (HHRA) (Appendix B) did not result in any health impacts above the level of concern. However, with the use of organic pesticides only, an increased amount of pyrethrins/pyrethroids may be used. Because they share a common mechanism of action, this may introduce potential elevated human health impacts, if multiple pyrethrins/pyrethroids are used in combination..

Noise

Under the USDA Organic Pesticide Alternative, the activities identified for the Proposed Program would continue to occur, albeit the types of pesticides to be used would be different. This alternative would have similar potential to result in potentially significant impacts as the Proposed Program.

Water Quality

Under the USDA Organic Pesticide Alternative, use of vehicles for personnel and cargo transport would be likely to increase somewhat, compared to the Proposed Program, because of the need for increased inspection, exclusion management, host removal, bait station installation, other trapping methods, sterile insect release, and quarantine activities. This could lead to an increase in nonpoint source vehicle pollution in urban and rural environments. However, this increase would be anticipated to be small in the context of overall levels of existing vehicle use (both Program-related and otherwise).

Under this alternative, most of the pesticides and related adjuvant chemicals that may be used under the Proposed Program would not be used. USDA organic pesticides typically are chemicals that degrade quickly and have little to no toxicity to aquatic or terrestrial organisms beyond target pests. No organic pesticides exceeded any numerical thresholds when modeled in the Ecological Risk Assessment (Appendix A). Therefore, compared to the

Proposed Program, the USDA Organic Pesticide Alternative would have reduced potential for adverse effects on water quality from pesticide use.

Use of chemicals and microorganisms related to physical and biological management activities would be similar to the Proposed Program; thus, these impacts also would be similar to those of the Proposed Program.

7.6.4 No Eradication Alternative

Agricultural Resources and Economics

Under the No Eradication Alternative, CDFA would manage pest populations at established population thresholds designed to avoid substantial economic damage. If pest management practices under this alternative were successful at maintaining established populations thresholds, they generally would not be expected to have a substantial effect on agricultural productivity or profitability that would result in growers raising alternative crops or converting their farmlands to non-agricultural uses. However, without eradication, the potential would exist for pests to become established to a point where it would be prohibitively expensive or infeasible to manage them at a level to avoid substantial economic damage. Therefore, this alterative could have a substantial enough effect on agricultural productivity to lead to conversion of farmland to non-agricultural uses.

Air Quality

The No Eradication Alternative would not conflict with any applicable air quality plans, policies or regulations. Managing pests at controlled population thresholds may require increased activities because a larger area of pests would require control. This increased activity may include more criteria pollutant intense activities, such as pesticide application and sterile insect releases, that would outweigh the decrease in emissions associated with eliminating eradication activities.

The No Eradication Alternative would potentially result in increased potential for exposure to TACs than the Proposed Program, because more repeated applications of pesticide in a specific area may be required to adequately control the pest population that may cause increased exposure to cancer and chronic non-cancer health impacts from TACs. The No Eradication Alternative would not generate any substantial quantities of odors beyond the short-term odors associated with fossil-fueled equipment that dissipate shortly after use. The No Eradication Alternative would be likely to result in a cumulatively considerable impact on air quality, similar to the Proposed Program.

Biological Resources

Under the No Eradication Alternative, CDFA’s use of pesticides would be expected to increase overall, because pesticide use would occur over a larger geographic area and over a longer duration, compared to pesticide use for eradication activities at their anticipated frequency under the Proposed Program. Therefore, pesticide impacts on natural areas adjacent to agriculture may increase, with an increase in potential impacts on biological resources.

Pests such as Asian long-horned beetle, palm weevils and others that infest native plants would have the potential to have substantial adverse effects on protected biological resources in the event of an un-eradicated invasion. If such pests were to invade California and eradication was not conducted, the impacts on biological resources may be substantial.

Global Climate Change

The No Eradication Alternative would not conflict with any applicable plan, policy, or regulation. The No Eradication Alternative may require increased activities because a larger area of pests would require control. This increased activity may include more GHG intense activities, such as pesticide application and sterile insect releases that would outweigh the decrease in emissions associated with eliminating eradication activities. Because a change would occur in the activity types, GHG emissions overall may either increase or decrease, depending on the extent to which activities change compared to baseline conditions.

Hazards and Hazardous Materials

This alternative would have the potential to increase the amount of chemical pesticides that would be used to maintain the pests at established population thresholds. Under the No Eradication Alternative, increased amounts of repeat pesticide applications in the same area would be likely. This could increase the exposure of sensitive individuals to human health hazards compared to the Proposed Program, including potential adverse chronic and cancer effects. How much more frequently repeated pesticide application would occur is unknown; therefore, whether this would exceed the human health risk level of concern is unknown.

Noise

Under the No Eradication Alternative, the activities identified for the Proposed Program would continue to occur, albeit with a different pest management goal (no eradication). This alternative would have similar potential to result in significant impacts as the Proposed Program.

Water Quality

Under the No Eradication Alternative, use of vehicles for personnel and cargo transport would be likely to increase for inspection, exclusion management, host removal, bait station installation, other trapping methods, sterile insect release, and quarantine activities. This could lead to an increase in nonpoint source vehicle pollution in urban and rural environments. However, this increase would be anticipated to be small and would be unlikely to be significant in the context of overall levels of existing vehicle use (both Program-related and otherwise).

Under this alternative, CDFA would use most, if not all, of the same pesticides and related adjuvant chemicals that may be used under the Proposed Program. Compared to the Proposed Program, the No Eradication Alternative potentially would have greater impacts on water quality resulting from the increased use of pesticides and related adjuvant chemicals in the same area. These impacts would be likely not only to increase in magnitude, but would occur over a larger geographic area. Because of the larger areas that would need to be treated and the more frequent need to use pesticides, aerial drift, spray drift, and runoff resulting from storm events would be more likely to occur.

Use of chemicals and microorganisms related to physical and biological management activities would be greater than the Proposed Program for similar reasons as stated above. However, these chemicals still would not be used in concentrations or methods that would be likely to result in a violation of water quality standards. Impacts of these activities would likely be similar to those of the Proposed Program.

7.7 Environmentally Superior Alternative

Considering all environmental aspects, the Proposed Program is considered to be environmentally superior. It would strike an appropriate balance between protecting natural and agricultural resources from the adverse impacts of pest invasions while providing for impact avoidance and minimization through a coordinated program for management of Statewide Program activities, including PEIR mitigation and other protective measures.

Because the Proposed Program is not an alternative per se, an environmentally superior alternative also has been identified from among the alternatives carried forward for full analysis in this PEIR. The No Program Alternative is considered to be this environmentally superior alternative. It generally would have impacts that would be similar to the Proposed Program, although it would not benefit from the impact minimization and avoidance offered by the Proposed Program's coordinated approach to managing Statewide Program activities, including PEIR mitigation and other protective measures.

Under CEQA, if the environmentally superior alternative is the "no project" alternative, an EIR also shall identify an environmentally superior alternative among the other alternatives. Of the remaining alternatives, the USDA Organic Pesticide Alternative is considered to be environmentally superior. It would avoid any potential impacts associated with use of conventional pesticides, but could result in some offsetting adverse effects, such as impacts associated with greater reliance on organic pesticides. The alternative also could result in other adverse environmental impacts because of the inability to achieve effective eradication and control of certain priority pests. Such effects may include resource degradation from more widespread invasions of these pests into natural and agricultural areas. In addition, use of conventional pesticide outside the framework of the Statewide Program and CDFA's authority may increase to address these pests, which would have impacts similar to those potential impacts associated with the Proposed Program but without the benefit of a coordinated program for management of such activities, including PEIR mitigation and other protective measures.

The other alternatives were not selected as the environmentally superior alternative for the following reasons:

- **No Pesticide Alternative.** This alternative would avoid potential impacts associated with Statewide Program pesticide use but could result in other adverse environmental impacts because alternative management methods are not anticipated to be as effective in controlling or managing pests. Such effects may include resource degradation from more widespread pest invasions into natural and agricultural areas. In addition, pesticide use outside the framework of the Statewide Program and CDFA's authority may increase in response, without the benefit of a coordinated program for management of such activities, including PEIR mitigation and other protective measures. The overall adverse effects of a potential increase in resource degradation and increase in non-Statewide Program pesticide use would render this alternative less environmentally desirable than either the Proposed Program, the No Program Alternative, or the USDA Organic Pesticide Alternative.

- **No Eradication Alternative.** This alternative would avoid impacts associated with eradication activities; however, the overall intensity of pest management activities and related pesticide use would be anticipated to increase because pests would become established and would require more effort to manage at a level that would avoid unacceptable economic and environmental damage. Therefore, the No Eradication Alternative would be anticipated to have greater impacts overall compared to the Proposed Program or any of the other alternatives.

Chapter 8
OTHER STATUTORY CONSIDERATIONS

8.1 Introduction to Other Statutory Considerations

This chapter addresses the Proposed Program's potential to induce growth and describes the potential energy impacts and energy conservation aspects of the Proposed Program, pursuant to Appendix F of the CEQA Guidelines.

8.2 Growth-Inducing Impacts

Section 15126.2(d) of the CEQA Guidelines requires an EIR to include a detailed statement of a proposed project's anticipated growth-inducing impacts. The analysis of growth-inducing impacts must discuss the ways in which a proposed project could foster economic or population growth or the construction of additional housing in the project area. The analysis also must address project-related actions that, either individually or cumulatively, would remove existing obstacles to population growth. A proposed project is considered growth inducing if it induces growth directly (through constructing new housing or increasing population) or indirectly (increasing employment opportunities or eliminating existing constraints on development). Under CEQA, growth is not assumed to be either beneficial or detrimental.

The Proposed Program would not involve new development that could directly induce population growth, nor would it involve the extension of infrastructure that could indirectly induce population growth. The Proposed Program would not involve construction of new housing or create a demand for additional housing, such as through commercial development. No additional staff or workers are expected to be required to carry out the activities under the Proposed Program, as compared to existing conditions. Furthermore, the Proposed Program on its own would not displace any existing housing units or persons. Therefore, the Proposed Program is anticipated to neither induce growth nor remove obstacles to growth.

8.3 Energy Conservation Aspects of the Statewide Program

This section evaluates the Proposed Program's potential use of energy, with the goal of conserving energy by decreasing overall per capita energy consumption, decreasing reliance on natural gas and oil, and increasing reliance on renewable energy sources. CEQA requires that EIRs include a discussion of the potential energy impacts of a proposed project with respect to avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines outlines the energy conservation-related elements to consider for a proposed project, including suggested mitigation measures.

The Proposed Program's direct energy consumption primarily would come from the use of natural gas and oil products to fuel vehicles and agriculture equipment as they are used to implement the various physical, chemical and biological management activities. The indirect life cycle of the various products and equipment to be used for such management activities would include several forms of energy consumption that are imbedded in a product's manufacturing and distribution. For example, petroleum products may serve as precursors that would be the raw material in manufacturing of the pesticides to be used in the Proposed Program. In addition, the manufacturing process would likely use natural gas and electricity. Petroleum-based fuels would be used to bring products from the place they are manufactured to the locations where they are to be used.

8.3.1 Environmental Setting

Pesticide Use and Associated Energy Use in the United States

In the United States, approximately 1.25 billion pounds of pesticides are used annually; nearly half are herbicides, and the most used are glyphosate and atrazine. The use of pesticides also varies by crop group. The fruit and vegetable industry uses the largest amount on a per acre basis but, because of their large area of cultivation, the feed and food grain crops lead by far in total use. Foraging lands and pastures overall use the least per acre and in total. Of the overall total energy used in agriculture, less than 15 percent is attributed to pesticides, with most crop acres being closer to 5 percent. Fertilizer (primarily nitrogen), followed by direct fuel consumption for field operations, and then irrigation and grain drying represent the greatest amounts of energy use in U.S. agriculture production. Transportation on and off the farm also uses significant amounts of petroleum fuels. Although total energy use in pesticide manufacture is small in comparison, it can require two to five times as much energy per pound as nitrogen fertilizer manufacture. (Helsel 2012).

Energy Involved in Pesticide Manufacture

Energy used in pesticide manufacturing is affected by chemical composition, the methods of manufacture, and the fossil fuel and other resources used to manufacture them. Petroleum chemicals, such as ethylene, propylene, and methane, are the source of many pesticides. The heating, distillation, stirring, and drying processes in pesticide manufacturing use electricity, natural gas, steam, and additional petroleum sources. Secondary and tertiary energy consumption occurs in the construction and maintenance of the manufacturing plant and equipment, consumption and handling of raw materials, waste disposal, and other operations. (Helsel 2012)

Because of different use rates, pesticides also vary in energy use per acre, which can vary based on pests, crop grown, field conditions, and method and type of application. In addition, some pesticides can be applied multiple times to the same crop in a given growing season. In addition to the energy consumed to manufacture the active ingredients of pesticides, energy used in formulation, packaging, and transportation also can represent sizable amounts of energy expended to convey usable pesticides to the end user. These amounts can vary substantially because of the variety of uses, formulations, and packaging options. Because pest control is important in both yield and quality of crops, selection of the best control method often will provide substantial reductions in per unit energy use of crop production, compared to selecting a practice based solely on low fossil fuel energy that may sacrifice pest control. (Helsel 2012).

Energy Involved in Manufacture of Other Materials used under the Statewide Program

Lifecycle energy use also is associated with equipment manufacturing (e.g., vehicles, aircraft, and pesticide application equipment); production of non-pesticide chemicals, production of traps; and rearing of biological control agents (BCAs) and sterile insects. Similar to pesticide manufacturing, the energy associated with equipment manufacturing, non-pesticide chemicals, and traps includes several types of energy use, from raw materials to final delivery to the consumer. The various manufacturing processes, which may include fabrication of metal and plastic components, robotic assembly of parts, and heat used to cure adhesives, also use electricity, natural gas, steam, and additional petroleum sources. Secondary and tertiary energy consumption occurs in the construction and maintenance of the manufacturing plant and equipment, consumption and handling of raw materials, waste disposal; other operation-related energy used in formulation, packaging, and transportation also can represent sizable amounts of energy expended to convey usable products to the end user.

The rearing of BCAs and sterile insects requires sophisticated control of the environmental chambers used to raise the organisms. The rearing chambers use electricity, natural gas, and various raw materials to properly control the temperature, provide water, and supply the nutrients required by the developing organisms. Sterile insect rearing also typically involves energy used to radiate the insects before release, to render the insects sterile. Secondary and tertiary energy consumption occurs in the construction and maintenance of the rearing facility and equipment, as well as in the energy used to deliver the BCAs and sterile insects to the release area.

California Energy Production and Use

California is rich in both conventional and renewable energy resources. It has large crude oil and substantial natural gas deposits in six geological basins, located in the Central Valley and along the Pacific coast. Most of these reserves are concentrated in the southern San Joaquin basin. Seventeen of the nation's 100 largest oil fields are located in California, including the Belridge South oil field, the third largest oil field in the contiguous United States. In addition, federal assessments indicate that large, undiscovered deposits of recoverable oil and gas lie offshore, in the federally administered Outer Continental Shelf (OCS), which in 2008 was reopened for potential oil and gas leasing. California's renewable energy potential is extensive. The state's hydroelectric power potential ranks second in the nation behind Washington State, and substantial geothermal and wind power resources are found along the coastal mountain ranges and the eastern border with Nevada. High solar energy potential exists in southeastern California's sunny deserts (EIA 2013).

California is the most populous state in the country, and its total energy demand is second only to Texas. Although California is a leader in the energy-intensive chemical, forest products, glass, and petroleum industries, the state has one of the lowest per capita energy consumption rates in the U.S. The State's energy-efficiency programs have contributed to the low per capita energy consumption. Driven by high demand from California's many motorists, major airports, and military bases, the transportation sector is the state's largest energy consumer. More motor vehicles are registered in California than any other state, and worker commute times are among the longest in the country (EIA 2013).

Petroleum Production

California is one of the top producers of crude oil in the country, with output accounting for more than one-tenth of total U.S. production. Drilling operations are concentrated primarily in Kern County and the Los Angeles basin, although substantial production also takes place offshore, in both State and federal waters. Concerns regarding the cumulative impacts of offshore oil and gas development, combined with a number of major marine oil spills throughout the world in recent years, have led to a permanent moratorium on offshore oil and gas leasing in California waters. However, development on existing State leases is not affected and may still occur within offshore areas that were leased before the effective date of the moratorium. A moratorium on oil and gas leasing in federal OCS waters expired in 2008.

A network of crude oil pipelines connects production areas to refining centers in the Los Angeles and San Francisco Bay areas, and the Central Valley. California refiners also process large volumes of Alaskan and foreign crude oil, received at ports in Los Angeles, Long Beach, and the Bay Area. Crude oil production in California and Alaska is in decline, and California refineries have become increasingly dependent on foreign imports. Led by Saudi Arabia, Iraq, and Ecuador, foreign suppliers now provide more than two-fifths of the crude oil refined in California; however, California's dependence on foreign oil remains less than the national average.

California ranks third in the United States in petroleum refining capacity and accounts for more than one-tenth of total U.S. capacity. California's largest refineries are highly sophisticated, are capable of processing a wide variety of crude oil types, and are designed to yield a high percentage of light products such as motor gasoline. To meet strict federal and State environmental regulations, California refineries are configured to produce cleaner fuels, including reformulated motor gasoline and low-sulfur diesel.

Most California motorists are required to use a special motor gasoline blend called California Clean Burning Gasoline. In the ozone non-attainment areas of Imperial County and the Los Angeles metropolitan area, motorists are required to use California Oxygenated Clean Burning Gasoline. There are five ethanol production plants in central and southern California, but most of California's ethanol supply is transported by rail from corn-based producers in the Midwest. Some supply also is imported from abroad.

Because of the relative isolation and specific requirements of the California fuel market, California motorists are particularly vulnerable to short-term spikes in the price of motor gasoline. No pipelines connect California to other major U.S. refining centers, and California refineries often operate at near maximum capacity resulting from the high demand for petroleum products. When an unplanned refinery outage occurs, replacement supplies must be brought in via marine tanker. Locating and transporting this replacement gasoline (which must conform to the State's strict fuel requirements) can take from 2 to 6 weeks. (EIA 2013)

California Energy Consumption

California's consumption of total energy use across all sectors in 2011 was 7,858 trillion British thermal units. The state consumed 27,001,800,000 gallons of petroleum products, with motor vehicle gasoline comprising 14,498,400,000 gallons and diesel fuel oil comprising 4,086,600,000 gallons. Jet fuel consumption was 4,074,000,000 gallons. (EIA 2013)

Statewide Program Existing Fuel Consumption

The ongoing activities conducted by CDFA to control pest invasions in California consume motor vehicle gasoline and diesel fuel. Primarily motor vehicle gasoline and diesel fuel are used by CDFA staff and contractors, traveling from field offices to locations of detection, eradication, and control activities. In addition, some of the activities that are conducted require the use of gasoline- or diesel-fueled off-road vehicles, such as bulldozers and wood chippers during host removal, pumps for irrigation equipment, and tractors and other agriculture equipment to apply pesticides. Some jet fuel is used for aircraft and helicopter operation, as part of the sterile insect release programs and aerial pesticide spraying in agricultural and nursery (not residential) environments. Table 8-1 shows the estimated baseline fuel consumption for CDFA-related activities (see Section 8.3.2, Methodology, for details on the baseline fuel consumption calculations).

Table 8-1. Estimated Baseline Fuel Consumption

Activity	Fuel Type	Gallons of Fuel Consumed (2010)
Pesticide Application	Diesel	2,889,589
	Gasoline	465,578
	Jet	2,193,615
Sterile Insect Release	Diesel	5,902
	Gasoline	
	Jet	480,181
On-Road Vehicles	Diesel	617
	Gasoline	1,006,145
	Jet	
Total	Diesel	2,896,109
	Gasoline	1,471,723
	Jet	2,673,796

8.3.2 Methodology

Direct energy consumption includes energy used by vehicle operation (i.e., automobiles, trucks, tractors, and other off-road diesel equipment). In assessing the direct energy consumptions, vehicle activity estimates were combined with fuel consumed per mile or hour of use.

CDFA kept records of vehicle miles traveled for several of its surveying, trapping, eradication, and quarantine activities, from 2008 through 2010. In addition, based on the reported pesticide use for specific chemicals that are used to control pests under CDFA's pesticide program, and the location of specific eradication and quarantine activities, an estimate of the equipment used to apply pesticides was developed. Because of the range of application methods available for a given active ingredient contained in a pesticide, the application method with the highest emission intensity per pound of active ingredient was conservatively selected for each active ingredient. From this information, the amount of equipment hours was determined and used to estimate fuel consumption. Historical data, collected by CDFA, provided the estimate of the number of hours of equipment usage and/or fuel consumption associated with its sterile insect release programs. This data was used to estimate the average fuel consumption per hour of flight—59.7 gallons of fuel per hour of flight. In contrast, CDFA only tracked the number of flight hours for the pink bollworm, but this was assumed to have the same fuel consumption as the Medfly sterile insect release aircraft. Estimates of future activity assume similar activity levels throughout the state. Details of this information and supporting assumptions are provided in Appendix H, Air Quality and Greenhouse Gas Technical Report.

The amount of fuel consumed is based on fuel usage estimates from CARB's latest OFFROAD and EMFAC emission programs (CARB 2013), if conversion of vehicle miles or equipment hours to fuel usage was necessary, assuming a 2010 calendar year average fleet for baseline conditions. Information about the impact of the improved fuel efficiency of vehicles is demonstrated by showing future fuel usage, assuming the same activity for calendar years 2014, 2020, and 2030. Aircraft and helicopter fuel usage was estimated using CARB, Bay Area Air Quality Management District, and Federal Aviation Administration data, as provided in Appendix H, and conservatively no improvements in fuel economy were assumed for the future.

All other Proposed Program-related energy consumption activities were assumed to have negligible use for CDFA activities. The life cycle emissions of pesticides depend on manufacturing processes and efficiencies that typically are deemed confidential and are not readily available for inclusion.

8.3.3 Significance Thresholds

Based on Appendix F of the CEQA Guidelines, the Statewide Program would result in a significant impact related to energy if it would result in:

A. Wasteful, inefficient, and unnecessary usage of energy; or

B. Placement of a significant demand on regional energy supply or requirement for substantial additional capacity.

8.3.4 Impact Assessment

The projected Proposed Program fuel usage is shown in Table 8-2. The estimate for several years indicates the vehicle fleet improvements in fuel efficiency that are expected to occur because of existing federal and State regulations. As shown in Table 8-2, about a 1 percent reduction would occur in overall fuel usage by 2020, compared to baseline conditions, assuming normal vehicle and equipment fleet turnover.

The Proposed Program would represent only a small portion of the fuel consumption in California. As a State agency, CDFA is required to develop plans to use the most efficient vehicles and consider the use of alternative fueled vehicles under Executive Order S-14-2009 and Public Resources Code 25722.5–25722.9. With implementation of the Proposed Program, the most efficient means of controlling pests would be utilized and would decrease the need for more energy-intensive controls, potentially resulting in less pesticide and fuel use to conduct and monitor pest control activities. In addition, CDFA would utilize local branch offices and local contractors to conduct Proposed Program activities to the extent feasible, thus minimizing fuel consumption by controlling the vehicle miles traveled as well as controlling fuel consumption. This combination of compliance with regulations and careful utilization practices would result in efficient and non-wasteful fuel consumption. Therefore, the Proposed Program would not result in wasteful, inefficient, or unnecessary fuel or energy consumption, and would not place a substantial demand on regional fuel or energy supplies.

Table 8-2. Projected Statewide Program Fuel Usage

		Gallons of Fuel Consumed				
Activity	Fuel Type	2010	2014	2020	2030	2035
Pesticide Application	Diesel	2,889,589	2,881,476	2,873,520	2,868,160	2,867,622
	Gasoline	465,578	445,516	424,355	416,311	416,285
	Jet	2,193,615	2,193,615	2,193,615	2,193,615	2,193,615
Sterile Insect Release	Diesel	5,902	5,902	5,902	5,902	5,902
	Gasoline					
	Jet	480,181	480,181	480,181	480,181	480,181
On-Road Vehicles	Diesel	617	678	690	691	670
	Gasoline	1,006,145	999,676	999,676	1,001,761	1,002,735
	Jet					
Total	Diesel	2,896,109	2,888,057	2,880,112	2,874,753	2,874,195
	Gasoline	1,471,723	1,445,192	1,424,031	1,418,072	1,419,020
	Jet	2,673,796	2,673,796	2,673,796	2,673,796	2,673,796
Percent Reduction	Diesel		0.3%	0.6%	0.7%	0.8%
	Gasoline		2%	3%	4%	4%
	Jet		0%	0%	0%	0%

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Chapter 9
GLOSSARY AND ACRONYMS

Glossary

Adjuvants	These are emulsifiers, spreaders, and other compounds added to improve the efficacy of a pesticide.
Advanced biofuel	This is any renewable fuel, other than ethanol derived from corn that achieves a 50 percent greenhouse gas (GHG) emissions reduction.
Aerial Sterile Release	Releasing sterile insects over a designated area by aircraft.
Biological Control Agents	BCAs, sometimes called "natural enemies," are the organisms (typically insects, mites, and nematodes) that consume or infect a pest in its native home range.
Biomass-based diesel	This is a renewable transportation fuel, transportation fuel additive, heating oil, or jet fuel that meets the definition of either biodiesel or non-ester renewable diesel, and achieves a 50 percent GHG emissions reduction.
Biopesticides	Also called synthetic pheromones, these are insect pheromones that are synthesized in a laboratory.
Cellulosic Biofuel	This is any renewable fuel derived from cellulose, hemicellulose, or lignin that achieves a 60 percent GHG emissions reduction.
Commercial Production Area	An area where material that can serve as a host to a pest is grown for commercial purposes.
Cultural Resources	These are the remains and sites associated with past human activities and include prehistoric and ethnographic Native American archaeological sites, historic archaeological sites, historic buildings, elements or areas of the natural landscape that have traditional cultural significance, and paleontological (fossil) resources.
Day Degrees	An accumulation of heat units above a specified developmental temperature threshold during life stage.

Delimitation Survey	A survey conducted to determine the extent of the infestation in an area where pest has been detected.
Detection	The collection of any life stage of a target pest.
Detection Survey	A survey conducted in a susceptible area not known to be infested with pest.
dref	This is the reference distance that helps define L_{eq} (activity) and will often be 50 feet.
Economic Poison	This is any substance or mixture of substances used to prevent, destroy, repel, or mitigate pests such as insects and mites, rodents, weeds, nematodes, fungi, and other microorganisms. It also is any substance or mixture of substances intended for plant growth regulation, plant defoliation, or plant desiccation. Under this definition, pesticides are economic poisons.
Ecological Receptor	An ecological receptor is any living organism (ex., insects, birds, mammals, fish, plants) other than humans that may be exposed to chemicals in contaminated environmental media (i.e., soil, water, food, plants, air).
entomophagous	feeding on insects
Eradication	Application of phytosanitary measures to eliminate a pest from an area (FAO 1990; revised ISPM 5 [2013]; formerly eradicate)
Erosion	Erosion is the detachment and movement of soil particles by natural forces primarily water (rain events) and wind.
Falconiformes	New World vultures, hawks, eagles, ospreys, and falcons, among others
Fruit Cutting Survey	A survey conducted by cutting fruit and examining for larvae.
Fruit Stripping	The removal and proper disposal of all host fruit from a designated area.
Fumigation	Fumigation is the act of releasing and dispersing a chemical so it reaches the target pest in a gaseous state.
Generation (Life Cycle)	The period of time for the pest to complete all stages of development predicated on day degrees or other biological information.

Ground Bait Spray	Using ground bait spray equipment to spray host vegetation in an infested area with an insecticide and a protein hydrolysate bait.
Hazardous Material	This is any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.
Host	A plant species that provides for reproduction of a pest.
Infestation	A detection of individual(s) of a pest species, the number of which meets or exceeds the population threshold for a management response. During an eradication effort, the detection of a single adult determined to be associated with a current infestation may be sufficient to trigger expanded program activity.
Infested Area	The area so declared by program officials where criteria for "infestation" have been met.
Integrated Pest Management (IPM)	IPM is the coordinated use of information about pest population biology and the host environment combined with all available pest control methods to prevent unacceptable levels of pest damage by the most economical means and with the least possible hazard to people, property, and the environment, while achieving adequate efficacy to meet the goal of the program.
Interior Pest Exclusion	This is the process of limiting the artificial spread of newly introduced pests within California by imposing quarantines within State borders, called State Interior Quarantines.
Invertivore	An animal whose diet primarily consists of invertebrates.
Lead Agency	"Lead Agency" means the public agency which has the principal responsibility for carrying out or approving a project. The Lead Agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared.
Least Restrictive Action	If there is a less restrictive action that can be taken to prevent the dissemination of a pest or noxious weed, and it is feasible and adequate, than those actions must be taken into consideration.

Lure	The synthetic food and/or sex lure used primarily to attract target pest.
Male Attractant Technique	Male Attractant Technique (MAT) involves the application of "bait stations," or mixtures of methyl eugenol and small amounts of pesticide, to trees and/or utility poles. The parapheromone, methyl eugenol, is a powerful male attractant. Bait stations are applied to street trees or utility poles 8 to 10 feet aboveground, by trained CDFA staff using a specially modified pick-up truck equipped with a spray gun. MAT is used to lure and kill methyl eugenol-responding species (i.e., oriental fruit fly, guava fruit fly, peach fruit fly) of exotic fruit flies.
Microbial Insecticides	These are pathogenic microorganisms that consume pests or excrete substances and act as effective insecticides
NOAEL	The no observable adverse effect level (NOAEL) is the highest exposure level at which no statistically or biologically significant increases occur in the frequency or severity of adverse effects of the exposed population.
Performance Standard	A performance standard requires the grower to demonstrate that the commodity is pest free and allows the grower to use any available treatment method, as long as it appears on an approved list, to comply with the standard.
Pescivore	An animal whose diet primarily consists of fish.
Pest	Per CFAC Section 12754.5, this means any of the following that is, or is liable to become, dangerous or detrimental to the agricultural or nonagricultural environment of the state: (a) Any insect, predatory animal, rodent, nematode, or weed. (b) Any form of terrestrial, aquatic, or aerial plant or animal, virus, fungus, bacteria, or other microorganism (except viruses, fungi, bacteria, or other microorganisms on or in living man or other living animals). (c) Anything that the director, by regulation, declares to be a pest.
Pesticide	Per CFAC Section 12753, this includes any of the following: (a) Any spray adjuvant. (b) Any substance, or mixture of substances which is intended to be used for defoliating plants, regulating plant growth, or for preventing, destroying, repelling, or mitigating any pest, as defined in CFAC Section 12754.5, which may infest or be detrimental to vegetation, man, animals, or households, or be present in any agricultural or nonagricultural environment whatsoever.

Pesticide Drift	This is the movement of a pesticide through the air, away from the intended target, in the form of mist, particles, or vapor (gas).
pesticide regulations	California Toxic Air Contaminant Act
Pheromones	Natural chemicals that are emitted by an individual of a species, triggering a behavioral or physiological response in other members of the same species.
phytophagous	feeding on plants
Phytosanitary Measure	Any legislation, regulation or official procedure having the purpose to prevent the introduction or spread of quarantine pests, or to limit the economic impact of regulated non-quarantine pests (FAO 1990; revised ISPM 5 [2013])
Pierce's Disease	This is a deadly disease of grapevines, caused by the bacterium *Xylella fastidiosa*, which is spread by xylem-feeding leafhoppers known as sharpshooters.
Priority Pests	These are pests that would be the subject of management activities as part of the Proposed Program.
Prescribed Standard	A prescribed standard requires the grower to use a particular treatment method to eliminate the pest from the host material, and may include the requirement to use a particular pesticide treatment.
Quarantine	A quarantine is a restriction on the movement of commodities and other materials that may result in the spread of a pest infestation unless certain requirements are met.
Regulated Area	The regulated area is that portion of the State in which a quarantine pest may occur but which is not generally infested, and where efforts to control or suppress the disease may be conducted. The regulated area does not include areas described as a quarantine area or suppressive area.
Regulated Entity	Any party subject to quarantine requirements to allow for movement of a regulated article out of the quarantine area. This includes growers, nurseries, shippers, etc.
Regulatory Trapping	Trapping conducted around establishments where regulated articles are sold, handled, processed, or moved.

Responsible Agency	"Responsible Agency" means a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For the purposes of CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency which have discretionary approval power over the project.
Residential	A noncommercial area containing multiple or single family dwellings. Does not apply to a residence found in a commercial (e.g., farm) setting.
Risk	Risk is the probability of harmful effects on human health or on ecological receptors (i.e., species) resulting from exposure to an environmental stressor. A stressor is any physical, biological, or chemical entity that can induce an adverse response. Environmental risk is a function of the probability of occurrence for an environmental stress event and the magnitude of the potential harm that would be caused by such an event.
Risk Characterization	This is the process of estimating the incidence of a health effect resulting from the human exposure described in an exposure assessment. The goal of risk characterization is to provide an understanding of the type and magnitude of an adverse health effect that a particular chemical could cause under particular circumstances.
Sedimentation	Sedimentation is the process in which particulate matter carried from point of origin by either natural or human-enhanced processes and is deposited elsewhere on land surfaces or in water bodies.
Soil Treatment	The application of an approved insecticide to the soil of nursery stock and within the drip line of host plants.
Solarization	This is covering soil with plastic to heat-treat pests.
State Interior Quarantine	This quarantine is established when a pest population is detected that meets a particular trigger for the species; usually the trigger relates to detection of numbers of individual pests or particular life stages of that pest that support a reproductive population.
Statewide Program	a range of prevention and management activities, carried out or overseen by CDFA or by individuals in response to CDFA regulations, against specific injurious agricultural and other pests and pathogens that include arthropods, mollusks,

	nematodes, fungi, bacteria, other microorganisms, viruses, and their vectors, throughout California
Sterile Insect Technique	This is an approach that mates females of a pest species with a sterile male through the continuous release of numerous sterile (or partially sterile) males into the pest population. Sterile insects are released in an area as a method of eradication or as one of several methods in an integrated eradication program.
Suppression	The application of phytosanitary measures in an infested area to reduce pest populations (FAO 1990; revised ISPM 5 [2013])
Toxicity Values	These are quantitative values that describe the relationship between an estimated dose and the probability of developing an adverse health effect, such as cancer.
Trustee Agency	"Trustee Agency" means a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California.
Urban/Residential Area	See definition of Residential

Acronyms and Abbreviations

°C	Centigrade
O_3	ozone
AA	Administering Agency
AB	Assembly Bill
ACP	Asian citrus psyllid
ACTM	Airborne Toxic Control Measure
ADI	area of direct impacts
AFV	alternative fuel vehicle
Ag Vision	California Agricultural Vision (CDFA report)
ALB	Asian long-horned beetle
AP	Apprentice Pest Control Aircraft Pilot Certificate

APCD	air pollution control district
APHIS	USDA Animal and Plant Health Inspection Service
AQMD	air quality management district
ARS	U.S. Department of Agriculture Agricultural Research Service
ASD	autism spectrum disorder
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	acoustical usage factor
BAAQMD	Bay Area Air Quality Management District
Basin Plan	water quality control plan
BAU	Business As Usual
BCA	biological control agent
BCPUD	Bolinas Community Public Utility District
BCTVCP	Beet Curly Top Virus Control Program
BEE	triclopyr butoxyethyl ester
BMP	best management practice
BPS	border protection station
Btk	Bacillus thuringiensis kurstaki
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California Ambient Air Quality Standards
CAC	county agricultural commissioner
CACASA	California Agricultural Commissioners and Sealers Association
CAFE	Corporate Average Fuel Economy
CalARP	California Accidental Release Prevention

Cal EMA	California Emergency Management Agency
Cal/EPA	California Environmental Protection Agency
CALFED	CALFED Bay-Delta Program
CAL FIRE	California Department of Forestry and Fire Protection
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	criteria air pollutant
CAPS	Cooperative Agricultural Pest Survey
CAR	cedar apple rust
CARB	California Air Resources Board
CAT	California Climate Action Team
CBR	California black rail
CCAA	California Clean Air Act
CCD	colony collapse disorder
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CDPH	California Department of Public Health
CDPR	California Department of Pesticide Regulation
CEC	California Energy Commission
CEDEN	California Environmental Data Exchange Network
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act

CFAC	California Food and Agricultural Code
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CH_4	methane
cm2/hour	square centimeter per hour
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNW	combined-nursery worker
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
COHP	California Office of Historic Preservation
CRHR	California Register of Historic Resources
CRLF	California red-legged frog
CSF	cancer slope factor
CSM	conceptual site model
CTR	California Toxics Rule
CTS	California tiger salamander
CTV	citrus tristeza virus
CUPA	Certified Uniform Program Agency
CWA	Clean Water Act
dBA	A-weighted decibels
DDT	dichlorodiphenyltrichloroethane
DDVP	dichlorvos (or 2,2-dichlorovinyl dimethyl phosphate)

DFR	dislodgeable foliar residue
DGS	California Department of General Services
Director	Plant Health and Pest Prevention Services Director
DNA	deoxyribonucleic acid
DOT	U.S. Department of Transportation
DPAR	during- and post-application resident
DRW	diaprepes root weevil
DTSC	California Department of Toxic Substances Control
DWB	downwind bystander
DWR	California Department of Water Resources
EA	Environmental Assessment
EEC	estimated environmental concentration
EGVM	European grapevine moth
EIR	Environmental Impact Report
EP	Emergency Projects
ERA	Ecological Risk Assessment
ESA	federal Endangered Species Act
FAA	Federal Aviation Administration
Farm Bureau	California Farm Bureau Federation
FCM	false codling moth
FE	Federal Endangered
FESA	Federal Endangered Species Act
FFLDRS	Feed, Fertilizer, and Livestock Drugs regulatory Services Branch
F-gases	fluorinated gases

FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FP	Federal Proposed
FR	Federal Register
FREP	Fertilizer Research and Education Program
FSZ	Farmland Security Zone
FT	Federal Threatened
FTA	Federal Transit Administration
FUW	fumigation worker
GHG	greenhouse gas
GWP	global warming potential
GWPL	Ground Water Protection List
GWPP	Groundwater Protection Program
GWSS	glassy-winged sharpshooter
H_2O	water vapor
H_2S	hydrogen sulfide
HAP	hazardous air pollutant
HCFs	hydrofluorocarbons
HCP	habitat conservation plan
HHBP	Human Health Benchmark for Pesticides
HHRA	Human Health Risk Assessment
HLB	Huanlongbing (disease)
HMIS	Hazardous Materials Inventory Statement
HMMP	Hazardous Materials Management Plan
HSBD	Hazardous Substances Data Bank

HUD	U.S. Department of Housing and Urban Development
ICS	Incident Command System
ILRP	Irrigated Lands Regulatory Program
IPC	Integrated Pest Control
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IPP	Invertebrate and Plant Pathogen
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
JB	Japanese beetle
JP	Journeyman Pest Control Aircraft Pilot Certificate
Lab	Plant Pest Diagnostics Branch (or PPD)
Lawns/Turf SOP	U.S. EPA Lawns/Turf Standard Operating Procedure
LBAM	Light Brown Apple Moth
LCFS	Low Carbon Fuel Standard
L_{dn}	Day-Night Average Sound Level
LDV	light-duty vehicle
L_{eq}	equivalent sound level
L_{max}	maximum equivalent sound level
LOAEL	Lowest Observable Adverse Effect Level
LOC	level of concern
LRA	Local Responsibility Area
Lv	human annoyance vibration level
MAT	Male Attractant Technique

MBTA	Migratory Bird Treaty Act
MCL	Maximum Contaminant Level
MCS	multiple chemical sensitivity
Medfly	Mediterranean fruit flies
MEP	maximum extent practicable
Mexfly	Mexican fruit flies
mg/kg-day	milligrams per kilogram per day
MLA	mixer-loader applicator
MLA/PAL	mixer-loader applicator and post-applicator worker
MND	Mitigated Negative Declaration
MOE	Margin of Exposure
MP	management practice
mpg	miles per gallon
mph	miles per hour
MPO	metropolitan planning organization
MS4s	municipal separate storm sewer systems
MSDS	Material Safety Data Sheet
MSFW	migrant and seasonal farm worker
N_2O	nitrous oxide
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAPPO	North American Plant Protection Organization
National List	National List of Allowed and Prohibited Substances

ND	Negative Declaration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic and Safety Administration
NICNAS	Australian National Industrial Chemicals Notification and Assessment Scheme
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAEL	no observable adverse effect level
NOC	Notice of Completion
NOD	Notice of Determination
NOI	Notice of Intent
NO/ONOO cycle	nitric oxide and its oxidant product peroxynitrite cycle
NOP	Notice of Preparation
NOSB	National Organic Standards Board
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPV	nuclear polyhedrosis virus
NRHP	National Register of Historic Places
NTR	National Toxics Rule
OBD	on-board diagnostic systems
OCS	Outer Continental Shelf
OCSEH	Australian Office of Chemical Safety and Environmental Health

ODS	ozone-depleting substance
OEHHA	California Office of Environmental Health Hazard Assessment
OFFROAD2007	In-Use Off-Road Equipment Inventory Model (CARB 2007)
OFFROAD2011	In-Use Off-Road Equipment Inventory Model (CARB 2011)
OIM	Organic Input Material
OMRI	Organic Materials Review Institute
OPCA	Office of Pesticide Consultation and Analysis
OPR	Office of Planning and Research
Orders	conditional waivers of waste discharge requirements
OSHA	Occupational Safety and Health Administration
PAL	post-application loader
PAP	Pesticide Application Plan
PAR	post-application resident
PAW	post-application worker
PCA	Pest Control Advisor
PCB	polychlorinated biphenyl compound
PCN	potato cyst nematode
PCPA	Pesticide Contamination Prevention Act
PD	Pest Detection
PD/EP	Pest Detection/Emergency Projects
PDCP	Pierce's Disease Control Program
PDD	Plant Pest Diagnostics
PE	Pest Exclusion
PEIR	Program Environmental Impact Report

PERP	Portable Equipment Registration Program
PEIS/R	Program Environmental Impact Statement/Environmental Impact Report
Plant Health Division	Plant Health and Pest Prevention Services Division
PM	particulate matter
PM_{10}	particulate matter with aerodynamic radius of 10 micrometers or less
$PM_{2.5}$	particulate matter with aerodynamic radius of 2.5 micrometers or less
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
ppb	parts per billion
PPD	Plant Pest Diagnostics
ppm	parts per million
PPQ	Plant Protection and Quarantine (Permit)
PPV	plum pox potyvirus
PRC	California Public Resources Code
Proposed Program	Statewide Plant Pest Prevention and Management Program, Draft Program Environmental Impact Report, for implementation of future Statewide Program activities
PTW	post-transfer worker
RCRA	Resource Conservation and Recovery Act
REI	re-entry interval
Residential Pesticide SOP	U.S. EPA’s Standard Operating Procedures for Residential Pesticide Exposure Assessments
Residential SOP	U.S. EPA’s Overview of Issues Related to the Standard Operating Procedures for Residential Exposure Assessment
RFS	Renewable Fuel Standard
RINs	Renewable Identification Numbers

RMP	risk management plan
ROGs	reactive organic gases
RPW	red palm weevil
RQ	risk quotient
RVO	Renewable Volume Obligation
RWQCB	Regional Water Quality Control Board
SAPW	South American palm weevil
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SC	State Candidate
SCAQMD	South Coast Air Quality Management District
SCBGP	Specialty Crop Block Grant Program
SCS	Sustainable Communities Strategies
SDTF	Spray Drift Task Force
SDWA	Safe Drinking Water Act
SE	State Endangered
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SIT	sterile insect technique
SJVAPCD	San Joaquin Valley Air Pollution Control District
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	sulfur dioxide
SOP	State Organic Program
SPoT	Stream Pollution Trends

SRA	State Responsibility Area
SSC	State Species of Special Concern
ST	State Threatened
Statewide Program	Statewide Plant Pest Prevention and Management Program
Strigiformes	owls
SWAMP	Surface Water Ambient Monitoring Program
SWPP	Surface Water Protection Program
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCP	Traditional Cultural Properties
TEA	triclopyr triethylamine salt
TILT	Toxicant-Induced Loss of Tolerance
TMDL	total maximum daily load
TPZ	Timberland Production Zone
TRU	Transport Refrigeration Unit
TRV	toxic reference value
TRV	toxicity reference value
UC	University of California
UHR	ultra-high release
USC	U.S. Code
USDA	U.S. Department of Agriculture
U.S. EPA	United States Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

USGS	United State Geological Survey
VdB	vibration decibels
VOC	volatile organic compound
WDR	waste discharge requirement
WHO	World Health Organization
Williamson Act	California Land Conservation Act of 1965
YCR	Yuma clapper rail
YSAQMD	Yolo-Solano Air Quality Management District
ZEV	zero emission vehicle

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