UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

MEMORANDUM

SUBJECT: Effects Determinations for Azinphos-methyl Relative to the San Francisco Garter Snake, San Joaquin Kit Fox, Valley Elderberry Longhorn Beetle, California Clapper Rail, California Tiger Salamander, and Bay Checkerspot Butterfly

FROM: Melissa Panger, Ph.D., Senior Biologist 3/2/11
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THROUGH: Dana Spatz, Branch ~~Chief~~ 3/2/11
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TO: Arthur-Jean B. Williams, Associate Director
Environmental Fate and Effects Division

This document is an abbreviated risk assessment of potential direct and indirect effects on the San Francisco garter snake (SFGS) (*Thamnophis sirtalis tetrataenia*), San Joaquin kit fox (SJKF) (*Vulpes macrotis mutica*), valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*), California clapper rail (CCR) (*Rallus longirostris obsoletus*), California tiger salamander (CTS) (*Ambystoma californiense*) [all three populations; the Santa Barbara Distinct Population Segment (DPS), the Sonoma County DPS, and the central population], and bay checkerspot butterfly (BCB) (*Euphydryas editha bayensis*) arising from FIFRA regulatory actions regarding all registered uses of azinphos-methyl (AZM) (PC code: 058001). In addition, this abbreviated assessment evaluated whether the action is expected to result in modification of the designated critical habitat for the listed species with designated critical habitat (VELB, CTS, and BCB). This assessment addresses potential risks to the aforementioned species for which AZM was alleged to be of concern in a complaint made by the Center for Biological Diversity against the United States Environmental Protection Agency on May 30, 2007 (Case Number 07-2794-JCS).

As part of the reregistration process, on November 16, 2006, the Agency issued its decision on AZM to phase out all uses by September 30, 2012. The Agency's product cancellation order

from February 20, 2008 (73 FR 9328) confirmed and finalized that decision. This decision was based on the Agency's reevalation of the risks and benefits of the AZM uses, and a thorough consideration of public comments. Attached is a memorandum from the Pesticide Re-evaluation Division (PRD) and the Registration Division (RD) detailing the cancellation order for AZM and confirming that all products containing AZM will be cancelled by September 30, 2012. There will be no existing stock provisions with this cancellation; therefore, on and after September 30, 2012, the use of AZM will not be allowed in the United States. Any regulatory action taken between March 31, 2011 and September 30, 2012 would not be completed before September 30, 2012. Therefore, an abbreviated risk assessment was conducted based on previous ecological risk assessments completed in the Environmental Fate and Effects Division (EFED).

- The most recent ecological risk assessment conducted by the Environmental Fate and Effects Division (EFED) for AZM was an assessment conducted for the federally-listed California red-legged frog (CRLF) (*Rana aurora draytonii*) (USEPA, 2007). The assessment considered the following AZM uses in California: almonds, Brussels sprouts, apples, cherries (sweet and tart), nursery stock (excluding Christmas trees), pears, pistachios, and walnuts (which were registered for use in California at the time of the assessment). AZM use on blueberries, parsley, and alkali bee beds was not assessed (these uses were not allowed in California at the time of the assessment). The assessment relied on the application rates and management practices allowed on AZM labels in 2007 for its effects determinations relative to the CRLF, but also explored several risk mitigation measures that were being implemented at the time of the assessment (including the phasing out of some uses, a mandatory reduction of annual application rates, and larger required buffer widths).

  Based on the AZM uses, application rates and management practices allowed in California in 2007 (see **Table 1**), it was determined that the use of AZM was likely to adversely affect the CRLF and modify its designated critical habitat. These risk determinations were based on an overlap of potential AZM use sites and CRLF range/critical habitat and exceedences of the Agency's levels of concern (LOCs) for freshwater fish (acute and chronic exposures, all uses), freshwater invertebrates (acute and chronic exposures, all uses), mammals (acute and chronic exposures, all uses), birds (acute and chronic exposures, all uses), and terrestrial invertebrates (based on acute exposure, all uses). Risks to terrestrial and aquatic plants were not expected from any AZM use.

Table 1. Azinphos Methyl Application Rates and Management Practices for 2007 (California Only).

Crop	Max. Rate (lbs a.i./A)	Max. No. Apps.	Minimum Interval (days)	Buffer Width (ft)	Method
Almonds[1]	2	1	NA	25	air blast
Apples[1]	1.5	32	7 d	25	air blast
Brussels sprouts	0.75	1	NA	25	ground spray
Cherries[1,3]	0.75	2	14 d	25	air blast
Nursery Stock4	1	4	10 d	25	air blast
Pears[1]	1.5	2	7 d	25	air blast
Pistachios[1]	2	1	NA	25	air blast
Walnuts[1]	2	1	NA	25	air blast

[1] No dormant application allowed
[2] Last application of 1.0 lb acre^{-1} as yearly maximum is 4 lb acre^{-1}.
[3] Several azinphos methyl products are restricted from application to cherries before harvest in California
[4]The ornamental use specifically excludes Christmas trees.

- The use of AZM on Brussels sprouts, nursery stock, almonds, pistachios, and walnuts is currently prohibited. The remaining AZM uses [alkali bee beds (only allowed in OR and WA), apples, blueberries, cherries, parsley, and pears] will be prohibited on and after September 30, 2012. Therefore, of the currently registered uses, the only AZM uses allowed in California (and, thus, relevant to the listed species considered here) are apples, cherries, and pears (these uses will be disallowed in 2012). The application rates for these uses for the duration of the phase-out can be found in **Table 2**.

  The risks associated with the application rates and management practices that were to take effect in 2008 as part of the phase out were explored in the 2007 CRLF assessment (USEPA, 2007) for freshwater animals (again, see **Table 2**). For AZM use on apples, cherries, and pears (using 2008 label requirements), LOCs were exceeded for freshwater fish (acute and chronic exposures) and freshwater invertebrates (acute and chronic exposure). For terrestrial taxa, the risks associated with the 2011 apple, pear, and cherry uses are expected to be similar to the 2007 Brussels sprouts use because the application rates are similar to or higher than the 2007 rate and only one application is allowed. Therefore, risks to mammals (acute and chronic exposures, all uses), birds (acute and chronic exposures, all uses), and terrestrial invertebrates (based on acute exposure, all uses) are also expected for the 2011 apple, pear, and cherry uses. As with the 2007 conclusions, risks to terrestrial and aquatic plants are not expected from any AZM use.

Table 2. Azinphos Methyl Application Rates and Management Practices for the Duration of the Phase-out (California Only).

Use	Year				
	2008	2009	2010	2011	2012
Apples	Yearly Max: 3 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet		Yearly Max: 2 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet	Yearly Max: 1.5 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet	
Cherries (Sweet and Tart)	Yearly Max: 1.5 lbs a.i./A Single Max: 0.75 lbs a.i./A Apply after fruit harvest and before leaf fall. Minimum App. Interval: 14 d Buffer: 60 feet		Yearly Max: 0.75 lbs a.i./A Single Max: 0.75 lbs a.i./A Apply after fruit harvest and before leaf fall. Minimum App. Interval: 14 d Buffer: 60 feet		
Pears	Yearly Max: 3 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet		Yearly Max: 2 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet	Yearly Max: 1.5 lbs a.i./A Single Max: 1.5 lbs a.i./A Minimum App. Interval: 7 d Buffer: 60 feet	

- Based on the current labels, LOC exceedences for freshwater fish, freshwater invertebrates, mammals, birds and terrestrial invertebrates are expected for the AZM uses currently allowed in California (i.*e.,* apples, cherries, and pears). Therefore, any overlap of potential use sites with the range of the SFGS, SJKF, VELB, CCR, CTS (Santa Barbara DPS, Sonoma County DPS, and the central population) or BCB is expected to result in a likely to adversely affect (LAA) determination. Similarly, overlap of potential use sites with designated critical habitat for the VELB, CTS, and BCB is expected to result in a habitat modification determination.

  To explore the potential for overlap of use sites with species' ranges and/or critical habitats, maps were created using the California Gap Analysis Program (GAP) data layers for orchards (using primary, secondary, and tertiary classifications to represent potential use sites for apples, cherries, and pears) and species and critical habitat locations (see **APPENDIX A**). These maps indicate that there is an overlap of potential AZM use sites with the ranges of the VELB, BCB, CTS (all three populations), and SJKF. Additionally, there is an overlap of potential use sites with the designated critical habitat of the BCB and CTS. Although the CCR range does not overlap with AZM use sites, there are large areas of orchards upstream of the CCR range. Although not quantitatively assessed, the use of AZM upstream could result in exposures high enough downstream to adversely impact the CCR (either directly or indirectly). That is also the case with the designated critical habitat for the VELB; although there is no direct overlap, there are areas of orchards upstream of the VELB critical habitat that could (qualitatively) result in exposures high enough downstream to adversely impact the habitat. Although not quantitatively assessed, the range of the SFGS appears far removed from the potential orchard use sites, and, thus, exposure to the SFGS is not expected.

  Therefore, use of AZM on apples, cherries, and pears is expected to result in direct and indirect effects on the aforementioned species and a Likely to Adversely Affect

Determination is made for the SJKF, VELB, CCR, CTS (Santa Barbara DPS, Sonoma County DPS, and the central population) and BCB. A No Effect determination is made for the SFGS. Additionally, a Habitat Modification is made for AZM and the critical habitat designated for the VELB, CTS, and BCB.

- On and after September 30, 2012, the effects determinations for all of the listed species (and their designated critical habitat) will be no effect (NE) and no habitat modification because the use of AZM in the United States will no longer be allowed on and after that date.

As required by the Alternative Consultation Agreement EPA entered into with the United States Fish and Wildlife Service and National Marine Fisheries Service, I have been trained by the Services to make such determinations. Additionally, this abbreviated assessment was subjected to internal Agency peer review throughout its development.

Please let me know if you have any question regarding this assessment and effects determination for AZM relative to the SFGS, SJKF, VELB, CCR, CTS, and BCB.

Attachments:
Attachment 1: Azinphos-Methyl (AZM) Registration Review Status (October 2008)
Attachment 2: Verification Memorandum for Azinphos-methyl for SF Bay Species (February 2011)

References:

USEPA (2007). Risks of Azinphos Methyl Use to Federally Listed California Red Legged Frog (*Rana aurora draytonii*). Environmental Fate and Effects Division, Office of Pesticide Programs, United States Environmental Protection Agency. Washington, DC. July 20, 2007.

APPENDIX A: Maps of Potential Use Sites for Current AZM Uses in California (*i.e.*, Apples, Cherries and Pears) and Species' Ranges [SFGS, SJKF, VELB, CCR, CTS (Santa Barbara DPS, Sonoma County DPS, and the central population) and BCB] and Critical Habitats (VELB, CTS, and BCB).

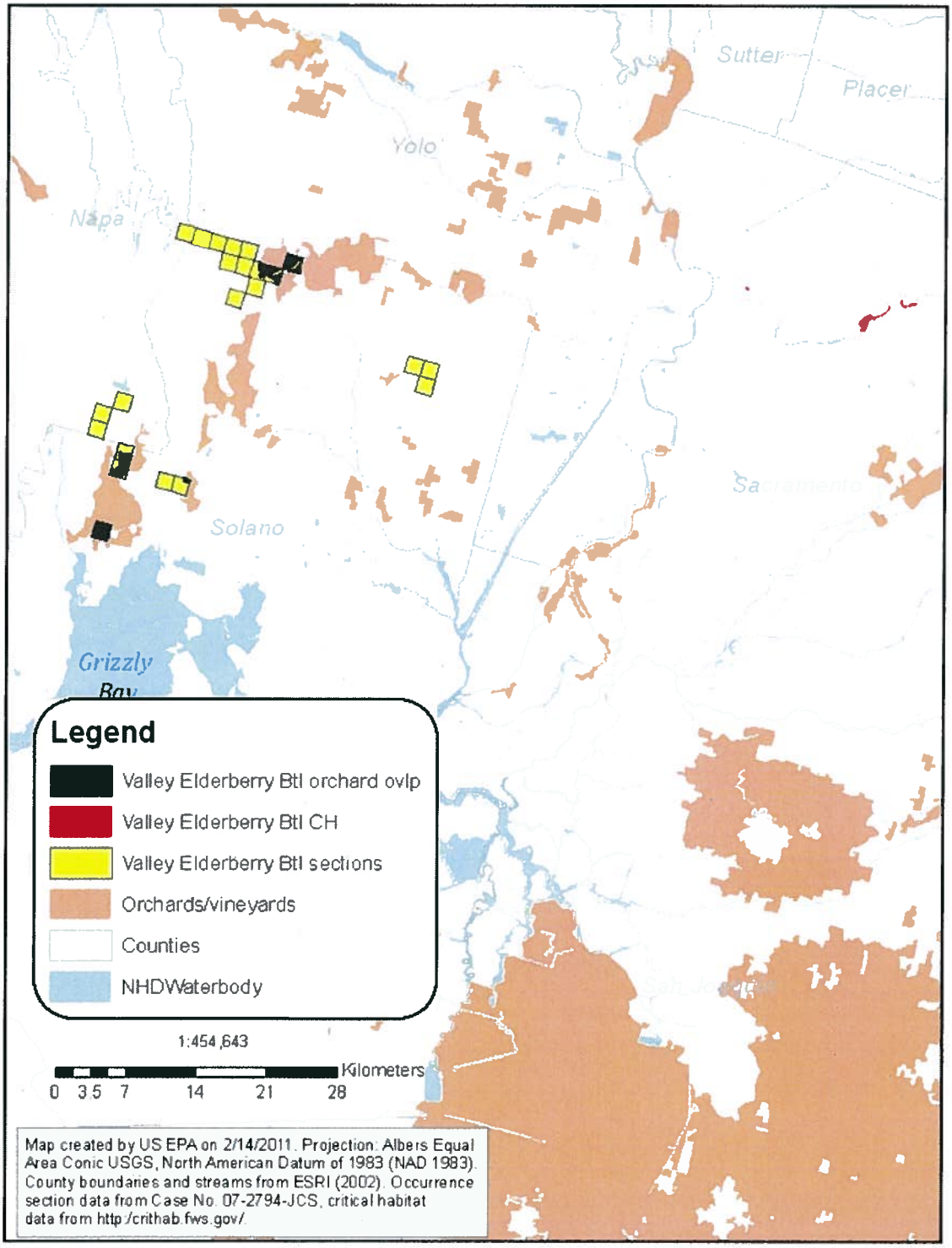

FIGURE A.1. Map of Potential Orchard Use Sites and the Range and Critical Habitat of the VELB.

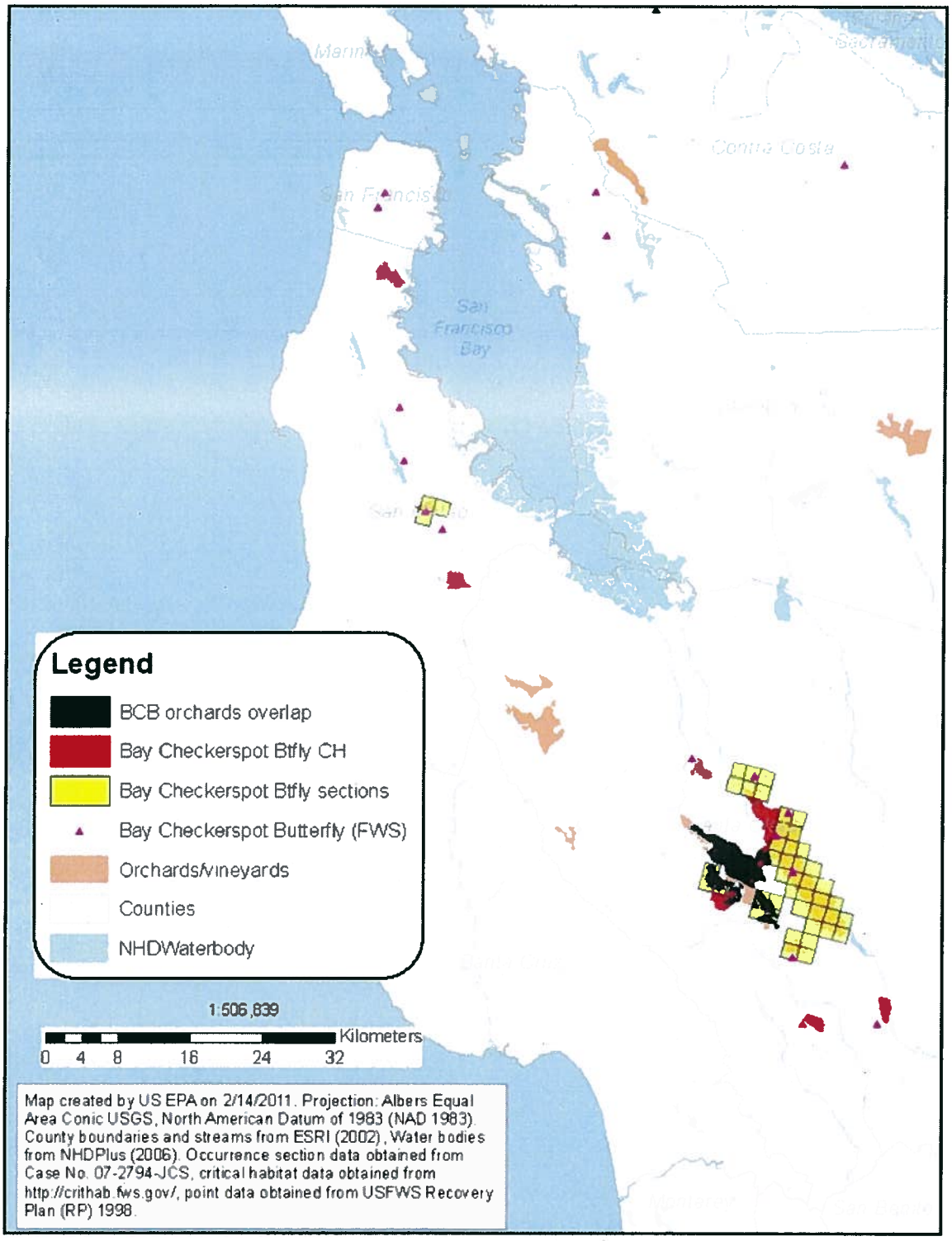

FIGURE A.2. Map of Potential Orchard Use Sites and the Range and Critical Habitat of the BCB.

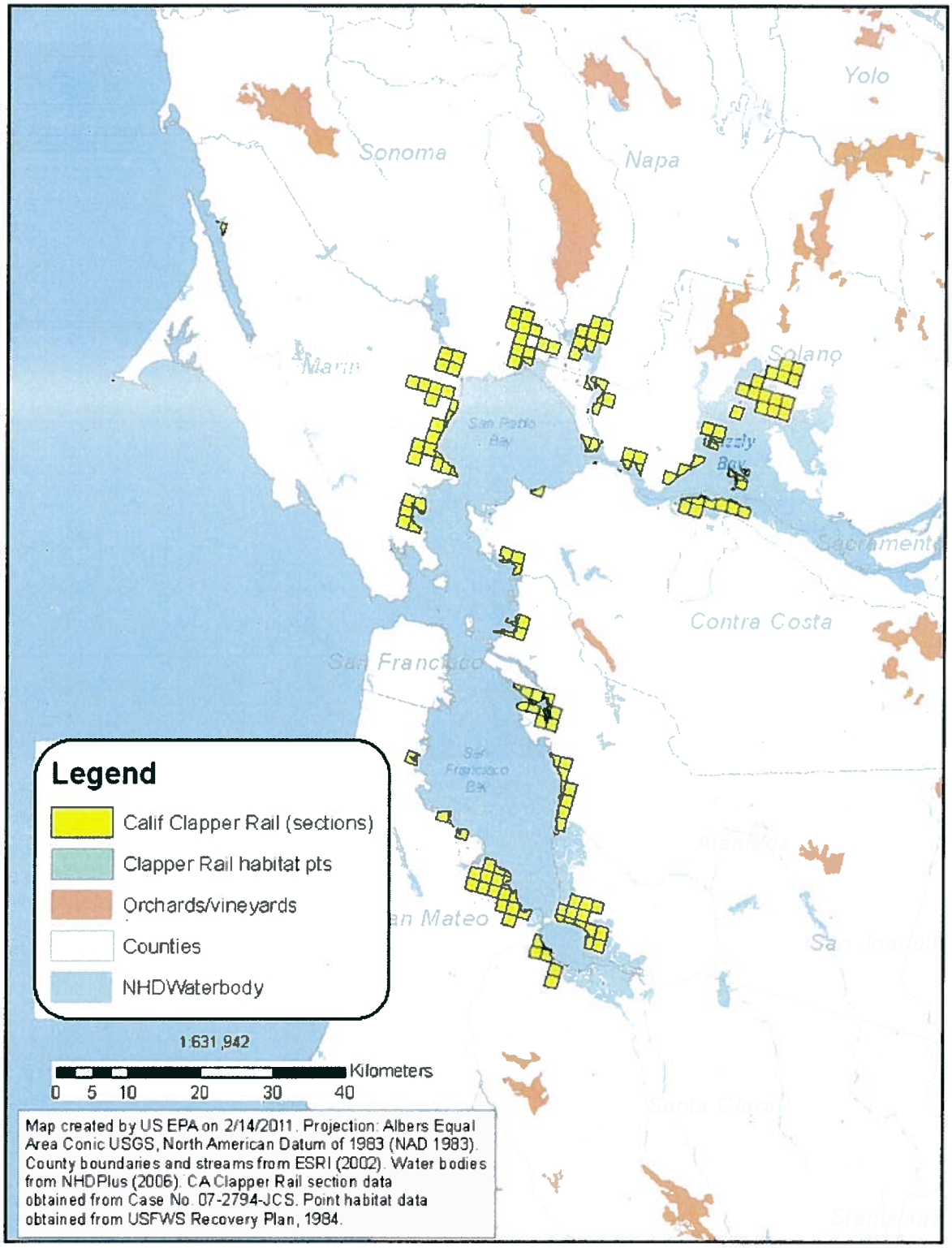

FIGURE A.3. Map of Potential Orchard Use Sites and the Range of the CCR.

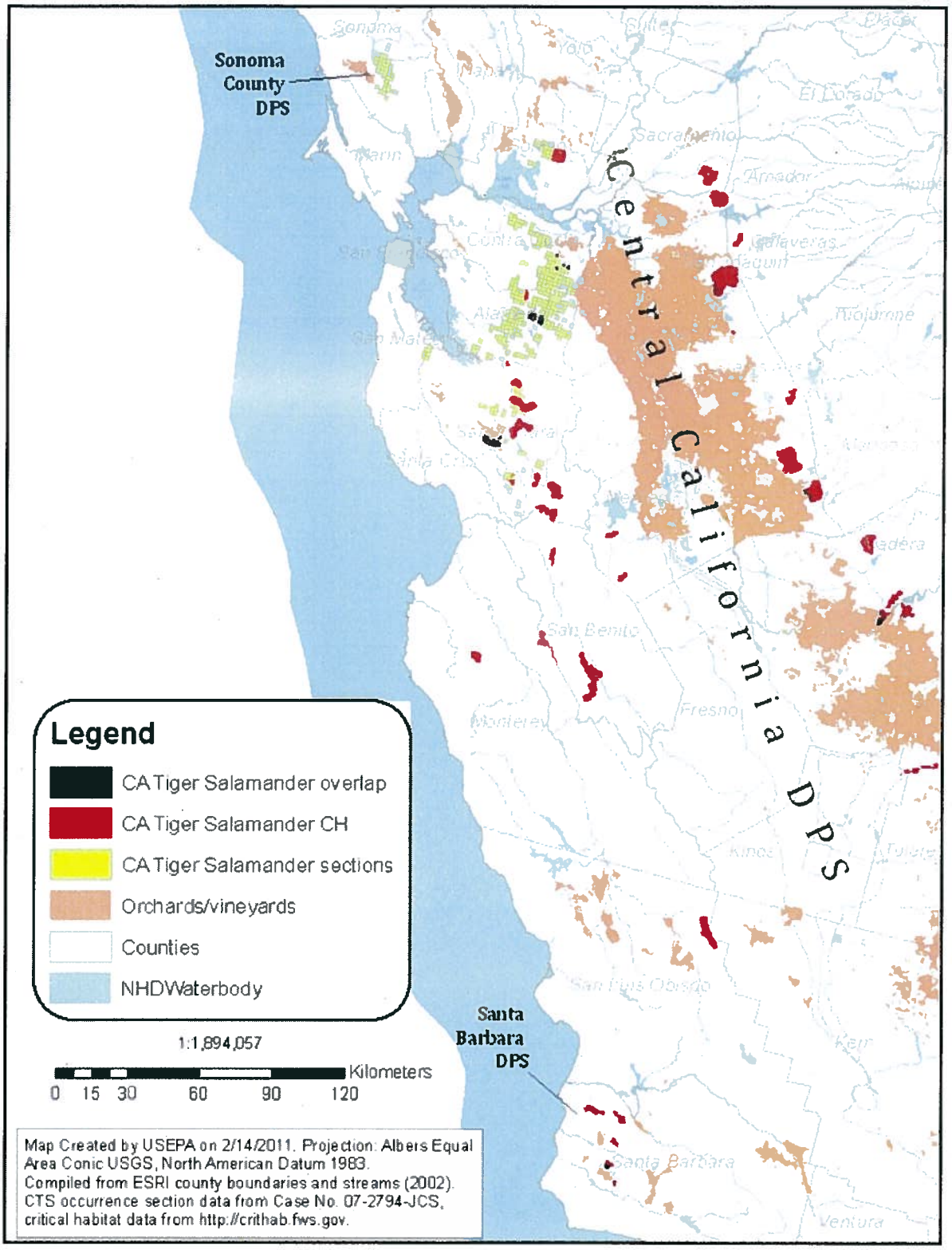

FIGURE A.4. Map of Potential Orchard Use Sites and the Range and Critical Habitat of the CTS (All Three Populations).

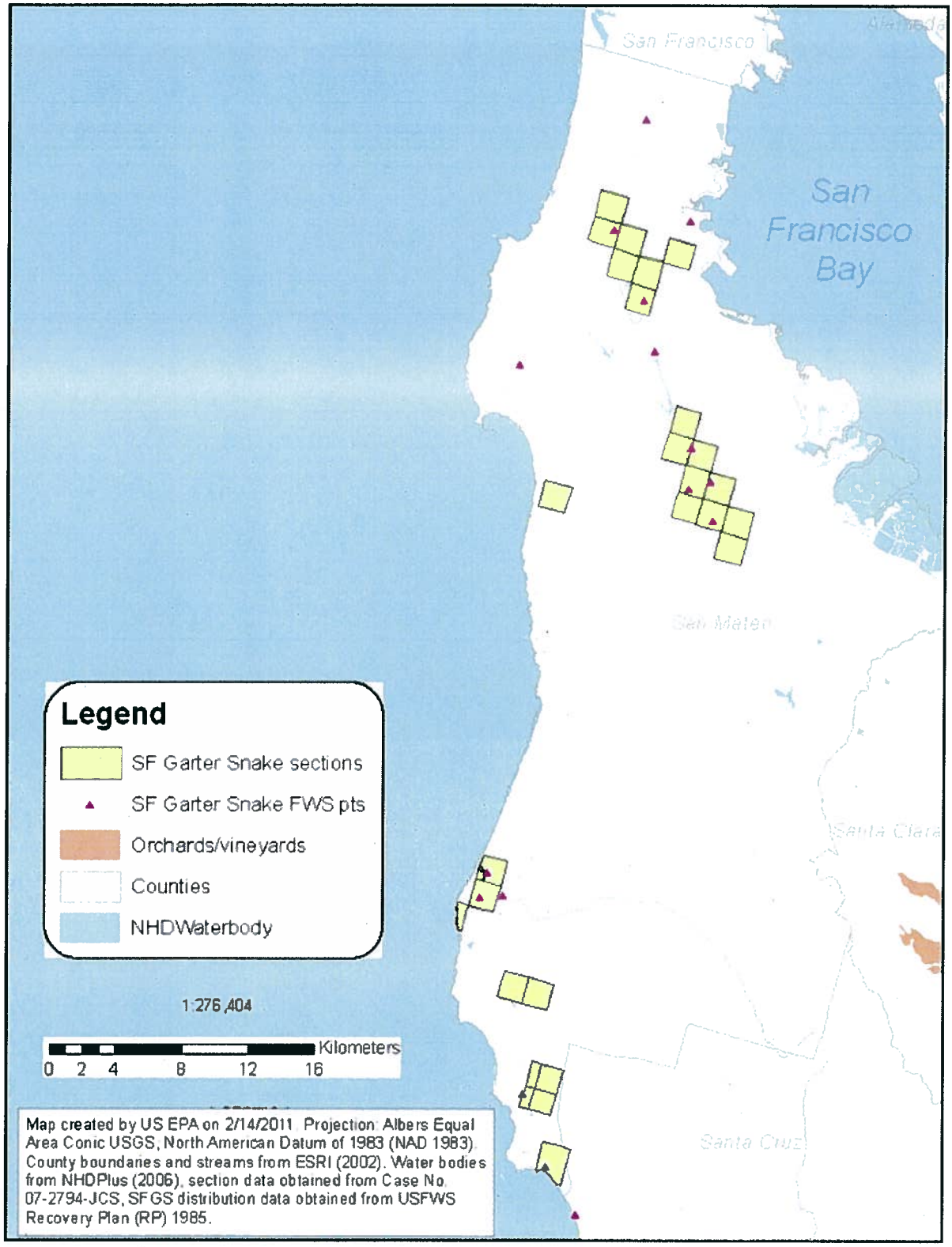

FIGURE A.5. Map of Potential Orchard Use Sites and the Range of the SFGS.

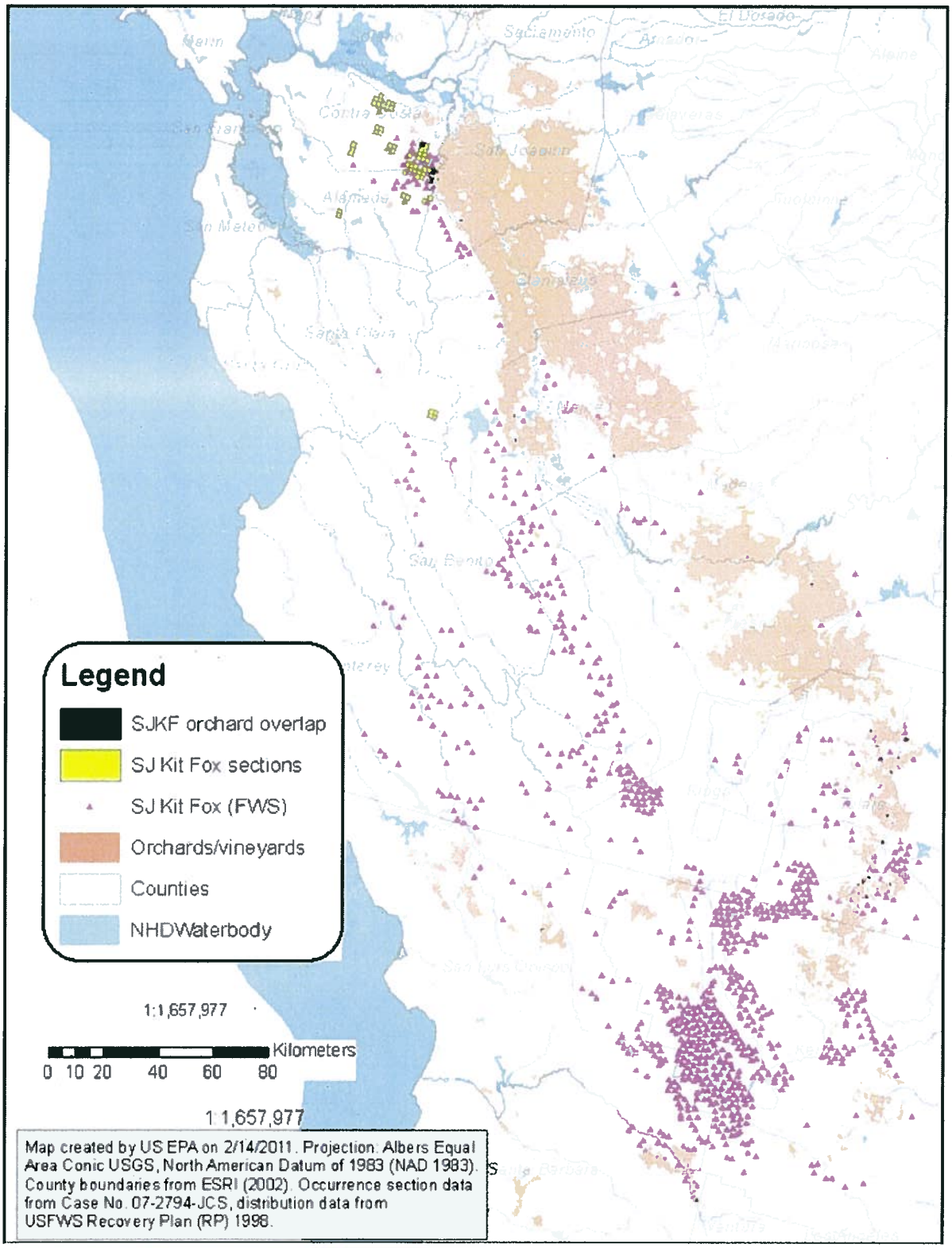

FIGURE A.6. Map of Potential Orchard Use Sites and the Range of the SJKF.

ATTACHMENT 1:

US Environmental Protection Agency
Office of Pesticide Programs

Azinphos-Methyl (AZM) Registration Review Status

October 2008

Azinphos-methyl
Registration Review Status
October 2008

Case #0235

Approved By:

Steve Bradbury, Ph.D.
Director, Special Review and
Reregistration Division

Introduction

The Food Quality Protection Act of 1996 mandated a registration review program. All pesticides distributed or sold in the United States generally must be registered by EPA, based on scientific data showing that they will not cause unreasonable risks to human health, workers, or the environment when used as directed on product labeling. The new registration review program is intended to make sure that, as the ability to assess risk evolves and as policies and practices change, all registered pesticides continue to meet the FIFRA statutory standard for registration of no unreasonable adverse effects. Changes in science, public policy, and pesticide use practices will occur over time. Through the new registration review program, the Agency periodically reevaluates pesticides to make sure that as change occurs, products in the marketplace can be used safely. Information on this program is provided at: http://www.epa.gov/oppsrrd1/registration_review/.

Status Update for Azinphos-Methyl

Final Decision and Phase Out:

This is the Environmental Protection Agency's (EPA's or the Agency's) status update for the registration review of azinphos-methyl (AZM). AZM is an organophosphate (OP) pesticide that poses health risks to farm workers, pesticide applicators, and aquatic ecosystems. AZM also provides important pest control for tree fruit, blueberries, and other use sites.

On November 16, 2006, EPA issued its final decision on AZM to phase out all remaining uses by September 30, 2012. This decision was based on the Agency's reevaluation of the risks and benefits of the remaining uses of AZM, and a thorough consideration of public comments. EPA's February 20, 2008, product cancellation order confirmed and finalized that decision (73 FR 9328).

As a result of these actions, the use of AZM on Brussels sprouts and nursery stock is now prohibited. As of October 30, 2009, use of AZM on almonds, pistachios, and walnuts will be prohibited. As of September 30, 2012, use of AZM will be prohibited on the last remaining uses: alkali bee beds, apples, blueberries, cherries, parsley, and pears. All other uses of AZM have already been voluntarily cancelled by the manufacturer.

The final AZM Decision Document and supporting materials are available electronically at Regulations.gov in docket number EPA-HQ-OPP-2005-0061.

Anticipated Actions

The Agency expects growers using AZM for the remaining "phase out" uses will successfully transition to the available alternative pesticides that pose fewer risks. Many new alternatives have been registered since the Agency's previous benefits (grower impact) assessment was conducted in 2001 as part of the AZM Interim Reregistration Eligibility Decision (IRED). These

new chemistries are more costly and generally require more precise application. Crop experts point out the importance of adopting these innovations gradually, so that growers learn appropriate application techniques and gain confidence in the efficacy of the new pesticides.

Also, international maximum residue levels (MRLs) have not been established for many alternatives in several key export markets. Establishing MRLs has historically been a lengthy process of 6-7 years, but EPA believes that MRLs for AZM alternatives can be achieved faster. MRLs are important so that food or feed legally treated with a pesticide in the U.S. can be exported in compliance with international food safety standards.

Because of mitigation measures already in effect on product labeling, EPA believes that the transition away from AZM can be managed in a way that minimizes risks to farm workers and the environment. Since AZM is being phased out, no additional action is anticipated at this time in registration review.

ATTACHMENT 2:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

MEMORANDUM

PC Code: 058001

DATE: **02/08/2011**

SUBJECT: Verification Memorandum for Azinphos-methyl for SF Bay Species

FROM: Tom Myers
Risk Management & Implementation Branch 2
Pesticide Re-evaluation Division (7508P)

TO: Melissa Panger
Environmental Risk Branch 5
Ecological Fate & Effects Division (7507P)

This memorandum serves to provide information on the remaining uses of azinphos-methyl.

Reregistration Verification

Date and Scope of the RED

- The IRED for AZM was completed in October 2001 and the RED was finalized in July 2006 with the completion of the OP cumulative.

- On November 16, 2006, EPA issued its final decision on AZM to phase out the remaining uses by September 30, 2012. This action on AZM grew out of EPA's concern for worker and ecological risks. The AZM reevaluation and this decision are in accordance with the 2002 Memorandum of Agreement between EPA and the registrants of AZM products. This decision was based on new data and information that were required in the 2002 Data Call-In following the 2001 AZM Interim Reregistration Eligibility Decision (IRED), and on comments received on the June 2006 proposed decision for the remaining AZM uses.

Mitigation Required Through the Reregistration Process

The only remaining crop uses are apples/crabapples, blueberries, cherries, pears, and parsley. Application of AZM to these crops is prohibited after September 30, 2012. The mitigation, as noted below, that was required in the AZM November 2006 final decision, is on the labels. There are 7 Section 3 registrations, including 3 technical products. There are two SLNs for control of blister beetles around alkali bee beds. However, these are restricted to the states of Oregon and Washington. This use will also be phased out as of September 30, 2012.

As part of the November 2006 agreement, the use of AZM on Brussels sprouts and nursery stock was prohibited after September 30, 2008 and the use of AZM on almonds, pistachios, and walnuts was prohibited after October 30, 2009.

All other uses of AZM have been voluntarily cancelled.

Apples/Crabapples Mitigation Strategy

Rate Reduction for Apples/crabapples

Apples	2007	2008, 2009	2010	2011, 2012
Limit Seasonal Max	4.0 lbs ai/A per year	3.0 lbs ai/A per year	2.0 lbs ai/A per year	1.5 lbs ai/A per year

- Use on apples/crabapples will be cancelled as of September 30, 2012
- Aerial application is prohibited
- Buffer zone for homes and occupied dwellings: 60 feet
- Vegetative buffer zone for water bodies: 60 feet

Blueberries Mitigation Strategy

Rate Reduction for Blueberries

Blueberries	2007	2008, 2009	2010, 2011, 2012
Limit Seasonal Max	1.5 lbs ai/A per year	1.25 lbs ai/A per year	0.75 lbs ai/A per year

- Use on blueberries will be cancelled as of September 30, 2012
- Aerial application is prohibited.
- Buffer zone for homes and occupied dwellings: 60 feet
- Vegetative buffer zone for water bodies: 60 feet
- Application is restricted to the following states: Alabama, Arkansas, Florida, Georgia, Indiana, Michigan, New Jersey, Maine, New York, and North Carolina.

Cherries Mitigation Strategy

Rate Reduction for Cherries

Cherries	2007, 2008, 2009	2010, 2011, 2012
Limit Seasonal Max	1.5 lbs ai/A per year	0.75 lbs ai/A per year

- Use on cherries will be cancelled as of September 30, 2012
- Aerial application is prohibited
- Buffer zone for homes and occupied dwellings: 60 feet
- Vegetative buffer zone for water bodies: 60 feet

Parsley Mitigation Strategy

Rate Reduction for Parsley

Parsley	2007	2008, 2009, 2010	2011, 2012
Limit Seasonal Max	1.5 lbs ai/A per year	1.25 lbs ai/A per year	1.0 lbs ai/A per year

- Use on parsley will be cancelled as of September 30, 2012
- Buffer zone for homes and occupied dwellings: 60 feet
- Vegetative buffer zone for water bodies: 60 feet

Pears Mitigation Strategy

Rate Reduction for Pears

Pears	2007, 2008	2009, 2010	2011, 2012
Limit Seasonal Max	3.0 lbs ai/A per year	2.0 lbs ai/A per year	1.5 lbs ai/A per year

- Use on pears will be cancelled as of September 30, 2012
- Aerial application is prohibited
- Buffer zone for homes and occupied dwellings: 60 feet
- Vegetative buffer zone for water bodies: 60 feet

There are two SLNs for control of blister beetles around alkali bee beds. However, these are restricted to the states of Oregon and Washington. This use will be phased out as of September 30, 2012.

Active azinphos-methyl registrations as of 2/2/2011

Registration #	Name	latest label	latest changes	Company Name	Percent Active Ingredient	Active Ingredient
10163-78	GOWAN AZINPHOS-M 50 WSB	8/14/2007	corrects highbush blueberry REI rate error	GOWAN CO	50	Azinphos-Methyl
10163-95	AZINPHOS METHYL TECHNICAL	8/8/2007		GOWAN CO	94.2	Azinphos-Methyl
11678-53	COTNION-METHYL	8/8/2007	2/4/10 container handling notification	MAKHTESHIM CHEMICAL WORKS LTD	94.2	Azinphos-Methyl
11678-70	GUTHION TECHNICAL INSECTICIDE	2/5/2007		MAKHTESHIM CHEMICAL WORKS LTD	91	Azinphos-Methyl
66222-11	COTNION-METHYL AZINPHOS METHYL 50W	8/10/2010	corrects blueberry directions	MAKHTESHIM-AGAN OF NORTH AMERICA INC	50	Azinphos-Methyl
66222-162	GUTHION SOLUPAK 50% WETTABLE POWDER INSECTICIDE	8/10/2010	adds eyewear to PPE, corrects blueberry directions	MAKHTESHIM-AGAN OF NORTH AMERICA INC	50	Azinphos-Methyl
66330-233	AZINPHOSMETHYL 50W	8/10/2007	2/12/2009 container handling notification	ARYSTA LIFESCIENCE NORTH AMERICA, LLC	50	Azinphos-Methyl
OR040020	GUTHION SOLUPAK 50% WETTABLE POWDER INSECTICIDE	12/10/2007	12/10/2007 EPA acknowledged SLN; but see WA030025	BAYER CROPSCIENCE LP	50	Azinphos-Methyl
WA030025	GUTHION SOLUPAK 50% WETTABLE POWDER INSECTICIDE	Vol cancel received 1/18/2011	WA submits vol cancellation 1/18/2011	BAYER CROPSCIENCE LP	50	Azinphos-Methyl

- In general, MOA labels accepted 8/2007

- Spring 2010 attempt to maintain blueberry, apple, cherry, pear rates withdrawn