



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY  
AND POLLUTION PREVENTION

**MEMORANDUM**

**SUBJECT:** Endangered Species Act Section 7(d) Consistency Determination with Respect to the Application for the Registration of Products Containing the New Active Ingredient Glufosinate-P.

**FROM:** **for** Ed Messina, Director  
Office of Pesticide Programs

A handwritten signature in black ink, appearing to be "Ed Messina", written over a horizontal line.

**TO:** Jacket File for Glufosinate-P Product EPA Reg No. 86203-33

The purpose of this memorandum is to document the U.S. Environmental Protection Agency's (EPA) Endangered Species Act (ESA) section 7(d) consistency determination associated with the following action: granting MITSUI Chemicals Crop & Life Solutions, INC.'s ("MITSUI") May 26, 2020 application to register an end-use product containing the new active ingredient, Glufosinate-P ((2S)-2-amino-4-(hydroxymethylphosphinyl) butanoic acid; CAS number 35597- 44-5) for use on the following crops: apple, sugar beet, bushberry subgroup 13B, canola, field corn, sweet corn, cotton, citrus fruit crop group 10–10, pome fruit crop group 11–10, stone fruit crop group 12–12, grape, tree nut crop group 14–12, olive, potato, and soybean. On September 18, 2023, MITSUI informed the Agency that they wished to voluntarily withdraw some of the initially requested crop uses leaving only the conventional and glufosinate-resistant varieties of canola, field corn, sweet corn, cotton, and soybean for the pending glufosinate-P registration. On October 17, 2024, EPA initiated formal consultation under the ESA with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (collectively "the Services"). EPA determined that mitigation measures to avoid and minimize effects to federally threatened and endangered (listed) species were necessary as part of this action. EPA and MITSUI agreed to the necessary mitigations, which appears on the "L-Glufosinate Liquid Formulation" (EPA Reg. No. 86203-33) product label. Consistent with the counterpart regulations governing FIFRA-ESA consultations, EPA determined that these mitigation measures are sufficient for the Agency to predict no potential likelihood of jeopardy to listed species or adverse modification to any designated critical habitats. These mitigations also serve to minimize take of listed species. In granting the registration of glufosinate-P, EPA is complying with ESA section 7(d) by not making any irreversible or irretrievable commitment of resources with the effect of foreclosing any reasonable and prudent alternative measures. Further, EPA does not anticipate any interim effects of concern to listed species or designated critical habitat prior to completion of consultation.

This determination is supported by robust scientific analyses. These supporting documents are discussed below and available in the glufosinate-P docket ([EPA-HQ-OPP-2020-0250](#)).

## **Background**

On May 26, 2020, MITSUI submitted an application to register products containing the new active ingredient glufosinate-P. Under FIFRA section 3(c)(5), EPA shall issue a registration or an amendment to registration if:

- (A) its composition is such as to warrant the proposed claims for it;
- (B) its labeling and other material required to be submitted comply with the requirements of [FIFRA];
- (C) it will perform its intended function without unreasonable adverse effects on the environment; and,
- (D) when used in accordance with widespread and commonly recognized practice it will not generally cause unreasonable adverse effects on the environment.<sup>1</sup>

ESA section 7(a)(2) provides that “[e]ach Federal agency shall, in consultation with [the Services] insure that any action authorized, funded, or carried out by such agency. . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species . . . .” ESA section 7(d) provides that “[a]fter initiation of consultation required under [ESA section 7(a)(2)], the Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitments of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of reasonable and prudent alternative measures which would not violate [ESA section 7(a)(2)].”<sup>2</sup>

On May 9, 2024, EPA provided for public comment its proposed decision on this application along with a draft Biological Evaluation (BE) which included effects determinations for listed species and any designated critical habitat for the proposed uses of glufosinate-P. For those species where EPA proposed to determine that glufosinate-P was likely to adversely affect one or more individuals of a species or a designated critical habitat, EPA also evaluated population-level effects and predicted the potential likelihood of future jeopardy for listed species and adverse modification for designated critical habitats. Because EPA initially predicted a potential likelihood of future jeopardy for 60 listed species and 38 critical habitats based on the submitted application, EPA determined that the label for the end-use product containing the new active glufosinate-P did not include necessary measures to address concerns for non-target organisms, including listed species.

EPA also identified species that are particularly vulnerable based on a review of USFWS and NMFS documents (e.g., 5-yr reviews; BiOps) in which the Services have identified either high or medium vulnerability for species to all relevant stressors and where pesticides may be a potential stressor as well. These species generally have smaller ranges relative to other listed species and

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<sup>1</sup> See also 40 C.F.R. § 152.112. This action is supported by a decision document and other supporting materials available in the glufosinate-P public docket ([EPA-HQ-OPP-2020-0250](#)).

<sup>2</sup> Additionally, 50 C.F.R. § 402.09 restates the statutory obligation and adds that the “prohibition is in force during the consultation process and continues until the requirements of [ESA] section 7(a)(2) are satisfied.”

the ranges of these species or their designated critical habitat overlap with those of other listed species. Therefore, protections for the vulnerable species would benefit other listed species that are located in the same area. EPA identified additional geographically specific mitigation measures (i.e., pesticide use limitation areas; PULA) for two vulnerable species – Whorled Sunflower and Spring Creek bladderpod. The product labeling directs the user to EPA’s Bulletins Live! Two (BLT) website to access these measures through Endangered Species Protection Bulletins.

Based on EPA’s determination that additional mitigation measures were needed to reduce exposures to non-target organisms (especially the 60 listed species and 38 critical habitats, and the two vulnerable species stated above), MITSUI agreed to revise the submitted proposed label to include these measures. Based on the agreed upon mitigations and submission of new labeling, EPA’s final BE does not include predictions of potential likelihood of future jeopardy for any listed species or adverse modification to any designated critical habitat. After considering comments on the draft BE, EPA issued its final BE on October 17, 2024, and initiated formal consultation with the Services. EPA also developed a response to comment document for the final decision and the final BE that can be found in the docket.

### **Section 7(d) Consistency**

#### **No Irretrievable or Irreversible Commitment of Resources**

EPA has complied with ESA sections 7(a)(2) and 7(d) by initiating formal consultation with the Services and making this determination that the action to register the product L-Glufosinate Liquid Formulation (EPA Reg. No. 86203-33) containing the new active ingredient glufosinate-P, and for the reasons described below will not make any irreversible or irretrievable commitment of resources that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures determined necessary during the consultation process.

EPA considered the elements and factors presented in FWS and NMFS recent draft and final pesticide biological opinions (BiOps<sup>3</sup>) to guide the Agency’s assessment of effects to listed species and their designated critical habitat from the use of this product. EPA’s effects determination is consistent with how the Services have made such findings in their recent BiOps. Therefore, if the Services agree with EPA’s findings, the Services may adopt our determinations when concluding the formal consultation.<sup>4</sup> The specific label mitigations EPA identified as necessary to avoid and minimize effects to listed species are described below.

#### *1. Summary of Potential Effects Based on EPA’s Biological Evaluation*

In its final effects determination included in a final biological evaluation submitted to the Services to initiate formal consultation, EPA determined that glufosinate-P is likely to adversely affect (LAA) 637 listed species and 197 designated critical habitats. Of those species, EPA

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<sup>3</sup> <https://www.regulations.gov/document/EPA-HQ-OPP-2021-0957-0047>

<sup>4</sup> See 50 C.F.R. § 402.46(c)(1)(i).

initially predicted that the proposed uses of glufosinate-P would present a potential likelihood of future jeopardy for 60 listed species and a potential likelihood of future adverse modification to 38 designated critical habitats. Based on the LAA determinations, EPA also initially determined that the proposed uses could result in incidental take of individuals for an additional 382 listed animal species and affect individuals of an additional 197 listed plant species. Direct effects to plants at the use site and up to 60 meters (197 ft) from the field are the main drivers of population-level effects and predictions of potential likelihood of future adverse modification of critical habitat. Also, adverse effects to the vegetative habitat and sources of forage resulted in predictions of potential likelihood of jeopardy to certain listed animal species.

EPA has developed a strategy discussed in the document entitled *Herbicide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides*<sup>5</sup> (referred to as the Herbicide Strategy). The Herbicide Strategy focuses on identifying early protections for listed species and designated critical habitat from the use of conventional herbicides with agricultural uses in the CONUS to reduce the potential for population-level impacts on listed species. The mitigations to address predictions of potential likelihood of future J/AM were informed by the strategy document and reflect measures that can be readily implemented by growers and are structured to provide flexibility for growers to choose mitigation measures that work best for their situation. For additional information on the mitigation measures to reduce spray drift and/or runoff/erosion from treatment sites, EPA refers the reader to the document entitled *Ecological Mitigation Support Document to Support Endangered Species Strategies* (Version 1; <https://www.regulations.gov/document/EPA-HQ-OPP-2023-0365-1133>) and the document *Application of EPA's Runoff and Erosion and Spray Drift Mitigations through Scenarios that Represent Crop Production Systems in Support of Endangered Species Strategies* (<https://www.regulations.gov/document/EPA-HQ-OPP-2023-0365-1139>). The measures discussed in these documents and the mitigation discussed below include geographically explicit measures as well as more broadly applied restrictions that ensure greater consistency across mitigation measures. The mitigations were identified as necessary to minimize exposure and the likelihood of future jeopardy or adverse modification and to minimize take from the final registration of glufosinate-P.

Off-site transport from spray drift and runoff are the main drivers of exposure for the majority of listed plant species that are predicted to have a potential likelihood of future jeopardy from the uses. EPA used the Herbicide Strategy framework to inform the level of mitigations necessary to reduce exposure to listed species and designated critical habitat from runoff and erosion. To determine the level of mitigation, EPA used the Magnitude of Difference analysis in the strategy. That analysis showed that one order of magnitude reduction in exposure, equating to 3 points of mitigation, would sufficiently reduce exposure from runoff and erosion by a factor of 10x to avoid the initial predicted potential likelihood of future jeopardy of listed species and adverse

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<sup>5</sup> Herbicide Strategy to Reduce Exposure of Federally Listed Endangered and Threatened Species and Designated Critical Habitats from the Use of Conventional Agricultural Herbicides. Office of Pesticide Programs, Office of Chemical Safety and Pollution Prevention, U.S. Environmental Protection Agency, Washington, DC. August 20, 2024. <https://www.regulations.gov/document/EPA-HQ-OPP-2023-0365-1137>

modification of designated critical habitat. While many of the animal species with LAA determinations may occupy, move through, or forage at use sites, it is unlikely that any of the species would regularly use these sites thereby limiting the number of individuals affected such that effect would result in the potential likelihood of future jeopardy to the population. The final product labeling states that three points of mitigation must be met and directs the user to EPA's mitigation menu website (<https://www.epa.gov/pesticides/mitigation-menu>). This menu identifies mitigation measures that can be employed to achieve the three mitigation points necessary to reduce exposure from runoff and erosion through restrictions associated with application parameters, field characteristics, in-field versus adjacent area measures, and systems which capture/control runoff.

Two listed plant species, Spring Creek bladderpod (*Lesquerella perforata*) and Whorled Sunflower (*Helianthus verticillatus*), have been identified by EPA as particularly vulnerable<sup>6</sup> and likely to establish on agricultural fields where glufosinate-p is labeled for use. Since the Spring Creek bladderpod is likely to establish on managed agricultural fields, avoidance mitigations include measures tailored specifically to this species life history to reduce exposure during the months when the species is present on the field. EPA identified Whorled Sunflower to be a particularly vulnerable species, that has a potential likelihood of future jeopardy or adverse modification of its designated critical habitat because of glufosinate-P use. This is consistent with recent FWS biological opinions issued for pesticides with similar environmental fate properties and application methods. EPA determined that avoidance mitigations specific to Whorled Sunflower restricting the use of glufosinate-P within the use limitation area was also necessary for this action.

## 2. *Summary of Mitigations Included on the Revised L-Glufosinate Liquid Formulation Product Label*

EPA and MITSUI agreed to sufficient mitigation such that, in the final effects determination included in the *Glufosinate-P and Glufosinate-P Ammonium: Final Environmental Fate and Ecological Risk Assessment (ERA) for the FIFRA Section 3 Registration and Biological Evaluation (BE) with Associated Effects Determinations for Federally Listed Endangered and Threatened Species and Designated Critical Habitat*, EPA predicted no potential likelihood of future jeopardy or adverse modification. Furthermore, EPA believes that these measures will minimize the potential for take.<sup>7</sup> Accordingly, EPA does not anticipate impacts of concern pending the completion of consultation, given the registrants' submission of revised labeling to amend the original application. Additionally, the issuance of this registration does not foreclose the development and implementation of reasonable and prudent alternative measures.

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<sup>6</sup> EPA defines a vulnerable species as a listed species that is particularly vulnerable to pesticides due to a combination of factors including a declining population trend, small number of individuals or small number of populations (e.g., groups of individuals or sub-populations), limited distribution (e.g., endemic, constrained and/or isolated populations), and occurrence in areas that may be exposed to pesticides (<https://www.epa.gov/endangered-species/implementing-epas-workplan-protect-endangered-and-threatened-species-pesticides#species>)

<sup>7</sup> Under 50 C.F.R. § 402.40(b)(2), EPA may include in its effects determination a description of any anticipated incidental taking of any listed species from the action, any reasonable and prudent measures to minimize the impact, and any terms and conditions that may be necessary to implement the measures.

Specifically, EPA determined that the following mitigations were needed before EPA could grant the registration:

1. To reduce spray drift and runoff exposure from the labeled uses of glufosinate-P, EPA determined, and the registrants agreed on a combination of measures to minimize or avoid exposure.
  - A. The following language is included under Directions for Use Section with a 'MANDATORY SPRAY DRIFT MITIGATIONS' header.

**MANDATORY SPRAY DRIFT MITIGATIONS**

**For Aerial and Ground Boom Applications:**

- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Select nozzle and pressure that deliver medium or coarser spray droplets as indicated in nozzle manufacturer's catalogues and in accordance with American Society of Agricultural & Biological Engineers standards 572.1 and 641 (ASABE S572 and S641).
- During application, the Sustained Wind Speed, as defined by the National Weather Service (standard averaging period of 2 minutes) must register between 3 and 15 miles per hour.
- Wind speed must be measured at the release height or higher, in an area free from obstructions such as trees, buildings, and farm equipment.
- Do not apply during temperature inversions.

**For Aerial Application:**

- When applying to crops via aerial application equipment, the spray boom must be mounted on the aircraft to minimize drift caused by wing tip or rotor blade vortices.
- Wind speed and direction must be measured on location using a windsock, an anemometer (including systems to measure wind speed or velocity on an aircraft), or an aircraft smoke system.
- When the wind speed is between 11-15 miles per hour, the boom length must be 65% or less of the wingspan for fixed wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- When the wind speed is between 11-15 miles per hour, applicators must use a minimum of  $\frac{3}{4}$  swath displacement upwind at the downwind edge of the field. Otherwise, applicators must use a minimum of  $\frac{1}{2}$  swath displacement upwind at the downwind edge of the field.
- Do not release spray at a height greater than 10 ft above the crop canopy unless a greater application height is required for pilot safety.

**For Ground Boom Application:**

- Spray at the appropriate boom height based on nozzle selection and nozzle spacing, but do not exceed a boom height of 24 inches above target pest or crop canopy. Set boom to lowest effective height over the target pest or crop canopy based on equipment manufacturer’s directions.
- Wind speed and direction must be measured on location using a windsock or anemometer (including systems to measure wind speed or velocity using application equipment).

**Mandatory Spray Drift Buffers**

For aerial and ground applications, maintain a downwind buffer between the last spray row and the protection area as follows:

<b>Application Method</b>	<b>Droplet Size Distribution (DSD)</b>	<b>Minimum Buffer Distance</b>
Aerial	medium	50 ft
Ground	medium or coarser	10 ft

Protection areas include all areas with the following exceptions which can be included in the buffer footage, provided that people are not present within the application exclusion zone during the application, and they will not be contacted by the pesticide, either directly or through drift (see 40 CFR 170.405(a) and 40 CFR 170.505(a)):

- Agricultural fields, including untreated portions of the treated field.
- Roads, paved or gravel surfaces, mowed grassy areas adjacent to field, and areas of bare ground from recent plowing or grading that are contiguous with the treated area.
- Buildings and their perimeters, silos, or other man-made structures with walls and/or roof.
- Areas maintained as a mitigation measure for runoff/erosion or drift control, such as vegetative filter strips (VFS), field borders, hedgerows, Conservation Reserve Program lands (CRP), and other mitigation measures identified by EPA on the mitigation menu.<sup>1</sup>
- Managed wetlands including constructed wetlands on the farm.
- On-farm contained irrigation water resources that are not connected to adjacent water bodies, including on-farm irrigation canals and ditches, water conveyances, managed irrigation/runoff retention basins, and tailwater collection ponds.

<sup>1</sup> *Growers must ensure that pesticide use does not cause degradation of the CRP habitat.*

**Aerial Spray Drift Buffer Reduction Options:**

- A 20% (i.e., 10-foot) reduction in the required wind-directional buffer distance can be made if the applicator selects a nozzle and pressure that deliver coarse or coarser droplets in accordance with ASABE s572.
- A 35% (i.e., 18-foot) reduction can be made if the applicator selects a nozzle and pressure that delivers coarse droplets and uses an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix.

A reduction in the required wind-directional buffer distance can be made if a windbreak or shelterbelt (e.g., trees or riparian hedgerows) between the application site and non-managed area is present and meets the criteria listed in the '**Windbreak-Shelterbelt Criteria**' section of this label. The reduction is 50% (i.e., 25 feet) if the windbreak or shelterbelt meets the basic windbreak-shelterbelt criteria and is 75% (i.e., 38 feet) if the windbreak or shelterbelt meets the advanced windbreak-shelterbelt criteria.

- The percent reduction in wind-directional buffer distances may be added if you use one droplet size buffer reduction option (coarse or coarse with an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix) and one windbreak-shelterbelt option (basic or advanced). The maximum buffer reduction that can be achieved by a combination of buffer reduction options is 100% (i.e., no drift buffer).

**Ground Boom Spray Drift Buffer Reduction Options:**

Any of the following options can reduce the ground buffer distance to 0 feet:

- Use of an oil emulsion drift reducing adjuvant that constitutes 2.5% of the volume of the finished spray tank mix.
- Application is made using an over-the-top hooded sprayer, as a layby application, or is made below the crop canopy using drop nozzles.
- Use of a row-middle hooded sprayer.
- If a windbreak or shelterbelt (e.g., trees or riparian hedgerows) between the application site and non-managed area is present and meets the criteria listed in the '**Windbreak-Shelterbelt Criteria**' section of this label.

**Windbreak-Shelterbelt Criteria**

Both basic and advanced windbreaks or shelterbelts (e.g., trees or riparian hedgerows) between the application site and non-managed area must be present and meet the following criteria for 50% and 75% wind-directional buffer distance reductions, respectively:

- The windbreak or shelterbelt must be downwind between the pesticide application and the non-managed area.



- The windbreak or shelterbelt must run the full length of the treated area with no significant breaks in the vegetation.
- The windbreak or shelterbelt foliage must be sufficiently dense such that the non-managed area is not visible from the upwind side at the time of application.
- The windbreak or shelterbelt must be planted according to local/regional/federal conservation program standards; however, no state or federally listed noxious or invasive trees or shrubs should be planted.
- The windbreak or shelterbelt must be maintained such that their functionality is not compromised.
- For basic windbreaks (50% reduction)
  - The height of the trees in the windbreak or shelterbelt must be at the same height or above the release height of the application.
  - The windbreak must have a minimum of one row of trees and/or shrubs or a 4-foot-wide strip of non-woody vegetation.
  - A semi-permeable manmade structure, curtain, or netting that is raised prior to application can be used instead of a windbreak or shelterbelt. This structure must be downwind between the pesticide application and the non-managed area, cover the entire distance of field adjacent to non-managed area, and at the same height or higher as the release height of the application.
- For advanced windbreak-shelterbelt (75% reduction)
  - The height of the trees in the windbreak or shelterbelt must be at a height that is at least twice as high as the release height of the application.
  - The windbreak or shelterbelt must have a minimum of two or more rows of trees and/or shrubs with a mixture of vegetation types (*e.g.*, trees, shrubs, herbs), or that have 8 or more feet of depth for herbaceous (non-woody) vegetation.
  - A semi-permeable manmade structure, curtain, or netting that is raised prior to application can be used instead of a windbreak or shelterbelt. This structure must be downwind between the pesticide application and the non-managed area, cover the entire distance of field adjacent to non-managed area, and at a height that is at least twice as high as the release height of the application.

*SEE "ADDITIONAL SPRAY DRIFT INFORMATION" section below for more details.*

#### **ADDITIONAL SPRAY DRIFT INFORMATION:**

This section is intended to provide additional information for applicators to assist in implementing the mandatory spray drift mitigations above. **THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.** Be aware of nearby non-target sites and environmental conditions.

### **Importance of droplet size**

An effective way to reduce spray drift is to apply large droplets. Consider the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

#### **Controlling Droplet Size – Ground boom**

- Volume – Increasing the spray volume so that larger droplets are produced will reduce spray drift. Consider using the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure – Using the lowest spray pressure recommended for the nozzle will produce the target spray volume and droplet size.
- Spray Nozzle – Consider using a spray nozzle that is designed for the intended application, as well as using nozzles designed to reduce drift.

#### **Controlling Droplet Size – Aircraft**

- Adjust Nozzles – Applicators should follow nozzle manufacturers' recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

### **Release height – Ground Boom**

For ground equipment, the boom should remain level with the crop and have minimal bounce. Automated boom height controllers are recommended with large booms to better maintain optimum nozzle to canopy height. Excessive boom height will increase the potential for spray drift.

### **Release height – Aircraft**

Higher release heights increase the potential for spray drift.

### **Hooded (or shielded) sprayers**

Shielding the boom or individual nozzles can reduce spray drift. Consider using hooded sprayers. Applicators should verify that the shields are not interfering with the uniform deposition of the spray on the target area.

### **Temperature and humidity**

When making applications in hot and dry conditions, consider using larger droplets to reduce effects of evaporation.

### **Temperature inversions**

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated

cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

### **Wind**

Drift potential generally increases with wind speed.

Applicators need to be familiar with local wind patterns and terrain that could affect spray drift.

### **Measuring wind speed and wind direction**

Applicators should check and acquire the predicted wind speed and direction for the application site within 12 hours prior to conducting applications to determine the time periods wind speed is likely to fall outside the applicable thresholds.

- Applicators should reassess wind speed and direction at the application site every 15 minutes while applications are in progress.
- Measuring wind speed and direction can be done by:
  - Relying on equipment on the application equipment that measures wind speed (e.g., aerial equipment).
  - Using a tower anemometer with telemetry or handheld anemometer. Users should read user manual on how to calibrate, operate and interpret the output from an anemometer. Ground applicators should stop every 15 minutes to take a reading with a tower anemometer with telemetry or handheld anemometer. Some anemometers may have software that would allow users to view wind measurements in real time while making an application, and, those cases, applicators would not have to stop to take measurements.
  - Using a windsock. Wind can be estimated with a windsock using the strips on a windsock. The applicator should consult the user manual for the windsock on wind speed estimation and direction of wind. Applicators should look at the sock at least every 15 minutes to estimate wind speed and direction. The windsock should be pointed in the opposite direction of the windbreak and the non-managed area.
  - Using an aircraft smoke system. Laying down several puffs of smoke along different lines using an aircraft smoke system can provide an accurate view of what the wind speed and direction for the application.
  - Checking behind the spray rig at least every 15 minutes to see if the spray has changed direction from when the application started.

- B. EPA determined that the margin of difference for glufosinate-P placed this pesticide in the low category; therefore, EPA identified that three mitigation points are needed to avoid effects to listed species. The following language is included on the label to specify the label runoff/erosion mitigation measures required.

**MANDATORY RUNOFF MITIGATION:**

- DO NOT apply when soils are saturated or above field capacity.
- DO NOT apply during rain.

You must achieve a minimum of three points for the crop uses listed on this label unless otherwise stipulated below.

Applicators must access and search Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins> within six months of the application to determine whether the application site falls within a Pesticide Use Limitation Area (PULA) that has a Bulletin in BLT. If you are located inside a PULA, follow the instructions in the bulletin.

If the application site is located outside a PULA, runoff/erosion mitigation is required for this product unless certain field/application parameters are present at the time of application (i.e., subsurface or tile drains with controlled outlet, perimeter berm systems, irrigation tailwater return systems, spot treatment, etc). Access EPA's Mitigation Menu Website at [www.epa.gov/pesticides/mitigation-menu](http://www.epa.gov/pesticides/mitigation-menu) for a full list of field/application parameters to evaluate whether your field is subject to runoff/erosion mitigation.

If the application does not meet the specified field/application parameters, a minimum of three points for the crop uses listed on this label must be achieved. The applicator must choose among the mitigation and/or mitigation relief measures on EPA's Mitigation Menu Website to meet or exceed these points before applying this product. The website includes the full menu of runoff/erosion mitigation and mitigation relief measures. The following are examples:

- Location in a very low, low, or medium runoff vulnerability county
- Field slope
- Soil incorporation
- Conservation tillage
- Vegetative strips
- Cover crop or continuous ground cover
- Irrigation water management
- Mulching
- Grassed waterway
- Vegetated ditch
- Constructed and natural wetlands
- Water retention systems
- Following recommendations from a runoff/erosion specialist or participating in a qualifying conservation program (see the [www.epa.gov/pesticides/mitigation-menu](http://www.epa.gov/pesticides/mitigation-menu) for minimum elements).

To achieve mitigation points for the application, the mitigation and mitigation relief measures must be:

- Employed in accordance with the instructions and descriptions on EPA's Mitigation Menu Website.
- In place during the application unless a different timing (such as before or after application) is specifically provided in the measure's description on EPA's Mitigation Menu Website.

EPA may periodically update the Mitigation Menu Website, for example, by adding new mitigation measures or updating a mitigation measure description.

2. When tank mixing, the most restrictive of the products' label or bulletin requirements must be followed (e.g., use prohibition, timing restriction, application method restriction, sandy soil application restriction)." To address the potential effects to non-target vulnerable species, specifically the listed plant species Spring Creek bladderpod and whorled sunflower, included in the "Bulletins Live! Two" web-based system (BLT), the end-use product directs all users to access the BLT prior to application, according to the label statement below:

**"ENDANGERED AND THREATENED SPECIES PROTECTION**

**REQUIREMENTS:** Before using this product, you must obtain any applicable Endangered Species Protection Bulletins (Bulletins) within six months prior to or on the day of application. To obtain Bulletins, go to Bulletins Live! Two (BLT) at <https://www.epa.gov/pesticides/bulletins>. When using this product, you must follow all directions and restrictions contained in any applicable Bulletin(s) for the area where you are applying the product, including any restrictions on application timing if applicable. It is a violation of Federal law to use this product in a manner inconsistent with its labeling, including this labeling instruction to follow all directions and restrictions contained in any applicable Bulletin(s). For general questions or technical help, call 1-844-447-3813, or email ESPP@epa.gov.

3. *Registration Term for Implementing Additional Mitigations from the Services*

To account for the possibility that different mitigations may be needed as a result of formal consultation, EPA included, and the applicant has agreed to, the following term in the registration to ensure the amended registration does not foreclose any reasonable and prudent alternative measures, the expeditious implementation of those measures, and compliance with ESA section 7(a)(2):

If, following formal consultation with FWS and NMFS, additional modifications are identified in any applicable Biological Opinion, EPA will notify MITSUI in writing within 45 calendar days of the issuance of the Biological Opinion of any necessary required changes. Within 30 calendar days of receiving EPA's notice, MITSUI must submit an amendment application incorporating the necessary changes, including amended labels. Alternatively, MITSUI may respond by submitting a request for voluntary cancellation of this product. If MITSUI fails to

comply with this term, MITSUI has agreed in prior written acceptance of the terms that EPA may cancel the registration under an expedited process under FIFRA 6(e).

This term efficiently addresses the possibility that the Services could: (a) determine further mitigation measures are necessary to reach a no jeopardy biological opinion; or (b) issue a jeopardy biological opinion that contains Reasonable and Prudent Alternatives as well as any Reasonable and Prudent Measures that EPA determines and notifies the applicant will need to be addressed as described above in the registration terms. This term efficiently addresses the possibility that the Services could identify additional modifications in a Biological Opinion and ensures that issuing this registration before completing formal consultation will not foreclose any reasonable and prudent alternative measures.

### **Conclusion**

This memorandum documents EPA's ESA section 7(d) consistency determination associated with the following action: granting MITSUI's registration of an end-use product containing the new active ingredient glufosinate-P. EPA determined that mitigation measures to avoid and minimize effects to listed species and designated critical habitats were necessary as part of this action. Mitigation measures on the product label are intended to reduce exposures to listed species and designated critical habitats (60 listed species and 38 critical habitats) and minimize off-site effects via runoff and spray drift to address effects to non-target species. EPA also identified additional geographically specific mitigation measures (i.e., pesticide use limitation areas; PULA) for two vulnerable species –Spring Creek bladderpod and Whorled Sunflower. EPA determined that these mitigation measures are sufficient to predict no potential likelihood of future jeopardy to listed species or adverse modification of designated critical habitats, and also to minimize the potential for take of listed species. EPA initiated formal consultation with the Services on October 17, 2024.

EPA will work with the Services to complete the consultation process as expeditiously as possible. Acknowledging that the final determination on jeopardy and adverse modification is made by the Services and that either (or both) of the Services may not fully adopt EPA's prediction that this action will avoid jeopardy and adverse modification, the registration includes a term to allow EPA to address any further mitigation determined to be necessary following consultation. With this registration term, EPA is not making any irreversible or irretrievable commitment of resources with the effect of foreclosing any reasonable and prudent alternative measures to avoid jeopardizing listed species or adversely modifying designated critical habitats. Further, EPA does not anticipate any interim effects of concern prior to completion of consultation.