

## Noxious Weed Management Plan

### INTRODUCTION

This Weed Management Plan has been prepared to describe the methods Liberty Utilities and their Contractors will implement to prevent the introduction and/or spread of noxious, nonnative weeds during construction, operation, and maintenance of this project to the greatest extent possible. This plan complies with **APMs BIO-2, Bio-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8 and Mitigation Measure MM 4.7-5**. **This plan is provided in addition to the Habitat Restoration Plan that addresses many of the Noxious Weed management requirements. Contractor is responsible for compliance with both plans.**

A noxious weed is any plant designated by federal, state, or county government as injurious to public health, agriculture, recreation, wildlife, or property. For the purposes of this plan, noxious, nonnative species are defined as introduced plants that are restricted or controlled because of their potential to cause economic harm (e.g., affect the quality of forage on rangelands or productivity of cropland or forest land), environmental harm (e.g., displace native plants and natural habitats), or harm to human and animal health. These plants of concern have been identified in the project Final EIR/EIS/EIS document and are referenced herein regarding the management of them.

### PURPOSE

The goal of this plan is to avoid the introduction of noxious weeds in the project area as a result of construction, operation, and maintenance of the project. To achieve this goal, project activities will be conducted in a manner that will:

- Avoid or minimize the introduction of noxious nonnative species into areas highly susceptible to invasion, though not yet dominated by these species.
- Avoid or minimize direct or indirect potential adverse effects on listed or non-listed special-status plant or wildlife species or sensitive communities.

- Avoid or minimize potential adverse effects on plant communities, fish habitat, or wildlife habitat.

This plan outlines the methods that will be applied preconstruction and during the construction of the project to achieve these goals and provides guidance on monitoring and reporting the success of the weed management measures described below.

### **REGULATORY OVERVIEW**

Two federal acts and one executive order direct weed control; the Carlson-Foley Act of 1968, Federal Noxious Weed Act of 1974, and a federal executive order on invasive species (February 3, 1999). Local counties are also concerned about noxious weed infestation and dispersal on private and public lands.

### **ENVIRONMENTAL PROTECTION MEASURES**

Neither Liberty Utilities nor the Prime Construction Contractor will be responsible for pre-existing noxious weed infestations, weeds introduced by another activity (e.g., another construction project, mining, ranching, and hunting) or natural occurrence (e.g., fire), weeds found beyond the study corridor, or weeds along existing access roads that have not been improved by the project. Measures to minimize the spread of noxious weeds due to project-related activities have been developed and presented in the Habitat Restoration Plan.

### **PRECONSTRUCTION WEED CONTROLS**

To prevent the spread of noxious weeds into un-infested areas impacted by construction, the following measures will be implemented:

- In accordance with USFS Manual 2080 Noxious Weed Management, Liberty will complete a noxious weed risk assessment for all areas to be temporarily impacted, including the ROW, access roads that require improvement, staging areas, and pull sites. **(APM BIO-03 & BIO-02).**

- During preconstruction surveys, a qualified noxious weed specialist, range ecologist, or botanist will identify weed populations within the project area and will check to see if they can be avoided during construction.
- Before construction activities begin, Liberty Utilities will retain a specialist to employ chemical treatment of all noxious weeds within the work areas. Herbicides will only be used in project areas outside of the Lake Tahoe Basin or with approval from the Lake Tahoe Basin Management Unit (LTBMU) of the USFS botanist on National Forest lands within the Lake Tahoe Basin and in consistency with the TRPA *Handbook of Best Management Practices*.
- The application of herbicides shall be in compliance with all state and federal laws and regulations under the prescription of an Agricultural Pest Control Advisor (PCA) licensed under the California Department of Pesticide Regulation. Where manual and/or mechanical methods are to be used, disposal of plant debris will follow the regulations set for the by the Placer County Agricultural Commissioner.
- The timing of weed control treatments shall take place for each plant species in consultation with a PCA, the Placer County Agricultural Commissioner, or the California Invasive Plants Council, as appropriate, with the goal of controlling populations before they start producing seeds.
- Liberty Utilities will consult an Agricultural Pest Control Advisor (PCA) prior to any weed control activities. The PCA's written recommendations or prescription is attached to this document (Exhibit A) and a weed treatment plan identifying the appropriate treatment type specific to the project is attached (Exhibit B). No deviation from the plan shall occur without prior written approval by the PCA. It is the PCA's responsibility to address guidelines administered by regulatory agencies in the written recommendation.
- Applications of herbicides shall be under the direction of an individual(s) holding a Qualified Applicators License (QAL). All persons applying herbicides shall be aware of all safety and applicable environmental regulations and familiar with target versus non-target native plants.
- In areas where treatment is not feasible, the Contractor and the Environmental Monitor will work together to clearly flag or fence noxious weed areas in order to clearly delineate work exclusion in accordance with Appendix H, Flagging, Fencing and Signage Plan. **(APM BIO-04)**

- Construction crews will be environmentally trained regarding the importance of controlling and preventing the spread of noxious weed infestations. **(APM HAZ-01)**
- Equipment will arrive at the project area clean and weed-free. Equipment will be inspected by the on-site environmental monitor for mud or other signs that weed seeds or propagules could be present prior to use in the project area. If the equipment is not clean, the monitor will deny entry to the ROW and other work areas. **(APM BIO-05)**
- All weed infested areas will be flagged or fenced prior to the start of construction or vegetation management activities.

#### **DURING CONSTRUCTION WEED CONTROL**

- The use of straw is not allowed within the Tahoe Basin. As such, no straw bales will be allowed on this project.
- Only certified weed-free construction materials, such as sand or fill, will be used throughout the project. **(APM BIO-07)**
- If noxious weed populations are later identified throughout the course of construction in staging areas, parking areas, or access routes, they will be treated according to APM BIO-4. **(APM BIO-24)**
- If weeds cannot be removed or controlled before construction, the plants may be cut and disposed of in a landfill in sealed bags or disposed of or destroyed in another acceptable manner. **(APM BIO-08)**
- Application of an acceptable herbicide will only be applied by a certified applicator. This will be done in construction areas, including:
  - The centerline travel route
  - Pole and wire setup sites
  - Staging areas and
  - Other areas that would be disturbed by vehicles or equipment
- Layers of mulch, degradable geotextiles, or similar materials may be placed over the infestation area to minimize the spread of seeds and plant materials by equipment and vehicles during construction. These materials will be secured so they are not blown or washed away.

- In the event noxious weeds are found within the project area that were not previously identified and have come in contact with vehicles, vehicles and equipment will be cleaned using high-pressure water or air at designated weed-cleaning stations after exiting a weed-infested area, as specified by the Noxious Weed Risk Assessment. Cleaning stations will be designated by a botanist or noxious weed specialist and located away from aquatic resources. (APM BIO-06).
- Inspectors on the project will install a sign at the entrance of each cleaning station identifying the cleaning requirement. Cleaning will concentrate on the undercarriage, axles, frame, cross members, motor mounts, on and under steps, running boards, and front bumper/brush guard assemblies of vehicles and equipment.
- Disturbed wetland areas will be restored to preconstruction conditions and seeded with a native species, consistent with the vegetation community present prior to disturbance, to stabilize the soils and minimize the introduction of noxious weeds, as specified by the USACE and RWQCB. **(APM BIO-30)**
- Cleaning of all equipment and vehicles would be carried out using a combination of power or high-pressure air equipment and hand removal of all dirt, debris, seeds, and other vegetative material from the equipment. Cleaning efforts would be concentrated on tracks, feet, or tires and on the undercarriage, with special emphasis on axles, frames, cross members, motor mounts, the underside of running boards, and front bumper/brush guard assemblies. If the weather conditions and ROW conditions are dry and vehicles are relatively mud-free, compressed air would be used to clean.

#### **POST CONSTRUCTION - RESOTRATION**

In addition to all required restoration **APMs, the Restoration Plan, and Mitigation Measure 4.7-5**, Liberty will require the Contractor to utilize locally collected native seed sources for re-vegetation when possible. Plant and seed material will be collected from or near the project area, from within the same watershed, and at a similar elevation when possible and with approval of the Forest Service botanist.

After the project is completed, the USFS Noxious Weed Coordinator will be notified so that the project area can be monitored for three years for additional nonnative invasive

species establishment or spread of existing nonnative invasive species populations in the areas affected by the project.

#### **WEED ABATEMENT SUCCESS CRITERIA**

See the Habitat Restoration Plan for final restoration success criteria.

**Invasive Plant Treatment Implementation Plan**  
**Spring/Summer 2015**

**Contents:**

Section 1: Project overview and purpose	Page 3
Section 2: Target Plants and Survey Summary	Page 5
Section 3: Treatment Methods	Page 12
Section 4: Safety	Page 14
Section 5: Appendices	Page 17

*Landowner Contact List and Sample Notification Letter*

*Equipment List*

*Emergency Contact (for posting in truck)*

*Pest Control Adviser Recommendation/Herbicide mix rates*

*Herbicide Use Tracking Form*

*Applicators Pest Control Business County Registration (Placer Co.) and CA*

*Dept. of Pesticide Regulation Pest Control Business Main License*

*Herbicide Labels and MSDS(s)*

*Invasive Plants Survey Report Online Use Reports (as created during treatment periods)*

## Section 1: Project Overview and Purpose

In 2003, the United States Forest Service identified invasive species as one of four critical threats to the nation's ecosystems (Bosworth 2003). Invasive plants pose a significant threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure (Bossard et al. 2000). Infestations can also reduce the recreational or aesthetic value of native habitats.

Executive Order 13112 (1999) directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to control such species; and to minimize the economic, ecological, and human health impacts from invasive species on public lands. Correspondingly, the California Invasive Plants Council (Cal-IPC) is the authority for guidance and monitoring invasive plants in California. Cal-IPC's mission is to protect California's lands and waters from ecologically-damaging invasive plants through science, education and policy. Due to the deleterious effects of invasive plants, their control should be the objective of all land owners.

Liberty Utilities plans to implement a power line upgrade project in the North Tahoe area as described and evaluated in the Final EIS/EIS/EIR for the California Pacific Electricity Company (Liberty Utilities) 625 and 650 Electrical Line Upgrade Project, State Clearing House (SCH) # 2012032066. The supplemental report, Invasive Plant Risk Assessment: CalPeco 625 and 650 Electrical Line Upgrade Project, has been prepared by Ascent Environmental which includes an inventory of existing invasive plants and evaluation of expected impacts of Project implementation. Because construction and forest management activities can contribute to the introduction and spread of invasive plants by creating suitable environmental conditions for establishment and by acting as vectors for spread, it is Liberty Utilities' objective to minimize the potential for the spread of any invasive plants as a result of this project by implementing the FEIS/EIS/EIR Applicant Proposed Measures (APMs). Specifically, known infestations will be treated prior to tree removal and construction activities.

This Treatment Plan is written in accordance with the FEIS/EIS/EIR and supplemental report in order to satisfy the FEIS/EIS/EIR APM BIO-4:

*Before construction activities begin, CalPeco will treat invasive plant infestations where feasible. Treatments will be selected based on each species ecology and phenology. All treatment methods—including the use of herbicides—will be conducted in accordance with the law, regulations, and policies governing the land owner (e.g., TRPA in the Lake Tahoe Basin; LTBMU Forest Supervisor and Tahoe National Forest Supervisor on NFS lands). Land owners will be notified prior to the use of herbicides. In areas where treatment is not feasible, CalPeco will clearly flag or fence infested areas in order to clearly delineate work exclusion. Appropriate treatments will also be incorporated into tree removal and construction activities, such as a requirement that all cut live conifer stumps greater than 6 inches in diameter be treated with Sporangium or an EPA-registered borate compound to prevent the spread of Annosus root disease.*

In order to treat invasive plants with herbicides, a written recommendation from a California Department of Pesticide Regulation (CA DPR) Pest Control Adviser (PCA) is required. The Adviser reviews the invasive plant species, size of infestation, proximity to other resources such as surrounding vegetation and hydrologic features, seasonal timing, and among other considerations, identifies the proper herbicides, mix rates, application methods, and limitations for treating the target invasive plants. In California, only federal Environmental Protection Agency (EPA) and California EPA registered herbicides are allowed for use. Information about individual, brand-name herbicides, such as their federal EPA and CalEPA registration numbers, formulation, intended use, and safety information are contained in the herbicide label and material safety data sheet (MSDS). Businesses providing invasive plants treatment utilizing herbicides must maintain a valid CA DPR Qualified Applicator License (QAL), Pest Control Business County Registration (Placer Co.), and a CA DPR Pest Control Business Main License. For the Spring/Summer 2015 treatments as described in this Plan, the PCA recommendation, recommended herbicide labels and MSDSs, QAL, Placer County Pest Control Business Registration, and state Pest Control Business Main License are provided in the appendices. Copies of this information shall be available in the work truck during treatment activities per CA DPR requirements. All landowners shall be notified prior to the use of herbicides before those types of treatments commence; sample notification letters are included in the appendix.

## Section 2: Target Plants and Survey Summary

The supplemental report, Invasive Plant Risk Assessment: CalPeco 625 and 650 Electrical Line Upgrade Project has identified target invasive plants and their locations associated with the Project.

Reconnaissance-level surveys for invasive plants were completed for the CalPeco 625 and 650 Electrical Line Upgrade Project on June 19 and 20, 2012 and July 11, 12, and 13, 2012 by Ascent biologists Tammie Beyerl, Heather Valentine, and Steve Henderson and on July 11 through July 14, 2012 by POWER Engineering biologists Ken McDonald and Tom Herzog. The Invasive Plant Risk Assessment (IPRA) project area primarily covered a 200-foot-wide corridor centered on the proposed alignments (i.e., the area within 100 feet of the centerline of the power line alignment), new access roads, and improved access roads; however, for project access roads that would not need improvement, the project area encompassed the area within 50 feet of the road centerline. The project area defined for this report is the same as the project area defined in the EIS/EIS/EIR prepared for the project. Invasive plant species encountered in the project area were mapped on 1 inch = 400 feet scale aerial base maps or digitally recorded with a global positioning system (GPS). Weed polygons mapped in the field were subsequently digitized into a geographic information system (GIS) data layer. As this was a reconnaissance-level survey, weeds were mapped in polygons representing general areas of infestation and, therefore, weed polygon boundaries are not precise. Each weed infestation mapped was assigned a percent relative cover class as follows:

- < 10% relative cover (small scattered occurrences)
- 10 to 50% relative cover (moderate infestation)
- > 50% relative cover (heavy infestation)

Surveys identified the location of plants included on the USFS Lake Tahoe Basin Management Unit Invasive Plants of Management Concern list and the Tahoe National Forest Eastside Non-native Invasive Plants of Concern list. Additionally, staff from the TNF and LTBMU provided Ascent with GIS shapefiles showing locations of known invasive plants on NFS lands in the project vicinity. An analysis area consisting of a 1 mile buffer from the centerline of IPRA project area components located on National Forest System (NFS) land was used to identify known infestations that could be affected by project activities. Infestations within the analysis have the potential to be spread onto NFS lands. Conversely, infestations on NFS lands could be spread to the analysis area.

The project to be implemented as described in this Plan includes only a portion of the area surveyed in the IPRA. This is because Project-related activities will be limited to areas outside the Tahoe Basin, north of Brockway Summit in Placer County for the 2015 season. Additionally, not all invasive plants found in the entire scope of the IPRA are located in the 2015 treatment area. Relevant known invasive plants are listed and described here:

<b>Invasive Plant Species within the Project Area (Botany Analysis Area)</b>					
Species	Common Name	CDFA Rating <sup>1</sup>	Cal-IPC Rating <sup>2</sup>	2015 Treatment as Identified in IPRA	
				Total Infestation Acres	Infestation Acres Multiplied by Density
<i>Bromus tectorum</i>	cheatgrass	B	Moderate	13.29	0.55
<i>Convolvulus arvensis</i> *	field bindweed	C	-	0.01	<0
<i>Cirsium arvense</i> *	Canada thistle	B	Moderate	0.02	<0
<i>Cirsium vulgare</i>	Bull thistle	C	Moderate	0.25	0.02
<i>Conium maculatum</i>	Poison hemlock	-	Moderate	<0	<0
<i>Leucanthemum vulgare</i>	oxeye daisy	-	Moderate	0.02	<0
<i>Rumex crispus</i> *	curly dock	-	Moderate	Not surveyed	Not surveyed
<i>Salsola tragus</i> *	prickly Russian thistle	-	Limited	0.02	<0
<i>Verbascum thapsus</i>	woolly mullein	-	Moderate	0.1	<0
TOTAL				13.7	0.58

**Notes:**

<sup>1</sup> CDFA ratings - A-listed weeds: eradication or containment is required at the state or county level; B-listed weeds: eradication or containment is at the discretion of the County Agricultural Commissioner; C-listed weeds: eradication or containment required only when found in a nursery or at the discretion of the County Agricultural Commissioner. (California Department of Food and Agriculture 2009)

<sup>2</sup> Cal-IPC ratings- High: attributes conducive to moderate to high rates of dispersal and establishment; usually widely distributed among and within ecosystems. Moderate: impacts substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread. Limited: ecological impacts are minor or information is insufficient to justify a higher rating, although they may cause significant problems in specific regions or habitats; attributes result in low to moderate rates of invasion; distribution generally limited, but may be locally persistent and problematic. (California Invasive Plant Council 2010)

Source: Ascent 2012, TNF 2012, LTBMU 2012

\*Not evaluated in the IPRA but will be treated as a part of this Plan

Cheatgrass (*Bromus tectorum*)

Cheatgrass is a weedy annual grass that is widespread across the Great Basin and has begun to invade the Lake Tahoe Basin. It is common on lower mountain slopes but can occur as high as 9,000 feet. Cheatgrass can be found in disturbed roadside habitats such as cut banks and road medians and is spread by attaching to fur, clothing, or equipment; by wind; or by livestock and wildlife. Cheatgrass may displace native vegetation (especially during the seedling stage), and can affect the frequency, extent, and timing of wildfires (USFS 2010).

Cheatgrass has a Cal-IPC threat rating of “High” but is rated as a low priority (control) for the LTBMU. Within the LTBMU, the primary focus for this species is to prevent further spread where possible through management practices including a combination of chemical control, cultural control, seeding

perennial grasses, and proper land management (USFS 2010). On the TNF, this species is too common to map or treat.



*Cal-IPC*

#### Field bindweed (*Convolvulus arvensis*)

Field bindweed, *Convolvulus arvensis*, is a native of Eurasia that first was documented in California in 1884 in San Diego. By the first quarter of the twentieth century, field bindweed was proclaimed the worst weed in California and many other Western states. It most likely arrived in the United States as a contaminant in farm and garden seeds. However, because of its flowers and climbing nature, some seeds were probably planted as ornamentals, as a ground cover, in hanging baskets, or on trellises. Field bindweed has been given many names including perennial morningglory, creeping jenny, bellbine, sheepbine, and cornbind.

Field bindweed is one of the most persistent and difficult-to-control weeds in landscapes and agricultural crops. It has a vigorous root and rhizome system that makes it almost impossible to control with cultivation between desirable plants or broad scale tillage alone; in fact, it often spreads the infestation. Its seed has a long dormancy and can last in soil for up to 60 years. It has a climbing habit that allows the plant to grow up. In addition rhizomes have the ability to penetrate through fabric, plastic, and other barriers. Field bindweed also is very drought tolerant and once established is difficult to control even with herbicides. (UC Davis IPM)



*UC IPM*

#### Canada thistle (*Cirsium arvense*)

Canada thistle, a perennial broadleaf plant, is found in most of the western states except for southern Sierra Nevada, the Sonoran and Mojave deserts, and the Channel Islands. It is scattered throughout California to about 5900 feet (1800 m). Canada thistle inhabits agricultural land and other disturbed

locations. According to some taxonomists, four varieties or biotypes exist that differ in growth habit, leaf characteristics, seed germination, and development.

Canada thistle is a state-listed noxious weed in California and many other states. It is important to control plants before they regenerate food reserves in their roots or produce seed. Do not let this weed move to new areas and eliminate it from noncrop locations.

Its habitat includes: Stream banks, forest openings, rangeland, hillsides, moist depressions, gardens, crop fields, roadsides, and other open, disturbed sites. (UC Davis IPM)



UC IPM

### Bull thistle (*Cirsium vulgare*)

Bull thistle is a coarse biennial, reproducing only by seed, and dying following seed set. Manual eradication is possible for small populations. It is very common throughout the LTBMU and can colonize relatively undisturbed grasslands and meadows as well as more disturbed areas (USFS 2010).

The Cal-IPC threat rating for bull thistle is “moderate.” On LTBMU, bull thistle is a moderate priority weed, with a goal of control; treatment methods may include manual or mechanical treatment. On TNF, this weed is too common to map and treat.

*CalFlora*

### Oxeye daisy (*Leucanthemum vulgare*)

Oxeye daisy was introduced to the U.S. as an ornamental and is still widely planted. This perennial herb produces up to 26,000 seeds per plant and can germinate within 10 days (USFS 2010). Meadow infestations impact forage for wildlife since the plant irritates the nose and mouth of grazing animals.

Oxeye daisy has a Cal-IPC threat rating of “moderate.” Within the LTBMU the priority is generally low with a goal of eradication. On the TNF, oxeye daisy is uncommon and is not rated but is treated when practical. All methods of control can be used with this species.

*Cal-IPC*

### Curly dock (*Rumex crispus*)

Curly dock, a perennial broadleaf plant, usually grows in wet areas and is frequently associated with overwatering or standing water in low areas. It is found throughout California up to an elevation of 8200 feet (2500 m). Curly dock inhabits agricultural land and other disturbed areas. Plants may be poisonous to livestock when ingested in quantity.

Habitat includes: Ditches, roadsides, wetlands, pastures, agronomic crop fields (especially those in perennial crops like alfalfa), orchards, disturbed, unmanaged sites, and disturbed moist places. (UC Davis IPM)



UC IPM

Prickly Russian thistle (*Salsola tragus*)

Russian thistle, also known as tumbleweed, is in the goosefoot family (Chenopodiaceae). It is a summer annual native to southeastern Russia and western Siberia and was first introduced into the United States in 1873 by Russian immigrants as a contaminant in flax seed in South Dakota. After its introduction, it spread by contaminated seed, threshing crews, railroad cars (especially livestock cars), and by its windblown pattern of seed dissemination. In 1895 Russian thistle moved to the Pacific Coast in contaminated railroad cars that transported cattle to Lancaster in California’s Antelope Valley. Today it is common throughout the western United States—having invaded about 100 million acres. It is particularly well adapted to California’s climate of winter rainfall and summer drought.

Russian thistle is primarily a weed in sites where the soil has been disturbed, such as along highways and fencelines. It is also prevalent in vacant lots and other noncrop areas, in field and vegetable crops, and in poorly tended landscapes. It is rarely a problem in well-managed gardens or turfgrass.

In late fall and early winter, this troublesome pest becomes conspicuous as it breaks from the soil and is blown across highways and fields. Although Russian thistle, or tumbleweed, conjures up images of the old West, it can be a serious weed pest. In agricultural areas, Russian thistle can reduce yield and quality of numerous crops, particularly alfalfa and small grains. It depletes soil moisture, interferes with tillage operations, and serves as a shelter or food source to many insects, vertebrate pests, and crop diseases such as curly top, which affects many crops including potatoes and beans. Russian thistle can

also threaten native plant ecosystems. Large plants can reduce highway safety by obstructing views along right-of-ways and causing drivers to swerve their cars in an attempt to avoid colliding with windblown plants. In many areas, plants accumulate along tree rows and fencelines, posing a serious fire hazard that necessitates hours of manual labor for cleanup and disposal. It has been reported that prairie wildfires can spread rapidly when ignited balls of burning Russian thistle blow through grasslands. Russian thistle is a major problem along the California aqueduct where it can interfere with water delivery and pumping systems. Many people are sensitive to Russian thistle and exhibit skin rashes and allergic reactions after exposure to the plant. A slight scratch or abrasion from the plant may result in itching or reddened patches of skin. The windblown pollen of Russian thistle can cause an allergic reaction in people during summer.



UC IPM

### Woolly mullein (*Verbascum thapsus*)

*Verbascum thapsus* (common mullein, woolly mullein) is a biennial or annual forb (family Scrophulariaceae) that occurs throughout California, but is particularly abundant in dry valleys on the eastern side of the Sierra Nevada. High population densities have been observed in moist meadows and creek drainages near Mono Lake and Owens Valley. Common mullein is a host for insects that are themselves economic pests. Common mullein seeds can survive for 35 years or more in the soil. (UC Davis IPM)



*invasive.org*

### Section 3: Treatment Methods

Invasive plant infestations will be treated either by manual or chemical means. If herbicides are to be used, they shall be mixed as recommended by the PCA. Equipment used in conjunction with chemical applications will include hand sprayers, backpack sprayers, or large 60 gallon spray tank with electric pump. Equipment used in conjunction with manual treatments will include shovels or hand tools. Sprayer type will be determined by infestation size and accessibility as well as consideration for avoidance of non-target species. All chemical treatment shall be spot-treatment unless infestations are located in standing water, whereby hand removal with a shovel or other hand tool shall occur. All plants removed by hand shall be put in plastic trash bags, sealed, and properly disposed. Spray nozzles shall be adjusted so that spray does not contact non-target plants to the extent feasible. Spraying shall not occur when winds could cause significant herbicide drift. It is recommended for herbicides to be diluted in 20-gallon batches. Herbicide shall be added to the mix-tank following the dilution water. The tank shall be agitated as recommended by the herbicide labels. All empty herbicide containers shall be triple rinsed and disposed of in accordance with label recommendations. The following table summarizes the herbicide mix to be utilized as recommended by the PCA for this project:

<b>Product</b>	<b>Rates per Unit</b>	<b>Dilution Rate</b>	<b>Oz. per 20 Gallon Mix Tank</b>
Imazapyr 4SL		1%	26 oz
Alligare Glyphosate 5.4		4%	102 oz
Milestone	<14 oz. per acre	0.25%	6.4 oz
Syl-Tac (surfactant)		3%	77 oz
Hi-Light (blue dye)		0.25%	6.4 oz

All equipment containing herbicides must be labeled with all herbicide and/or chemical names and the business name, address, and phone number. Crews shall utilize a laminated business card, zip-tied to every herbicide container with the applicable herbicide/chemical names in addition to the highest label signal word: "CAUTION."

All treatment areas shall be inventoried as point or polygon data with a GPS unit with the following data attributes:

<b>Attribute</b>	<b>Description</b>
Date	Date of treatment
Personnel	Names of personnel treating
Species	Common name of treated species
Size	Size of infestation area treated (square feet)
Density	Density of infestation within infestation area (ten percent)
Comment	Various notes about the infestation or treatment as deemed useful by treatment personnel

Additionally, treatment personnel should take geo-referenced photos as deemed useful to track infestations over time. Particular care should be taken to track any infestation not listed or invasive species not listed in the IPRA.

Treatment crews will utilize known invasive plant locations as identified in the supplemental report IPRA and their associated GIS/GPS data as a basis for treatment location. Additionally, where existing easement or right-of-entry have been authorized, crews will survey locations directly adjacent to the known infestations and treat them as authorized. During the course of treatment, the entire power line right of way and other approved access locations shall be walked and surveyed by treatment crews. Treatment crews shall keep a detailed log of the quantity of herbicides used on a daily basis. The Herbicide Use Tracking Form can be found in the appendix; an abbreviated version can be found here:

Date	Herbicide/Chemical Quantity in Oz.			
	Imazapyr 4SL	Alligare Glyphosate 5.4	Milestone	Syl-Tac

Herbicide use reporting is required by CA DPR and tracked by County. The Placer County Online Use Reporting System can be found here:

<http://www.placer.ca.gov/departments/agriculture/pesticides/online-reporting>

Reports shall be filed monthly as required by the Placer County Agricultural Commissioner. Records of online use reporting shall be filed with this report.

**Section 4: Safety**

Personal protective equipment (PPE) is required for all herbicide application activities. Herbicide labels recommend specific PPE and shall be utilized by all crews handling and applying herbicides. The herbicide labels identified for use in this project recommend the following PPE:

<b>Herbicide</b>	<b>Signal Word</b>	<b>PPE Recommendation</b>
Alligare Imazapyr 4SL	Caution	Mixers, loaders, applicators, and other handlers must wear: <ul style="list-style-type: none"> <li>• Long-sleeve shirt and long pants</li> <li>• Shoes plus socks</li> <li>• Chemical-resistant gloves for all mixers and loaders, plus applicators using handheld equipment</li> </ul>
Alligare Glyphosate 5.4	Caution	Applicators and other handlers must wear: <ul style="list-style-type: none"> <li>• Long-sleeved shirt and long pants</li> <li>• Shoes plus socks</li> </ul>
Dow AgroSciences Milestone	Caution	Applicators and other handlers must wear: <ul style="list-style-type: none"> <li>• Long-sleeved shirt and long pants</li> <li>• Shoes plus socks</li> </ul>
Wilbur-Ellis Syl-Tac (surfactant)	Caution	None
Becker Underwood Hi-Light (blue dye)	None	None

As recommended, applicators or other handlers shall wear:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves

The applicator may require additional PPE, such as glasses with wrap around lenses. Face masks or Tyvec overalls may be worn at the personnel's discretion.

Other safety and contamination precautions include triple-rinsing measuring containers and an air-gap between water hoses used to fill containers and container contents to prevent contamination of the hose. An eye-wash kit and five-gallon clean water tank for washing shall be available at the crew-truck at all times. The emergency contact form as provided in the appendix shall be posted and visible from the outside of the crew truck at all times during herbicide handling or application. As advised by the PCA, no posting is required for this herbicide application project, however, there is a 48-hour no re-entry period for treated areas.

All personnel handling herbicides shall also be properly trained by an experienced crewmember. Signed training documentation shall be kept on file for all employees handling herbicides.

### PESTICIDE SAFETY TRAINING RECORD

Print EMPLOYEE'S Name: \_\_\_\_\_

EMPLOYEE'S Signature: \_\_\_\_\_

Print TRAINER'S Name: \_\_\_\_\_

Trainer Qualifications: \_\_\_\_\_

<b>Date of Training:</b>						
Specific Pesticides						
Trainer Initials						
Employee Initials						

<b>Subjects as Specified in Section 6724(b) of the California Code of Regulations</b>						
<b>Safe Use of Pesticides</b>	READ THE LABEL: Signal word, caution statements, first aid, rate dilution volume. Applicable laws and regulations. MSDS and PSIS leaflet.					
	PROTECTIVE CLOTHING AND EQUIPMENT: Coveralls, gloves, goggles, boots, respirator, apron. Equipment cleaning and maintenance.					
	USE OF ENGINEERING CONTROLS (i.e. closed system, enclosed cabs).					
	SAFETY PROCEDURES: To be followed while mixing, loading, applying pesticides. Procedures for handling non-routine tasks or emergency situations.					
	DRIFT: Confine the spray to the crop. Watch out for people, animals, waterways, or any special hazard.					
	TRIPLE RINSE PESTICIDE CONTAINERS AT TIME OF USE: Never take home pesticide containers used at work.					
	STORE pesticides in a LOCKED and posted area or attended by an authorized person.					
	WEAR CLEAN WORK CLOTHES DAILY. Be aware of pesticide residues on clothing.					
	WASH hands and arms with SOAP & WATER: Before eating, drinking, smoking, going to the bathroom. Emergency eye flushing techniques.					
	WASH COMPLETELY at the end of the workday. Change into clean clothing.					
<b>Health Information</b>	EMERGENCY MEDICAL INFORMATION: Name, address, phone number of clinic, physician, or hospital emergency room & where information is located.					
	HEAT RELATED ILLNESSES: Prevention, recognition, and first aid treatment.					
	LOCATION OF PESTICIDE SAFETY INFORMATION SERIES (PSIS): Material Safety Data Sheets (MSDS). Pesticide Use Records, safety posters, and Restricted Entry Interval Information.					
	EMPLOYEE RIGHTS: Against discharge, discrimination. Right to receive information.					
	NEED FOR IMMEDIATE DECONTAMINATION of skin and eyes when exposure occurs.					
	SYMPTOMS OF POISONING: Pinpoint pupils, nausea, shortness of breath, dizziness, headaches, blurred vision. Ways poisoning or injury can occur.					
	ROUTES THROUGH WHICH PESTICIDES ENTER THE BODY.					
	UNDERSTANDING THE IMMEDIATE AND LONG TERM HAZARDS involved in handling pesticides. Known or suspected chronic and acute effects.					
MEDICAL SUPERVISION: Required when working with carbamate or organophosphate pesticides with signal word of DANGER or WARNING.						

## Section 5: Appendices

**625/650 Upgrade Project  
Invasive Plant Treatment Landowner Contact List  
Spring/Summer 2015**

Trimont Land Company  
c/o Jen Mader, Environmental Planner, Northstar California Resort  
P.O. Box 129  
Truckee, CA 96160  
530-562-8044

Sierra Pacific Industries  
c/o Gary Blanc, Manager, Land Development Division  
PO Box 496014  
Redding, CA 96049  
530-378-8149

Truckee Donner Land Trust  
c/o John Svahn, Stewardship Director  
PO Box 8816  
Truckee, CA 96162  
530-582-4711

Truckee Tahoe Airport District  
Phred Stoner, Director of Operations & Maintenance  
10356 Truckee Airport Road  
Truckee, CA 96161  
530-587-8993

CalTrans - District 3  
c/o Berinder Dhaliwal  
703 B Street  
Marysville, CA 95901  
530-741-5374



Invasive Plant Notification Letter

Date: XX

Landowner: XX

APN(s): XX]

RE: Liberty Utilities 650 Line Electrical Upgrade Project Invasive Plant Treatment

Dear Landowner:

In association with the Final EIS/EIS/EIR for the California Pacific Electric Company (Liberty Utilities) 625 and 650 Electrical Line Upgrade Project, Liberty Utilities has identified invasive plant species on property you own or manage on the above identified parcels in Placer County, CA. Invasive plant treatments are required per the approved FEIS/EIS/EIR.

Approved treatment methods include mechanical methods (digging, clipping, etc.) or chemical methods, including the use of herbicides. Chemical treatments will be in accordance with all applicable local, state, and federal laws including the use of only CA EPA registered herbicides as permitted by a certified Pest Control Advisor.

Check Box Below and Initial	Treatment Options*:
_____ <input type="checkbox"/>	<b><u>MECHANICAL OR MANUAL METHODS:</u></b> I have been notified that invasive plant infestations have been identified on the above referenced parcels and <b><u>do not agree</u></b> to the use of chemical treatments to control their spread.
_____ <input type="checkbox"/>	<b><u>CHEMICAL TREATMENT METHODS:</u></b> I have been notified that invasive plant infestation(s) have been identified on the above referenced parcels and <b><u>agree to</u></b> the use of chemical treatment methods to be utilized to control their spread.
<i>*If neither box is checked above, Liberty Utilities will manually treat invasive plants in accordance with existing land use authorizations.</i>	

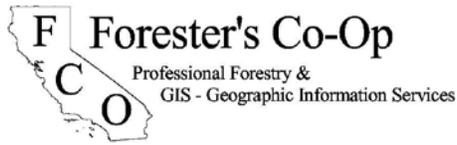
Name of Property Owner: \_\_\_\_\_

Signer's Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_



**Forester's Co-Op Herbicide Application Equipment List**  
**Spring/Summer 2015**

<b>Quantity</b>	<b>Model</b>	<b>Description</b>	<b>Availability</b>
3	Cell Phones	One in Each Vehicle	Yes
6	Motorola	Hand Radio	Yes
3	Trimble "XH" with Antenna	Hand Held GPS Field Units	Yes
2	iPad	Hand Held GPS Field Units	Yes
2	Flint	Hand Held GPS Field Units	Yes
3	First Aid Kits	Complete with Eye Wash	Yes
3	4x4 Ford Truck	Transportation	Yes
1	Honda 4x4 ATV	Remote Application	Yes
6	ProFlow/Solo	4 Gal Back Pack Sprayers	Yes
6	Spritzer Sprayers	1.5 Liter Hand Sprayer	Yes
1	60 Gal Truck Mount Skid Sprayer	Right of Way Sprayer	Yes
1	60 Gal Water Storage Tank	Clean Water Tank	Yes
1	2200 GVW Security Trailer	Lockable Trailer for Bulk Chemical Transport	Yes
1	Operating Plan with All Necessary Documentation	Binder	Yes
As Needed	Personnel Protective Equipment	Gloves, Goggles, Tyvek Coveralls, Spill Vests	Yes
As Needed	Measuring Tools	Several	Yes



## **EMERGENCY CONTACT INFORMATION**

### **LIBERTY UTILITIES 625/650 UPGRADE INVASIVE PLANTS TREATMENT PROJECT Placer County, CA**

1) **TRUCKEE HOSPITAL**

**Phone number: 530-587-6011**

**Address: 10121 Pine Ave, Truckee, CA 96161**

2) **FIRE STATIONS**

**NORTHSTAR FIRE DEPARTMENT**

**Phone number: 530-562-1212**

**Address: 910 Northstar Dr, Truckee, CA 96161**

**TRUCKEE FIRE DISTRICT STATION 96 (in airport complex)**

**Phone number: 530-582-7341**

**Address: 10277 Truckee Tahoe Airport Rd, Truckee, CA 96161**

3) **PLACER COUNTY AGRICULTURE DEPARTMENT**

**530-582-7341**

4) **LIBERTY UTILITIES VEGETATION/REGULATORY COMPLIANCE**

**Jessica Drummond**

**Office: 530-546-1713**

**Cell: 775-636-3032**

5) **FORESTER'S CO-OP**

**OFFICE NUMBER: (530) 273-8326**

**TOM AMESBURY CELL: (530) 945-6276**

**TOM AMESBURY HOME: (530) 274-9528**

**CHRISTIAN EGGLETON – Foreman Cell: (562) 640-0860**

**ANDREA HARDLUND EGGLETON – Foreman Cell: (714) 393-9646**

**KYLE MILLS – (530) 301-4525**



# PEST CONTROL RECOMMENDATION

GROWER / OPERATOR NAME: Truckee Tahoe Airport District; CLP Northstar, LLC; Truckee Dunsmuir Sierra Paci Industries, Land Trust EXPIRATION DATE: 12/31/2015

ADDRESS: T17N R. 17E Sections 20, 28, 29, 32, 33 CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

APPLICATOR: Foresters Coop PHONE: \_\_\_\_\_ ACCT #: \_\_\_\_\_

ADDRESS: 715 Colfax Ave. CITY: Grass Valley STATE: CA ZIP: 95945 COUNTY: Placer

APPLICATION LOCATION / SITE: See legal description above.

COMMODITY / CROP TREATED: Right of Way AREA: 8  ACRES  SQ. FT.  OTHER

PESTS CONTROLLED: Vegetation METHOD OF APPLICATION: Ground - Spot applic.  AIR  GROUND  OTHER

PRODUCT / PESTICIDE	RATES PER UNIT	DILUTION RATE	VOLUME PER UNIT
Imazapic 4SL		1%	Variable.
Alifone Glyphosate S-4.0% Rodeo		4%	"
Milestone	< 14 oz/Ac.	1.25%	"
Syl-Tac		3%	"

**Criteria Used to Determine Need for Pest Control:**

- Field Observation  Sweep Net Count  Preventative  
 History  Trap  Soil Sampling  Other \_\_\_\_\_

**Choose One:**

- Spot Treat  Landscape  Right-of-Way  Vertebrate  
 Other \_\_\_\_\_

**Hazards and/or Restrictions:**

- Highly toxic to bees  
 Toxic to birds, fish and wildlife  
 Do not apply during irrigation or when runoff is likely to occur  
 Do not apply near desirable plants  
 Do not allow to drift onto humans, animals, desirable plants or property  
 Keep out of lakes, streams and ponds  
 Birds feeding on treated area may be killed  
 Do not apply when foliage is wet (dew, rain, etc.)  
 May cause allergic reaction in some people  
 This product is corrosive and reacts with certain materials (see label)  
 Closed system required  
 Restricted use pesticide (California and/or Federal)  
 Hazardous areas involved (see map and warnings)  
 Prop 65 Chemical Warning  
 Other (see attachment)

**Ground Water Protection Statement Required:**  YES  NO

GWP Area Maps: [www.cdpr.ca.gov/docs/emon/grndwtr/gwp\\_regs.htm](http://www.cdpr.ca.gov/docs/emon/grndwtr/gwp_regs.htm)

**Clopyralid Statement Required:**  YES  NO

**ENDANGERED SPECIES Requirement:**

It is the responsibility of the applicator/grower to identify threatened or endangered species in the application zone. Please use the following websites as a reference:  
 - Goby 11 Stipulated Injunction: <http://www.epa.gov/espp/litstatus/use-limitation.html>  
 - Red Legged Frog: [www.epa.gov/espp/litstatus/redleg\\_frog/rif.htm](http://www.epa.gov/espp/litstatus/redleg_frog/rif.htm)  
 - General Endangered Species Info: <http://ecos.fws.gov/>

ag.wilburellis.com

**Crop and Site Restrictions:**

- Worker re-entry interval 48  Hours  Days  Till Dry  
 Do not use within \_\_\_\_\_ days of harvest  
 Posting required  YES  NO  
 Do not irrigate for at least \_\_\_\_\_  Hours  Days after application  
 Do not apply more than \_\_\_\_\_ application(s) per season  
 Do not feed treated foliage / straw / clippings to livestock  
 Plantback restrictions (see labels)  
 Other (see attachment)

**Surrounding hazards including crops, occupied dwellings, people, pets, livestock, well heads, riparian environments, and others:**

N/A

**Schedule, Time or Conditions:**

N/A.

I certify that alternatives and mitigation measures that would substantially lessen any significant adverse impact on the environment have been considered and, if feasible, adopted.

ADVISER SIGNATURE: George H. Severson DATE: 5/19/2015  
 ADVISER PRINTED NAME: George H. Severson  
 ADVISER LICENSE No.: 070059  
 EMPLOYER: Wilbur Ellis Company  
 EMPLOYER ADDRESS: 1611 Kimberly Dr. Klamath Falls, OR 97603



**PEST CONTROL BUSINESS  
COUNTY REGISTRATION**

STATE OF CALIFORNIA  
DEPARTMENT OF PESTICIDE REGULATION  
PEST MANAGEMENT AND LICENSING BRANCH

REGISTRATION EXPIRATION DATE: DECEMBER 31, <u>2015</u>
FOR REGISTRATION IN COUNTY OF: <u>Placer</u>

NAME: <u>Tom Amesbury</u>
ADDRESS: <u>415 Colfax Ave</u>
CITY: <u>Grass Valley</u> ZIP CODE: <u>95945</u> TELEPHONE NUMBER: <u>530-273-8326</u>

BUSINESS NAME: <u>Forester's Co-op</u>	BUSINESS LICENSE NO: <u>33262</u>
ADDRESS: <u>415 Colfax Ave</u>	BUSINESS LOCATION: MAIN <input checked="" type="checkbox"/> BRANCH <input type="checkbox"/>
CITY: <u>Grass Valley</u> ZIP CODE: <u>95945</u> TELEPHONE NUMBER <u>530-273-8326</u>	

Restricted Material (s) Possession Permit No. 31-15-33262

No Restricted Material may be possessed except in accordance with any attached conditions(s). This is not a permit to apply.

CONDITION(S) ATTACHED Yes  No

QUALIFIED APPLICATOR'S SIGNATURE <u>Tom Amesbury</u>	DATE: <u>3/4/15</u>
---	------------------------

DEPARTMENT OF PESTICIDE REGULATION  
LICENSING/CERTIFICATION PROGRAM

**QAL**  
QUALIFIED APPLICATOR LICENSE

License #: **108705** EXPIRES: **12/31/2016**  
Categories: CE ISSUED: **01/01/2015**

**TOM D AMESBURY**  
415 COLFAX AVE  
GRASS VALLEY CA 95945



This License must be shown to any representative of the Director or Commissioner upon request.

ADDITIONAL INFORMATION/COMMENTS

ISSUING COUNTY'S ADDRESS  PLACER COUNTY DEPARTMENT OF AGRICULTURE 11477 E AVENUE AUBURN, CA 95603 (530) 889-7372	REGISTRATION FEE RECEIVED \$ <u>50.00</u>
	CASH <input type="checkbox"/> CHECK # <u>300561</u>
	AGRICULTURE COMMISSIONER'S SIGNATURE
	DATE: <u>3/27/15</u>



**CALIFORNIA DEPARTMENT OF PESTICIDE REGULATION**

1001 I STREET  
SACRAMENTO, CALIFORNIA 95814

ISSUED: March 24, 2015  
EXPIRES: **December 31, 2016**

**PEST CONTROL BUSINESS MAIN  
LICENSE**  
LICENSE NO. 33262

Invalid if insurance and/or qualified person(s) lapse before expiration date.

Mailing Address

FORESTER'S CO-OP  
415 COLFAX AVE  
GRASS VALLEY, CA 95945

Business Location

FORESTER'S CO-OP  
415 COLFAX AVE  
GRASS VALLEY, CA 95945

POST THIS LICENSE PROMINENTLY IN PUBLIC VIEW  
THIS LICENSE IS NOT TRANSFERABLE - ANY CHANGE IN OWNERSHIP REQUIRES A NEW LICENSE

1. Please make sure the information on your license is correct.
2. Notify us immediately of any changes to your business (e.g., name, address, insurance carrier or qualified person).
3. If you lose your license, then you may request a new one for a \$20 fee.
4. Please refer to the license number located in the middle of the page when contacting us.
5. For more information, please contact us at (916) 445-4038 or at <licenseemail@cdpr.ca.gov>. Or you may write to

**Department of Pesticide Regulation  
Pest Management and Licensing Branch  
Licensing and Certification Program  
P.O. Box 4015  
Sacramento, California 95812-4015**



# GLYPHOSATE 5.4

## Specimen Label

AVOID CONTACT OF HERBICIDE WITH FOLIAGE, GREEN STEMS, EXPOSED NON-WOODY ROOTS OR FRUIT OF CROPS, DESIRABLE PLANTS AND TREES BECAUSE SEVERE INJURY OR DESTRUCTION MAY RESULT.

### ACTIVE INGREDIENT:

Glyphosate\*, N-(phosphonomethyl)glycine, in the form of its isopropylamine salt . . . . .53.8%

**OTHER INGREDIENTS:** . . . . .46.2%

**TOTAL:** . . . . .100.0%

\*Contains 648 grams per litre or 5.4 pounds per U.S. gallon of the active ingredient glyphosate, in the form of its isopropylamine salt. Equivalent to 480 grams per litre or 4 pounds per U.S. gallon of the acid, glyphosate.

EPA Reg. No. 81927-8      EPA Est. No. 81927-AL-001<sup>PM</sup>; 37429-GA-001<sup>ST</sup>  
Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

## KEEP OUT OF REACH OF CHILDREN CAUTION

FIRST AID	
<b>IF INHALED:</b>	<ul style="list-style-type: none"> <li>• Move person to fresh air.</li> <li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>• Call a poison control center or doctor for further treatment advice.</li> </ul>
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.	

**Manufactured for:**  
Alligare, LLC  
13 N. 8th Street  
Opelika, AL 36801

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS CAUTION

Harmful if inhaled. Avoid breathing spray mist. Remove and wash contaminated clothing before reuse.

DOMESTIC ANIMALS: This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

### PERSONAL PROTECTIVE EQUIPMENT

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants;
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE (Personal Protective Equipment). If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

### ENGINEERING CONTROL STATEMENT

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d) (4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

### USER SAFETY RECOMMENDATIONS

**Users should:**

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

Do not contaminate water when disposing of equipment washwaters. Treatment of aquatic weeds can result in oxygen depletion or loss due to decomposition of dead plants. This oxygen loss can cause fish suffocation.

### PHYSICAL OR CHEMICAL HAZARDS

Spray solutions of this product should be mixed, stored and applied using only stainless steel, aluminum, fiberglass, plastic or plastic-lined steel containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED STEEL OR UNLINED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of this product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could flash or explode, causing serious personal injury, if ignited by open flame, spark, welder's torch, lighted cigarette or other ignition source.

## DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is: coveralls, waterproof gloves, shoes plus socks.

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries or greenhouses.

Keep people and pets off treated areas until spray solution has dried to prevent transfer of this product onto desirable vegetation.

## STORAGE AND DISPOSAL

Do not contaminate water, foodstuffs, feed or seed by storage or disposal.

**Pesticide Storage:** Store above 10°F (-12°C) to keep product from crystallizing. Crystals will settle to the bottom. If allowed to crystallize, place in a warm room 68°F (20°C) for several days to redissolve and roll or shake container or recirculate in mini-bulk or bulk container to mix well before using.

**Pesticide Disposal:** Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

### Container Disposal:

#### [NONREFILLABLE CONTAINERS]

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying.

(Nonrefillable container ≤ 5 gallons): Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

(Nonrefillable > 5 gallons): Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

## STORAGE AND DISPOSAL (cont.)

### [REFILLABLE CONTAINERS]

Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller.

To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Read the entire label before using this product.

Use only according to label instructions.

Not all products listed on this label are registered for use in California. Check the registration status of each product in California before using.

Read the "CONDITIONS OF SALE AND WARRANTY" statement at the end of the label before buying or using. If terms are not acceptable, return at once unopened.

### PRODUCT INFORMATION

This product, a water-soluble liquid, mixes readily with water and nonionic surfactant to be applied as a foliar spray for the control or destruction of many herbaceous and woody plants.

This product moves through the plant from the point of foliage contact to and into the root system. Visible effects on most annual weeds occur within 2 to 4 days but on most perennial brush species may not occur for 7 days or more. Extremely cool or cloudy weather following treatment may slow the activity of this product and delay visual effects of control. Visible effects are a gradual wilting and yellowing of the plant which advances to complete browning of above-ground growth and deterioration of underground plant parts.

Unless otherwise directed on this label, delay application until vegetation has emerged and reached the stages described for control of such vegetation under the "Weeds Controlled" section of this label.

Unemerged plants arising from unattached underground rhizomes or root stocks of perennials or brush will not be affected by the spray and will continue to grow. For this reason best control of most perennial weeds or brush is obtained when treatment is made at late growth stages approaching maturity.

Always use the higher rate of this product per acre within the specified range when vegetation is heavy or dense.

Do not treat weeds or brush under poor growing conditions such as drought stress, disease or insect damage, as reduced control may result. Reduced results may also occur when treating weeds or brush heavily covered with dust.

Reduced control may result when applications are made to any weed or brush species that have been mowed, grazed or cut, and have not been allowed to regrow to the specified stage for treatment.

Rainfall or irrigation occurring within 6 hours after application may reduce effectiveness. Heavy rainfall or irrigation within 2 hours after application may wash the product off the foliage and a repeat treatment may be required.

When this product comes in contact with soil (on the soil surface or as suspended soil or sediment in water) it is bound to soil particles. Under specified use situations, once this product is bound to soil particles, it is not available for plant uptake and will not harm off-site vegetation where roots grow into the treatment area or if the soil is transported off-site. Under specified use conditions, the strong affinity of this product to soil particles prevents this product from leaching out of the soil profile and entering ground water. The affinity between this product and soil particles remains until this product is degraded, which is primarily a biological degradation process carried out under both aerobic and anaerobic conditions by soil microflora.

This product does not provide residual weed control. For subsequent residual weed control, follow a label-approved herbicide program. Read and carefully observe the cautionary statements and all other information appearing on the labels of all herbicides used.

The maximum use rates stated throughout this product's labeling apply to this product combined with the use of all other herbicides containing glyphosate or sulfosate as the active ingredient, whether applied as mixtures or separately. Calculate application rates and ensure that the total use of this and other glyphosate or sulfosate containing products does not exceed stated maximum use rate.

To the extent consistent with applicable law, buyer and all users are responsible for all loss or damage in connection with the use or handling or mixtures of this product or other materials that are not expressly listed in this label. Mixing this product with herbicides or other materials not specified in this label may result in reduced performance.

### ATTENTION

AVOID DRIFT. EXTREME CARE MUST BE USED WHEN APPLYING THIS PRODUCT TO PREVENT INJURY TO DESIRABLE PLANTS AND CROPS.

Do not allow the herbicide solution to mist, drip, drift or splash onto desirable vegetation

since minute quantities of this product can cause severe damage or destruction to the crop, plants or other areas on which treatment was not intended. The likelihood of injury occurring from the use of this product increases when winds are gusty, as wind velocity increases, when wind direction is constantly changing or when there are other meteorological conditions that favor spray drift. When spraying, avoid combinations of pressure and nozzle type that will result in splatter or fine particles (mist) which are likely to drift. AVOID APPLYING AT EXCESSIVE SPEED OR PRESSURE.

NOTE: Use of this product in any manner not consistent with this label may result in injury to persons, animals or crops, or other unintended consequences. Keep container closed to prevent spills and contamination.

### MIXING AND APPLICATION INSTRUCTIONS

APPLY THESE SPRAY SOLUTIONS IN PROPERLY MAINTAINED AND CALIBRATED EQUIPMENT CAPABLE OF DELIVERING DESIRED VOLUMES. HAND-GUN APPLICATIONS SHOULD BE PROPERLY DIRECTED TO AVOID SPRAYING DESIRABLE PLANTS. NOTE: REDUCED RESULTS MAY OCCUR IF WATER CONTAINING SOIL IS USED, SUCH AS WATER FROM PONDS AND UNLINED DITCHES.

#### Mixing

This product mixes readily with water. Mix spray solutions of this product as follows: fill the mixing or spray tank with the required amount of water while adding the required amount of this product (see the "Directions for Use" and "Weeds Controlled" sections of this label). Near the end of the filling process, add the required surfactant and mix well. Remove hose from tank immediately after filling to avoid siphoning back into the water source. During mixing and application, foaming of the spray solution may occur. To prevent or minimize foam, avoid the use of mechanical agitators, place the filling hose below the surface of the spray solution, terminate by-pass and return lines at the bottom of the tank and if needed use an approved anti-foam or defoaming agent.

Keep by-pass line on or near bottom of tank to minimize foaming. Screen size in nozzle or line strainers should be no finer than 50 mesh. Carefully select correct nozzle to avoid spraying a fine mist. For best results with conventional ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

When using this product, mix 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution. Use a nonionic surfactant labeled for use with herbicides. The surfactant must contain 50 percent or more active ingredient.

Always read and follow the manufacturer's surfactant label recommendations for best results.

These surfactants should not be used in excess of 1 quart per acre when making broadcast applications.

Colorants or marking dyes approved for use with herbicides may be added to spray mixtures of this product. Colorants or dyes used in spray solutions of this product may reduce performance, especially at lower rates or dilutions. Use colorants or dyes according to the manufacturer's label recommendations.

Clean sprayer and parts immediately after using this product by thoroughly flushing with water and dispose of rinsate according to labeled use or disposal instructions.

Carefully observe all cautionary statements and other information appearing in the surfactant label.

### APPLICATION EQUIPMENT AND TECHNIQUES

#### Aerial Equipment

Use the specified rates of this product and surfactant in 3 to 20 gallons of water per acre as a broadcast spray, unless otherwise specified. See the "Weeds Controlled" section of this label for specific rates. Aerial applications of this product may only be made as specifically directed in this label.

AVOID DRIFT – DO NOT APPLY DURING INVERSION CONDITIONS, WHEN WINDS ARE GUSTY OR UNDER ANY OTHER CONDITION WHICH WILL ALLOW DRIFT. DRIFT MAY CAUSE DAMAGE TO ANY VEGETATION CONTACTED TO WHICH TREATMENT IS NOT INTENDED. TO PREVENT INJURY TO ADJACENT DESIRABLE VEGETATION, APPROPRIATE BUFFER ZONES MUST BE MAINTAINED.

Coarse sprays are less likely to drift; therefore, do not use nozzles or nozzle configurations which dispense spray as fine spray droplets. Do not angle nozzle forward into the airstream and do not increase spray volume by increasing nozzle pressure.

Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing in the additive label.

Ensure uniform application – To avoid streaked, uneven or overlapped application, use appropriate marking devices.

Thoroughly wash aircraft, especially landing gear, after each day of spraying to remove residues of this product accumulated during spraying or from spills. PROLONGED EXPOSURE OF THIS PRODUCT TO UNCOATED STEEL SURFACES MAY RESULT IN CORROSION AND POSSIBLE FAILURE OF THE PART. LANDING GEAR ARE MOST SUSCEPTIBLE. The maintenance of an organic coating (paint) which meets aerospace specification MIL-C 38413 may prevent corrosion.

### AERIAL SPRAY DRIFT MANAGEMENT

#### SPRAY DRIFT MANAGEMENT

AVOIDING SPRAY DRIFT AT THE APPLICATION SITE IS THE RESPONSIBILITY OF THE APPLICATOR. The interaction of many equipment-and-weather-related factors

# GLYPHOSATE 5.4

# Specimen Label

determine the potential for spray drift. The applicator is responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target movement from aerial applications to agricultural field crops. These requirements do not apply to forestry applications, public health uses or to applications using dry formulations.

1. The distance of the outer most nozzles on the boom must not exceed  $\frac{3}{4}$  the length of the wingspan or rotor.
2. Nozzles must always point backward parallel with the air stream and never be pointed downwards more than 45 degrees.

Where states have more stringent regulations, they should be observed.

The applicator should be familiar with and take into account the information covered in the Aerial Drift Reduction Advisory.

#### Aerial Drift Reduction Advisory

[This section is advisory in nature and does not supersede the mandatory label requirements.]

#### **INFORMATION ON DROPLET SIZE**

The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (See Wind, Temperature and Humidity, and Temperature Inversions).

#### **CONTROLLING DROPLET SIZE**

- Volume – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- Pressure – Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of nozzles – Use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation – Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- Nozzle Type – Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

#### **BOOM LENGTH**

For some use patterns, reducing the effective boom length to less than  $\frac{3}{4}$  of the wingspan or rotor length may further reduce drift without reducing swath width.

#### **APPLICATION HEIGHT**

Applications must not be made at a height greater than 10 feet above the top of the target plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

#### **SWATH ADJUSTMENT**

When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller drops, etc.)

#### **WIND**

Drift potential is lowest between wind speeds of 2-10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

#### **TEMPERATURE AND HUMIDITY**

When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

#### **TEMPERATURE INVERSIONS**

Applications must not occur during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified 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.

#### **SENSITIVE AREAS**

The pesticide must only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas).

#### **For Aerial Application in California Only**

#### **Aquatic and Other Noncrop Sites:**

When applied as directed and under the conditions described in the "Weeds Controlled" section of this label booklet, this product will control or partially control the labeled weeds growing in the following industrial, recreational and public areas or other similar sites.

Aquatic Sites – Including all bodies of fresh and brackish water which may be flowing, nonflowing, or transient. This includes lakes, rivers, streams, ponds, seeps, irrigation and drainage ditches, canals, reservoirs, estuaries, and similar sites.

If aquatic sites are present in the noncrop area and are part of the intended treatment, read and observe the following directions:

There is no restriction on the use of treated water for irrigation, recreation, or domestic purposes.

Consult local state fish and game agency and water control authorities before applying this product to public water. Permit may be required to treat such water.

NOTE: Do not apply this product within  $\frac{1}{2}$  mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within  $\frac{1}{2}$  mile of an active potable water intake in a standing body of water such as lake, pond, or reservoir. To make aquatic applications around and within  $\frac{1}{2}$  mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after the application. The water intake may be turned on prior to 48 hours if the glyphosate level in the intake water is below 0.7 part per million as determined by laboratory analysis. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the application.

This product does not control plants which are completely submerged or have a majority of their foliage under water.

#### **Aerial Applications:**

Aerial applications may be made with helicopters only.

Use the following guidelines when aerial applications are to be made near perennial crops after bud break and before total leaf drop and/or near emerged annual crops.

1. Do not apply within a minimum of 100 feet of all crops.
2. If wind up to 5 miles per hour is blowing toward the crop(s), do not apply within a minimum of 500 feet of the crop(s).
3. Winds blowing from 5 to 10 miles per hour toward the crops(s) may require buffer zones in excess of the 500 feet minimum.
4. Do not apply when winds are in excess of 10 miles per hour or when inversion conditions exist.

#### **For Aerial Application in Fresno County, California Only From February 15 through March 31 Only**

#### **Applicable Area:**

The area contained inside the following boundaries within Fresno County, California.

North: Fresno County line  
South: Fresno County line  
East: State Highway 99  
West: Fresno County line

#### **General Information:**

Always read and follow the label directions and precautionary statements for all products used in the aerial application.

Observe the following directions to minimize off-site movement during aerial application of this product. Minimization of off-site movement is the responsibility of the grower, Pest Control Advisor and aerial applicator.

#### **Written Recommendations:**

A written recommendation MUST be submitted by or on behalf of the applicator to the Fresno County Agricultural Commissioner 24 hours prior to the application. This written recommendation MUST state the proximity of surrounding crops, and that conditions of each manufacturer's applicable product label and this label have been satisfied.

#### **Aerial Applicator Training and Equipment:**

Aerial application of this product is limited to pilots who have successfully completed a Fresno County Agricultural Commissioner and California Department of Pesticide Regulation approved training program for aerial application of herbicides. All aircraft must be inspected, critiqued in flight and certified at a Fresno County Agricultural Commissioner approved fly-in. Test and calibrate spray equipment at intervals sufficient to ensure that proper rates of herbicides and adjuvants are being applied during commercial use. Applicator must document such calibrations and testing. Demonstration of performance at Fresno County Agricultural Commissioner approved "fly-ins" constitutes such documentation, or other written records showing calculations and measurements of flight and spray parameters acceptable to the Fresno County Agricultural Commissioner.

#### **Applications at Night:**

Do not apply this product by air earlier than 30 minutes prior to sunrise and/or later than 30 minutes after sunset without prior permission from the Fresno County Agricultural Commissioner.

Note: For aerial application from April 1 through February 14, refer to the "For Aerial Application in California Only" section of this label.

# GLYPHOSATE 5.4

# Specimen Label

## Boom Equipment

For control of weed or brush species listed in this section using conventional boom equipment – Use the specified rates of this product and surfactant in 3 to 30 gallons of water per acre as a broadcast spray, unless otherwise specified. See the "Weeds Controlled" section of this label for specific rates. As density of vegetation increases, spray volume should be increased within the specified range to ensure complete coverage. Carefully select correct nozzle to avoid spraying a fine mist. For best results with ground application equipment, use flat fan nozzles. Check for even distribution of spray droplets.

## Hand-Held and High-Volume Equipment

Use Coarse Sprays Only

For control of weeds listed in this section using knapsack sprayers or high-volume spraying equipment utilizing handguns or other suitable nozzle arrangements – Prepare a ¼ to 2 percent solution of this product in water, add a nonionic surfactant and apply to foliage of vegetation to be controlled. For specific rates of application and instructions for control of various annual and perennial weeds, see the "Weeds Controlled" section of this label. Applications should be made on a spray-to-wet basis. Spray coverage should be uniform and complete. Do not spray to point of runoff.

This product may be used as a 5 to 8 percent solution for low-volume directed sprays for spot treatment of trees and brush. It is most effective in areas where there is a low density of undesirable trees or brush. If a straight stream nozzle is used, start the application at the top of the targeted vegetation and spray from top to bottom in a lateral zigzag motion. Ensure that at least 50 percent of the leaves are contacted by the spray solution. For flat fan and cone nozzles and with hand-directed mist blowers, mist the application over the foliage of the targeted vegetation. Small, open-branched trees need only be treated from one side. If the foliage is thick or there are multiple root sprouts, applications must be made from several sides to ensure adequate spray coverage.

Prepare the desired volume of spray solution by mixing the amount of this product in water, shown in the following table:

### Spray Solution

Desired Volume	Amount of Glyphosate 5.4					
	3/4%	1%	1 1/4%	1 1/2%	5%	8%
1 Gal	1 oz	1 1/3 oz	1 2/3 oz	2 oz	6 1/2 oz	10 1/4 oz
25 Gal	1 1/2 pt	1 qt	1 1/4 qt	1 1/2 qt	5 qt	2 gal
100 Gal	3 qt	1 gal	1 1/4 gal	1 1/2 gal	5 gal	8 gal

2 tablespoons = 1 fluid ounce

For use in knapsack sprayers, it is suggested that the specified amount of this product be mixed with water in a larger container. Fill sprayer with the mixed solution and add the correct amount of surfactant.

## WEEDS CONTROLLED

### Annual Weeds

Apply to actively growing annual grasses and broadleaf weeds.

Allow at least 3 days after application before disturbing treated vegetation. After this period the weeds may be mowed, tilled or burned. See "Directions for Use," "Product Information" and "Mixing and Application Instructions" for labeled uses and specific application instructions.

Broadcast Application – Use 1 ½ pints of this product per acre plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution if weeds are less than 6 inches tall. If weeds are greater than 6 inches tall, use 2 ½ pints of this product per acre plus 2 or more quarts of an approved nonionic surfactant per 100 gallons of spray solution.

Hand-Held, High-Volume Application – Use a ¾ percent solution of this product in water plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution and apply to foliage of vegetation to be controlled.

When applied as directed under the conditions described in this label, this product plus nonionic surfactant WILL CONTROL the following ANNUAL WEEDS:

### Balsamapple\*\*

*Momordica charantia*

### Barley

*Hordeum vulgare*

### Barnyardgrass

*Echinochloa crus-galli*

### Bassia, fivehook

*Bassia hyssopifolia*

### Bluegrass, annual

*Poa annua*

### Bluegrass, bulbous

*Poa bulbosa*

### Brome

*Bromus spp.*

### Buttercup

*Ranunculus spp.*

### Cheat

*Bromus secalinus*

### Chickweed, mouseear

*Cerastium vulgatum*

### Cocklebur

*Xanthium strumarium*

### Corn, volunteer

*Zea mays*

### Crabgrass

*Digitaria spp.*

### Dwarf dandelion

*Krigia cespitosa*

### Falsiflax, smallseed

*Camelina microcarpa*

### Fiddleneck

*Amsinckia spp.*

### Flaxleaf fleabane

*Conyza bonariensis*

### Fleabane

*Erigeron spp.*

### Foxtail

*Setaria spp.*

### Foxtail, Carolina

*Alopecurus carolinianus*

### Groundsel, common

*Senecio vulgaris*

### Horseweed/Marestail

*Conyza canadensis*

### Kochia

*Kochia scoparia*

### Lambsquarters, common

*Chenopodium album*

### Lettuce, prickly

*Lactuca scariola*

### Morningglory

*Ipomoea spp.*

### Mustard, blue

*Chorispora tenella*

### Mustard, tansy

*Descurainia pinnata*

### Mustard, tumble

*Sisymbrium altissimum*

### Mustard, wild

*Sinapis arvensis*

### Oats, wild

*Avena fatua*

### Panicum

*Panicum spp.*

### Pennycress, field

*Thlaspi arvense*

### Pigweed, redroot

*Amaranthus retroflexus*

### Pigweed, smooth

*Amaranthus hybridus*

### Ragweed, common

*Ambrosia artemisiifolia*

### Ragweed, giant

*Ambrosia trifida*

### Rocket, London

*Sisymbrium irio*

### Rye

*Secale cereale*

### Ryegrass, Italian\*

*Lolium multiflorum*

### Sandbur, field

*Cenchrus spp.*

### Shattercane

*Sorghum bicolor*

### Shepherdspurse

*Capsella bursa-pastoris*

### Signalgrass, broadleaf

*Brachiaria platyphylla*

### Smartweed, Pennsylvania

*Polygonum pennsylvanicum*

### Sowthistle, annual

*Sonchus oleraceus*

### Spanishneedles\*

*Bidens bipinnata*

### Stinkgrass

*Eragrostis cilianensis*

### Sunflower

*Helianthus annuus*

### Thistle, Russian

*Salsola kali*

### Spurry, umbrella

*Holosteum umbellatum*

### Velvetleaf

*Abutilon theophrasti*

### Wheat

*Triticum aestivum*

### Witchgrass

*Panicum capillare*

\*Apply 3 pints of this product per acre.

\*\*Apply with hand-held equipment only.

Annual weeds will generally continue to germinate from seed throughout the growing season. Repeat treatments will be necessary to control later germinating weeds.

# GLYPHOSATE 5.4

# Specimen Label

## Perennial Weeds

Apply this product as follows to control or destroy most vigorously growing perennial weeds. Unless otherwise directed, allow at least 7 days after application before disturbing vegetation.

Add 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution to the rates of this product given in this list. See the "Product Information," "Directions for Use" and "Mixing and Application" sections in this label for specific uses and application instructions.

NOTE: If weeds have been mowed or tilled, do not treat until regrowth has reached the specified stages. Fall treatments must be applied before a killing frost.

Repeat treatments may be necessary to control weeds regenerating from underground parts or seed.

When applied as directed under the conditions described, this product plus surfactant WILL CONTROL the following PERENNIAL WEEDS:

**Alfalfa**  
*Medicago sativa*

**Alligatorweed\***  
*Alternanthera philoxeroides*

**Anise/Fennel**  
*Foeniculum vulgare*

**Artichoke, Jerusalem**  
*Helianthus tuberosus*

**Bahiagrass**  
*Paspalum notatum*

**Beachgrass, European\*\*\***  
*Ammophila arenaria*

**Bermudagrass**  
*Cynodon dactylon*

**Bindweed, field**  
*Convolvulus arvensis*

**Bluegrass, Kentucky**  
*Poa pratensis*

**Blueweed, Texas**  
*Helianthus ciliaris*

**Brackenfern**  
*Pteridium spp.*

**Bromegrass, smooth**  
*Bromus inermis*

**Canarygrass, reed**  
*Phalaris arundinacea*

**Cattail**  
*Typha spp.*

**Clover, red**  
*Trifolium pratense*

**Clover, white**  
*Trifolium repens*

**Cogongrass**  
*Imperata cylindrica*

**Cordgrass**  
*Spartina spp.*

**Cutgrass, giant\***  
*Zizaniopsis miliacea*

**Dallisgrass**  
*Paspalum dilatatum*

**Dandelion**  
*Taraxacum officinale*

**Dock, curly**  
*Rumex crispus*

**Dogbane, hemp**  
*Apocynum cannabinum*

**Fescue**  
*Festuca spp.*

**Fescue, tall**  
*Festuca arundinacea*

**Guineagrass**  
*Panicum maximum*

**Hemlock, poison**  
*Conium maculatum*

**Horsenettle**  
*Solanum carolinense*

**Horseradish**  
*Armoracia rusticana*

**Ice Plant**  
*Mesembryanthemum crystallinum*

**Johnsongrass**  
*Sorghum halepense*

**Kikuyugrass**  
*Pennisetum clandestinum*

**Knapweed**  
*Centaurea repens*

**Lantana**  
*Lantana camara*

**Lespedeza: common, serices**  
*Lespedeza striata*  
*Lespedeza cuneata*

**Loosestrife, purple**  
*Lythrum salicaria*

**Lotus, American**  
*Nelumbo lutea*

**Maidencane**  
*Panicum hematomon*

**Milkweed**  
*Asclepias spp.*

**Muhly, wirestem**  
*Muhlenbergia frondosa*

**Mullein, common**  
*Verbascum thapsus*

**Napiergrass**  
*Pennisetum purpureum*

**Nightshade, silverleaf**  
*Solanum elaeagnifolium*

**Nutsedge: purple, yellow**  
*Cyperus rotundus*  
*Cyperus esculentus*

**Orchardgrass**  
*Dactylis glomerata*

**Pampasgrass**  
*Cortaderia jubata*

**Paragrass**  
*Brachiaria mutica*

**Phragmites\*\***  
*Phragmites spp.*

**Quackgrass**  
*Agropyron repens*

**Reed, giant**  
*Arundo donax*

**Ryegrass, perennial**  
*Lolium perenne*

**Smartweed, swamp**  
*Polygonum coccineum*

**Spatterdock**  
*Nuphar luteum*

**Starthistle, yellow**  
*Centaurea solstitialis*

**Sweet potato, wild\***  
*Ipomoea pandurata*

**Thistle, artichoke**  
*Cynara cardunculus*

**Thistle, Canada**  
*Cirsium arvense*

**Timothy**  
*Phleum pratense*

**Torpedograss\***  
*Panicum repens*

**Tules, common**  
*Scirpus acutus*

**Vaseygrass**  
*Paspalum urvillei*

**Velvetgrass**  
*Holcus spp.*

**Waterhyacinth**  
*Eichornia crassipes*

**Waterlettuce**  
*Pistia stratiotes*

**Waterprimrose**  
*Ludwigia spp.*

**Wheatgrass, western**  
*Agropyron smithii*

\*Partial control.  
\*\*Partial control in southeastern states. See specific directions below.  
\*\*\*Washington and Oregon only.

**Alligatorweed** – Apply 6 pints of this product per acre as a broadcast spray or as a 1/4 percent solution with hand-held equipment to provide partial control of alligatorweed. Apply when most of the target plants are in bloom. Repeat applications will be required to maintain such control.

**Beachgrass, European (Washington and Oregon only)** – Best results are obtained when applications are made when European beachgrass is actively growing through the boot to the full heading stages of growth. Applications should be made prior to the loss of more than 50% green leaf color in the fall.

Applications made during any period of plant (drought) stress, or beyond the recommended active growth period in the fall, will likely result in reduced performance.

Repeat applications of Glyphosate 5.4 may be necessary to treat skips. Monitor treated acres prior to reseeding of desirable vegetation.

## Spray-to-Wet Applications:

Apply an 8 percent solution of this product plus 0.5 to 1.5 percent nonionic surfactant on a spray-to-wet basis for control of European beachgrass.

Spray coverage should be uniform and complete but not to the point of runoff.

## Wiper Applications:

For selective control of European beachgrass, apply a 33 1/3 percent solution of this product plus 1 to 2.5 percent nonionic surfactant during active growth. Avoid contact of herbicide solution with desirable vegetation. Wiping the plants in opposite directions may improve performance. Maximizing the amount of individual leaf tissue contacted with the wiping equipment will result in optimal performance.

**Bermudagrass** – Apply 7 1/2 pints of this product per acre as a broadcast spray or as a 1/4

# GLYPHOSATE 5.4

# Specimen Label

percent solution with hand-held equipment. Apply when target plants are actively growing and when seed heads appear.

**Bindweed, field/Silverleaf Nightshade/Texas Blueweed** – Apply 6 to 7 ½ pints of this product per acre as a broadcast spray west of the Mississippi River and 4 ½ to 6 pints of this product per acre east of the Mississippi River. With hand-held equipment, use a 1 ½ percent solution. Apply when target plants are actively growing and are at or beyond full bloom. For silverleaf nightshade, best results can be obtained when application is made after berries are formed. Do not treat when weeds are under drought stress. New leaf development indicates active growth. For best results apply in late summer or fall.

**Brackenfern** – Apply 4 ½ to 6 pints of this product per acre as a broadcast spray or as a ¾ to 1 percent solution with hand-held equipment. Apply to fully expanded fronds which are at least 18 inches long.

**Cattail** – Apply 4 ½ to 6 pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment. Apply when target plants are actively growing and are at or beyond the early-to-full bloom stage of growth. Best results are achieved when application is made during the summer or fall months.

**Cogongrass** – Apply 4 ½ to 7 ½ pints of this product per acre as a broadcast spray. Apply when cogongrass is at least 18 inches tall and actively growing in late summer or fall. Allow 7 or more days after application before tillage or mowing. Due to uneven stages of growth and the dense nature of vegetation preventing good spray coverage, repeat treatments may be necessary to maintain control.

**Cordgrass** – Broadcast Applications (Air) – Apply 4 to 7 ½ pints of this product in 5-20 gallons of spray solution per acre. Add 1 to 2 quarts of nonionic surfactant per 100 gallons of spray solution.

Broadcast Applications (Ground) – Apply 4 to 7 ½ pints of this product in 10 to 60 gallons of spray solution per acre. For best results, ensure that complete coverage of cordgrass clumps is achieved. Add 1 to 2 quarts of a nonionic surfactant per 100 gallons of spray solution.

Hand-Held and High Volume Equipment - Apply a 2 to 8 percent solution of this product. Ensure that complete coverage of cordgrass clumps is achieved. Do not spray to the point of run-off. Add 1 to 2 quarts of a nonionic surfactant per 100 gallons of spray solution.

Wiper Applications - For wick or wiper applications, mix 1 gallon of this product with 2 gallons of clean water to make a 33 percent solution. Addition of a nonionic surfactant at a rate of 10 percent by volume of the total herbicide solution is recommended.

In heavy stands, a double application in opposite directions may improve results.

Application Conditions - Schedule applications in order to allow 6 hours before treated plants are covered by tidewater. Rainfall or immersion within 6 hours after application may reduce effectiveness.

The presence of debris and silt on the cordgrass plants will reduce performance of this product. It may be necessary to wash targeted plants prior to application to improve uptake of this product into the plant. Where cordgrass has been cut or mowed prior to application with Glyphosate 5.4, ensure adequate regrowth of cordgrass occurs to allow for interception or absorption of the herbicide solution.

**Cutgrass, giant** – Apply 6 pints of this product per acre as a broadcast spray or as a 1 percent solution with hand-held equipment to provide partial control of giant cutgrass. Repeat applications will be required to maintain such control, especially where vegetation is partially submerged in water. Allow for substantial regrowth to the 7 to 10-leaf stage prior to retreatment.

**Dogbane, hemp/Knapweed/Horseradish** – Apply 6 pints of this product per acre as a broadcast spray or as a 1-½ percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the late bud-to-flower stage of growth. For best results, apply in late summer or fall.

**Fescue, tall** – Apply 4 ½ pints of this product per acre as a broadcast spray or as a 1 percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained.

**Guineagrass** – Apply 4 ½ pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment. Apply when target plants are actively growing and when most have reached at least the 7-leaf stage of growth.

**Johnsongrass/Bluegrass, Kentucky/Bromegrass, smooth/Canarygrass, reed/Orchardgrass/Ryegrass, perennial/Timothy/Wheatgrass, western** – Apply 3 to 4 ½ pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the boot-to-head stage of growth. When applied prior to the boot stage, less desirable control may be obtained. In the fall, apply before plants have turned brown.

**Lantana** – Apply this product as a ¾ to 1 percent solution with hand-held equipment. Apply to actively growing lantana at or beyond the bloom stage of growth. Use the higher application rate for plants that have reached the woody stage of growth.

**Loosestrife, purple** – Apply 4 pints of this product per acre as a broadcast spray or as a 1 to 1-½ percent solution using hand-held equipment. Treat when plants are actively growing at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost.

**Lotus, American** – Apply 4 pints of this product per acre as a broadcast spray or as a ¾

percent solution with hand-held equipment. Treat when plants are actively growing at or beyond the bloom stage of growth. Best results are achieved when application is made during summer or fall months. Fall treatments must be applied before a killing frost. Repeat treatment may be necessary to control regrowth from underground parts and seeds.

**Maidencane/Paragrass** – Apply 6 pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment. Repeat treatments will be required, especially to vegetation partially submerged in water. Under these conditions, allow for regrowth to the 7 to 10-leaf stage prior to retreatment.

**Milkweed, common** – Apply 4 ½ pints of this product per acre as a broadcast spray or as a 1-½ percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached the late bud-to-flower stage of growth.

**Nutsedge: purple, yellow** – Apply 4 ½ pints of this product per acre as a broadcast spray, or as a ¾ percent solution with hand-held equipment to control existing nutsedge plants and immature nutlets attached to treated plants. Apply when target plants are in flower or when new nutlets can be found at rhizome tips. Nutlets which have not germinated will not be controlled and may germinate following treatment. Repeat treatments will be required for long-term control.

**Pampasgrass** – Apply a 1-½ percent solution of this product with hand-held equipment when plants are actively growing.

**Phragmites** – For partial control of phragmites in Florida and the counties of other states bordering the Gulf of Mexico, apply 7 ½ pints per acre as a broadcast spray or apply a 1-½ percent solution with hand-held equipment. In other areas of the U.S., apply 4 to 6 pints per acre as a broadcast spray or apply a ¾ percent solution with hand-held equipment for partial control. For best results, treat during late summer or fall months when plants are actively growing and in full bloom. Due to the dense nature of the vegetation, which may prevent good spray coverage and uneven stages of growth, repeat treatments may be necessary to maintain control. Visual control symptoms will be slow to develop.

**Quackgrass/Kikuyugrass/Muhly, wirestem** – Apply 3 to 4 ½ pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment when most quackgrass or wirestem muhly is at least 8 inches in height (3 to 4-leaf stage of growth) and actively growing. Allow 3 or more days after application before tillage.

**Reed, giant/ice plant** – For control of giant reed and ice plant, apply a 1-½ percent solution of this product with hand-held equipment when plants are actively growing. For giant reed, best results are obtained when applications are made in late summer or fall.

**Spatterdock** – Apply 6 pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment. Apply when most plants are in full bloom. For best results, apply during the summer or fall months.

**Sweet potato, wild** – Apply this product as a 1-½ percent solution using hand-held equipment. Apply to actively growing weeds that are at or beyond the bloom stage of growth. Repeat applications will be required. Allow the plant to reach the specified stage of growth before retreatment.

**Thistle: Canada, artichoke** – Apply 3 to 4 ½ pints of this product per acre as a broadcast spray or as a 1 ½ percent solution with hand-held equipment for Canada thistle. To control artichoke thistle, apply a 2 percent solution as a spray-to-wet application. Apply when target plants are actively growing and at or beyond the bud stage of growth.

**Torpedograss** – Apply 6 to 7 ½ pints of this product per acre as a broadcast spray or as a ¾ to 1 ½ percent solution with hand-held equipment to provide partial control of torpedograss. Use the lower rates under terrestrial conditions, and the higher rates under partially submerged or a floating mat condition. Repeat treatments will be required to maintain such control.

**Tules, common** – Apply this product as a 1-½ percent solution with hand-held equipment. Apply to actively growing plants at or beyond the seedhead stage of growth. After application, visual symptoms will be slow to appear and may not occur for 3 or more weeks.

**Waterhyacinth** – Apply 5 to 6 pints of this product per acre as a broadcast spray or apply a ¾ to 1 percent solution with hand-held equipment. Apply when target plants are actively growing and at or beyond the early bloom stage of growth. After application, visual symptoms may require 3 or more weeks to appear with complete necrosis and decomposition usually occurring within 60 to 90 days. Use the higher rates when more rapid visual effects are desired.

**Waterlettuce** – For control, apply a ¾ to 1 percent solution of this product with hand-held equipment to actively growing plants. Use higher rates where infestations are heavy. Best results are obtained from mid-summer through winter applications. Spring applications may require retreatment.

**Waterprimrose** – Apply this product as a ¾ percent solution using hand-held equipment. Apply to plants that are actively growing at or beyond the bloom stage of growth, but before fall color changes occur. Thorough coverage is necessary for best control.

**Other perennials listed on this label** – Apply 4 ½ to 7 ½ pints of this product per acre as a broadcast spray or as a ¾ to 1 ½ percent solution with hand-held equipment. Apply when target plants are actively growing and most have reached early head or early bud stage of growth.

# GLYPHOSATE 5.4

# Specimen Label

## WOODY BRUSH AND TREES

When applied as specified under the conditions described, this product plus surfactant CONTROLS or PARTIALLY CONTROLS the following woody brush plants and trees:

**Alder**  
*Alnus spp.*

**Ash\***  
*Fraxinus spp.*

**Aspen, quaking**  
*Populus tremuloides*

**Bearclover, Bearmat**  
*Chamaebatia foliolosa*

**Birch**  
*Betula spp.*

**Blackberry**  
*Rubus spp.*

**Broom:**

**French**  
*Cytisus monspessulanus*

**Scotch**  
*Cytisus scoparius*

**Buckwheat, California\***  
*Eriogonum fasciculatum*

**Cascara\***  
*Rhamnus purshiana*

**Catsclaw\***  
*Acacia greggi*

**Ceanothus**  
*Ceanothus spp.*

**Chamise**  
*Adenostoma fasciculatum*

**Cherry:**

**Bitter**  
*Prunus emarginata*

**Black**  
*Prunus serotina*

**Pin**  
*Prunus pensylvanica*

**Coyote brush**  
*Baccharis consanguinea*

**Creeper, Virginia\***  
*Parthenocissus quinquefolia*

**Dewberry**  
*Rubus trivialis*

**Dogwood**  
*Cornus spp.*

**Elderberry**  
*Sambucus spp.*

**Elm\***  
*Ulmus spp.*

**Eucalyptus, bluegum**  
*Eucalyptus globules*

**Hasardia\***  
*Haplopappus squamosus*

**Hawthorn**  
*Crataegus spp.*

**Hazel**  
*Corylus spp.*

**Hickory**  
*Carya spp.*

**Holly, Florida; Brazilian Peppertree**  
*Schinus terebinthifolius*

**Honeysuckle**  
*Lonicera spp.*

**Hornbeam, American**  
*Carpinus caroliniana*

**Kudzu**  
*Pueraria lobata*

**Locust, black\***  
*Robinia pseudoacacia*

**Manzanita**  
*Arctostaphylos spp.*

**Maple:**

**Red\*\***  
*Acer rubrum*

**Sugar**  
*Acer saccharum*

**Vine\***  
*Acer circinatum*

**Monkey Flower\***  
*Mimulus guttatus*

**Oak:**

**Black\***  
*Quercus velutina*

**Northern pine**  
*Quercus palustris*

**Post**  
*Quercus stellata*

**Red**  
*Quercus rubra*

**Southern red**  
*Quercus falcata*

**White\***  
*Quercus alba*

**Persimmon\***  
*Diospyros spp.*

**Poison Ivy**  
*Rhus radicans*

**Poison Oak**  
*Rhus toxicodendron*

**Poplar, yellow\***  
*Liriodendron tulipifera*

**Prunus**  
*Prunus spp.*

**Raspberry**  
*Rubus spp.*

**Redbud, eastern**  
*Cercis canadensis*

**Rose, multiflora**  
*Rosa multiflora*

**Russian-olive**  
*Elaeagnus angustifolia*

**Sage: black, white**  
*Salvia spp.*

**Sagebrush, California**  
*Artemisia californica*

**Salmonberry**  
*Rubus spectabilis*

**Salt cedar\***  
*Tamarix spp.*

**Saltbush, Sea myrtle**  
*Baccharis halimifolia*

**Sassafras**  
*Sassafras albidum*

**Sourwood\***  
*Oxydendrum arboreum*

**Sumac:**

**Poison\***  
*Rhus vernix*

**Smooth\***  
*Rhus glabra*

**Winged\***  
*Rhus copallina*

**Sweet gum**  
*Liquidambar styraciflua*

**Swordfern\***  
*Polystichum munitum*

**Tallowtree, Chinese**  
*Sapium sebiferum*

**Thimbleberry**  
*Rubus parviflorus*

**Tobacco, tree\***  
*Nicotiana glauca*

**Trumpet creeper**  
*Campsis radicans*

**Waxmyrtle, southern\***  
*Myrica cerifera*

**Willow**  
*Salix spp.*

\*Partial Control  
\*\*See below for control or partial control instruction.

NOTE: If brush has been mowed or tilled or trees have been cut, do not treat until regrowth has reached the specified stage of growth.

Apply the specified rate of this product plus 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution when plants are actively growing and, unless otherwise directed, after full-leaf expansion. Use the higher rate for larger plants and/or dense areas of growth. On vines, use the higher rate for plants that have reached the woody stage of growth. Best results are obtained when application is made in late summer or fall after fruit formation.

In arid areas, best results are obtained when application is made in the spring or early summer when brush species are at high moisture content and are flowering. Ensure thorough coverage when using hand-held equipment. Symptoms may not appear prior to frost or senescence with fall treatment.

Allow 7 or more days after application before tillage, mowing or removal. Repeat treatments may be necessary to control plants regenerating from underground parts or seed. Some autumn colors on undesirable deciduous species are acceptable provided no major leaf drop has occurred. Reduced performance may result if fall treatments are made following a frost.

See the "Directions for Use" and "Mixing and Application Instructions" sections in this label for labeled use and specific application instructions.

Applied as a 5 to 8 percent solution as a directed application as described in the "Hand-Held and High-Volume Equipment" section, this product will control or partially control all species listed in this section of this label. Use the higher rate of application for dense stands and larger woody brush and trees.

Apply the product as follows to control or partially control the following woody brush and trees.

**Alder/Blackberry/Dewberry/Honeysuckle/Oak, Post/Raspberry** – For control, apply 4 ½ to 6 pints per acre as a broadcast spray or as a ¾ to 1 ¼ percent solution with hand-held equipment.

# GLYPHOSATE 5.4

# Specimen Label

**Aspen, Quaking/Hawthorn/Trumpetcreeper** – For control, apply 3 to 4 ¼ pints of this product per acre as a broadcast spray or as a ¾ to 1 ¼ percent solution with hand-held equipment.

**Birch/Elderberry/Hazel/Salmonberry/Thimbleberry** – For control, apply 3 pints per acre of this product as a broadcast spray or as a ¾ percent solution with hand-held equipment.

**Broom: French, Scotch** – For control, apply a 1 ¼ to 1 ½ percent solution with hand-held equipment.

**Buckwheat, California/Hasardia/Monkey Flower/Tobacco, Tree** – For partial control of these species, apply a ¾ to 1 ½ percent solution of this product as a foliar spray with hand-held equipment. Thorough coverage of foliage is necessary for best results.

**Catsclaw** – For partial control, apply a 1 ¼ to 1 ½ percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.

**Cherry: Bitter, Black, Pin/Oak, Southern Red/Sweet Gum/Prunus** – For control, apply 3 to 7 ½ pints of this product per acre as a broadcast spray or as a 1 to 1 ½ percent solution with hand-held equipment.

**Coyote brush** – For control, apply a 1 ¼ to 1 ½ percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.

**Dogwood/Hickory/Salt cedar** – For partial control, apply a 1 to 2 percent solution of this product with hand-held equipment or 6 to 7 ½ pints per acre as a broadcast spray.

**Eucalyptus, bluegum** – For control of eucalyptus resprouts, apply a 1-½ percent solution of this product with hand-held equipment when resprouts are 6 to 12-feet tall. Ensure complete coverage. Apply when plants are actively growing. Avoid application to drought-stressed plants.

**Holly, Florida (Brazilian peppertree (*Schinus terebinthifolius*))** – For partial control, apply this product as a 1-½ percent solution with hand-held equipment.

Alternatively, when applied as directed, this product with QuikSorb™ Penetrant will control or partially control Brazilian peppertree in areas such as dry drainage ditches and canals, wildlife habitat restoration and management areas, roadsides, railroads, fence rows, and similar non-crop areas.

The recommended application technique is directed spot treatment of Brazilian peppertree using hand-held equipment only. Apply this product using backpack, hand-held, handgun or similar equipment. Use flat fan, cone, or similar nozzles that will provide effective spray coverage of target vegetation. Do not apply to Brazilian peppertree growing in water. The use of aerial, boom-type or other broadcast spray equipment is not recommended. These applications are more effective on small brush less than 15 feet in height or 3-inch stem diameter.

#### **Basal and Selective Stem Application:**

Apply a solution consisting of 25% v/v of this product and 75% v/v of QuikSorb™ penetrant. Completely cover the lower 18-24 inches of the brush stems or trunks. For larger stems over 3 inches in diameter, treat up to 48 inches or higher from the ground level. For better control of large trees, apply spray solution directly to upper foliage of plant canopy. Spray coverage should be uniform, covering at least 40 to 60% of the upper foliage and stems. Application is best when made to young, actively growing stems, branches and foliage. Spray-to-wet but not to the point of run-off.

Read and carefully observe the label claims, cautionary statements, and all information on the labels of all products used in this tank mixture.

**Kudzu** – For control, apply 6 pints of this product per acre as a broadcast spray or as a 1-½ percent solution with hand-held equipment. Repeat applications will be required to maintain control.

**Maple, Red** – For control, apply as a ¾ to 1 ¼ percent solution with hand-held equipment when leaves are fully developed. For partial control, apply 2 to 7 ½ pints of this product per acre as a broadcast spray.

**Maple, Sugar/Oak: Northern Pin, Red** – For control, apply as a ¾ to 1 ¼ percent solution with hand-held equipment when at least 50 percent of the new leaves are fully developed.

**Poison Ivy/Poison Oak** – For control, apply 6 to 7 ½ pints of this product per acre as a broadcast spray or as a 1-½ percent solution with hand-held equipment. Repeat applications may be required to maintain control. Fall treatments must be applied before leaves lose green color.

**Rose, multiflora** – For control, apply 3 pints of this product per acre as a broadcast spray or as a ¾ percent solution of this product as a foliar spray with hand-held equipment. Thorough coverage of foliage is necessary for best results.

**Sage, black/Sagebrush, California/Chamiste/Tallowtree, Chinese** – For control of these species apply as a ¾ percent solution of this product as a foliar spray with hand-held equipment. Thorough coverage of foliage is necessary for best results.

**Saltbush, Sea myrtle** – For control, apply this product as a 1 percent solution with hand-held equipment.

**Waxmyrtle, southern** – For partial control, apply this product as a 1-½ percent solution with hand-held equipment.

**Willow** – For control, apply 4 ½ pints of this product per acre as a broadcast spray or as a ¾ percent solution with hand-held equipment.

**Other woody brush and trees listed in this label** – For partial control, apply 3 to 7 ½ pints of this product per acre as a broadcast spray or as a ¾ to 1 ½ percent solution with hand-held equipment.

## AQUATIC AND OTHER NONCROP SITES

When applied as directed and under the conditions described in the "Weeds Controlled" section in this label, this product will control or partially control labeled weeds growing in the following industrial, recreational, public areas, aquatic and terrestrial sites.

**Aquatic Sites** – This product may be applied to emerged weeds in all bodies of fresh and brackish water which may be flowing, nonflowing or transient. This includes lakes, rivers, streams, ponds, estuaries, rice levees, seeps, irrigation and drainage ditches, canals, reservoirs, wastewater treatment facilities, wildlife habitat restoration and management areas.

If aquatic sites are present in the noncrop area and are part of the intended treatment, read and observe the following directions:

**This product does not control plants which are completely submerged or have a majority of their foliage under water.**

There is no restriction on the use of treated water for irrigation, recreation or domestic purposes.

Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

**NOTE:** Do not apply this product directly to water within ½ mile up-stream of an active potable water intake in flowing water (i.e., river stream, etc.) or within ½ mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within ½ mile of active potable water intakes, the water intake must be turned off for a minimum period of 48 hours after application. The water intake may be turned on prior to 48 hours if the glyphosate level in the intake water is below 0.7 parts per million as determined by laboratory analysis. These aquatic applications may be made ONLY in those cases where there are alternative water sources or holding ponds which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. This restriction does not apply to intermittent inadvertent overspray of water in terrestrial use sites.

For treatments after drawdown of water or in dry ditches, allow 7 or more days after treatment before reintroduction of water to achieve maximum weed control. Apply this product within 1 day after drawdown to ensure application to actively growing weeds. Floating mats of vegetation may require retreatment. Avoid wash-off of sprayed foliage by spray boat or recreational boat backwash or by rainfall within 6 hours of application. Do not re-treat within 24 hours following the initial treatment.

Applications made to moving bodies of water must be made while traveling upstream to prevent concentration of this herbicide in water. When making any bankside applications, do not overlap more than 1 foot into open water. Do not spray in bodies of water where weeds do not exist. The maximum application rate of 7 ½ pints per acre must not be exceeded in any single broadcast application that is being made over water.

When emerged infestations require treatment of the total surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in fish kill.

**Other Noncrop-Type Sites** – This product may be used to control the listed weeds in terrestrial noncrop sites and/or in aquatic sites within these areas.

Airports  
Golf Courses  
Habitat Restoration & Management Areas  
Highways & Roadsides  
Industrial Plant Sites  
Lumberyards  
Parking Areas  
Parks  
Petroleum Tank Farms  
Pipeline, Power, Telephone & Utility Rights-of-Way  
Pumping Installations  
Railroads  
Schools  
Storage Areas  
Similar Sites

## TANK MIXTURES

**NOTE:** Read and carefully observe the label directions, cautionary statements and all information on the labels of products used in these tank mixtures before proceeding with these directions. Additional precautionary statements are made in these labels. Use according to the most restrictive label directions for each product in these mixtures.

When used in combination as recommended by Alligare, LLC, the liability of Alligare, LLC shall in no manner extend to any damage, loss or injury not directly caused by the inclusion of the Alligare product in such combination use.

## GLYPHOSATE 5.4 plus GARLON® 4 or Triclopyr 4 EC

For burndown and partial control or suppression of woody brush and weeds in industrial sites:

When applied as directed for "Noncrop Uses" under the conditions described, this product, and an approved surfactant plus Garlon® 4 or Triclopyr 4 EC, provides burndown and partial control or suppression of woody brush and vegetation labeled for this product. Use this

# GLYPHOSATE 5.4

# Specimen Label

tank mixture on rights-of-way (utility, railroad, highway, pipeline), fencerows, roadsides, nonirrigation ditchbanks, wasteland and similar noncrop or industrial sites.

## Hand-Held and High-Volume Applications:

Use 3 to 6 pints of Glyphosate 5.4 herbicide and 2 or more quarts of an approved surfactant, plus 1 to 2 quarts of Garlon® 4 or Triclopyr 4 EC per 100 gallons of spray solution and apply to foliage of actively growing woody brush and weeds. Applications should be made on a spray to wet basis. Spray coverage should be uniform and complete. Do not spray to point of runoff.

## Broadcast Applications with Ground Equipment:

Use 3 to 6 pints of Glyphosate 5.4 plus ½ to 2 quarts of Garlon® 4 or Triclopyr 4 EC in sufficient water and make 20 to 100 gallons of total spray per acre. Use 2 to 4 quarts of an approved surfactant per 100 gallons of spray solution with this product.

## Aerial Application (Helicopter Only):

Use 3 to 6 pints of Glyphosate 5.4 plus surfactant plus 1 to 2 quarts of Garlon® 4 or Triclopyr 4 EC and apply in a total spray volume of 10 to 20 gallons per acre. Aerial sprays should be applied using suitable drift control. Use 2 to 4 quarts of an approved surfactant per 100 gallons of spray solution with this product.

Apply when plants are actively growing and after full leaf expansion of woody brush. Use the higher rates of these products where vegetation is heavy or dense, or where hard-to-control brush species are prevalent. Repeat applications may be necessary to maintain control and to suppress areas where canopied vegetation prevents good spray coverage and penetrations.

Drift control additives may be used. When a drift control additive is used, read and carefully observe the cautionary statements and all other information appearing on the additive label.

## GLYPHOSATE 5.4 plus ARSENAL® 2 WSL

When applied as directed, this tank mixture will control or partially control labeled woody brush, trees and herbaceous weeds in noncrop areas. In addition to the weeds listed on this label, this tank mixture will control arrowweed, salt cedar and yaupon.

## Hand-Held and High-Volume Applications:

Use 6 to 12 pints of Glyphosate 5.4 plus ½ to 4 pints Arsenal® 2 WSL per 100 gallons of spray solution. Add 2 to 4 quarts of nonionic surfactant per 100 gallons of spray solution. Apply to foliage of actively growing vegetation. Applications should be made on a spray-to-wet basis. Spray coverage should be uniform and complete. Do not spray to the point of runoff.

## Broadcast Applications with Ground Equipment:

Use 3 to 7 ½ pints of Glyphosate 5.4 plus ½ to 4 pints Arsenal® 2 WSL in sufficient water to apply in a total spray volume of 10 to 20 gallons per acre. Add 2 to 4 quarts of nonionic surfactant per 100 gallons of spray solution. Apply to foliage of actively growing vegetation. Apply to woody brush and trees after full leaf expansion until initiation of fall color.

Avoid direct applications to any body of water. Do not apply on ditches used to transport irrigation water.

## GLYPHOSATE 5.4 plus 2,4-D AMINE

When applied as a tank mixture, this product will control the annual weeds listed in this label booklet. This tank mixture will control or partially control the listed perennial weeds, woody brush and trees.

Use 1 ½ to 2 ½ pints of this product plus 2 to 4 pints of 2,4-D amine (4 lb ai per gallon, labeled for aquatic sites) for control of annual weeds.

Use 3 to 7 ½ pints of this product plus 2 to 4 quarts of 2,4-D amine (4 lb ai per gallon, labeled for aquatic sites) for control or partial control of perennial weeds, woody brush and trees. The tank mixture may be used on alligatorweed, smartweed, waterprimrose, waxmyrtle and other labeled weeds.

When using this product, mix 2 or more quarts of a nonionic surfactant per 100 gallons of spray solution. Always read and follow the surfactant manufacturer's label recommendations.

Always predetermine the compatibility of the tank mixtures of this herbicide and 2,4-D amine by mixing small proportional quantities in advance.

Mix in the following sequence: Fill sprayer tank one-half full with water, add Glyphosate 5.4, then 2,4-D amine and finally surfactant. Fill sprayer tank to final volume with water.

NOTE: DO NOT MIX GLYPHOSATE 5.4 AMINE CONCENTRATES WITHOUT WATER CARRIER. DO NOT MIX GLYPHOSATE 5.4 AND 2,4-D AMINE IN BYPASS INJECTOR-TYPE SPRAY EQUIPMENT.

## WILDLIFE HABITAT RESTORATION AND MANAGEMENT AREAS

This product can be used for the restoration and/or maintenance of native habitat and in wildlife management areas.

Habitat Restoration and Maintenance – When applied as directed, exotic and other undesirable vegetation may be controlled in habitat management areas. Applications may be made to allow recovery of native plant species, to open up water to attract waterfowl, and for similar broad-spectrum vegetation control requirements in habitat management areas. Spot treatments may be made to selectively remove unwanted plants for habitat enhancement. For spot treatments, care should be exercised to keep spray off of desirable plants.

Wildlife Food Plots – This product may be used as a site preparation treatment prior to planting wildlife food plots. Apply as directed to control vegetation in the plot area. Any wildlife food species may be planted after applying this product, or native species may be allowed to reinfest the area. If tillage is needed to prepare a seedbed, wait 7 days after

applying this product before tilling to allow for maximum effectiveness.

## WIPER APPLICATIONS

For wick or wiper applications, mix 1 gallon of this product with 2 gallons of clean water to make a 33 percent solution. Addition of a nonionic surfactant at a rate of 10 percent by volume of total herbicide solution is recommended.

Wiper applications can be used to control or suppress annual and perennial weeds listed on this label. In heavy weed stands, a double application in opposite directions may improve results. See the "Weeds Controlled" section in this label for timing, growth stage and other instructions for achieving optimum results.

**Bromegrass (smooth), Canarygrass (reed), Dock (curly), Mullein (common), Quackgrass and Canada thistle:** This product may be applied through a wiper applicator after dilution with water and thorough mixing to these weeds growing in or along aquatic sites.

Wiper applicators, including wick devices, apply the herbicide solution by rubbing the weed with an absorbent material containing the herbicide solution.

Contact of the herbicide solution with desirable vegetation may result in damage or destruction. Applicators used above desired vegetation should be adjusted so that the lowest wiper contact point is at least two (2) inches above this vegetation. Application made above desirable vegetation should be made when the weeds are a minimum of six (6) inches above this vegetation.

Best results may be attained when more of the weed is exposed to the herbicide solution. Weeds not contacted (wiped) with the herbicide solution will not be affected. This may occur in dense clumps, severe infestations, or when the height of the weed varies so that not all weeds are contacted.

In severe infestations, reduce equipment ground speed to ensure that adequate amounts of this herbicide solution are wiped onto the weeds. When wiping moderate weed infestations an adequate flow rate should be 3 to 4 quarts of herbicide solution per mile of canal (wiping 4 foot band). For best results, do not allow wiper applicator to contact water.

## Note:

- Maintain wiper equipment in good operating condition.
- Adjust height of wiper applicator to ensure adequate contact with weeds.
- Keep wiping surfaces clean.
- Keep wiper material at proper degree of saturation with herbicide solution.
- DO NOT use wiper equipment when weeds are wet or under conditions where wave action or other water immersions will wash the solution off the weed.
- DO NOT operate equipment at ground speeds of greater than 5 MPH. As weed density increases, reduce equipment ground speed to ensure good coverage of weeds.
- Be aware that on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying on the upper end of the wiper applicator.
- Variation in equipment design may affect weed control. With wiper applicators, the wiping material and its orientation must allow delivery of sufficient quantities of the specified herbicide solution directly to the weeds.
- Mix only the amount of solution to be used during a one day period as reduced activity may result from use of leftover solutions.

## Mixing Instructions:

Mix 2 ½ gallons of Glyphosate 5.4 herbicide with 7 ½ gallons of water to prepare a 25 percent solution. Add 1 quart of an approved surfactant per 10 gallons of herbicide solution (2 ½ percent surfactant by total volume). Apply this solution to weeds listed above.

## CUT STUMP APPLICATION

Woody vegetation may be controlled by treating freshly cut stumps of trees and resprouts with this product. Apply this product using suitable equipment to ensure coverage of the entire cambium. Cut vegetation close to the soil surface. Apply a 50 to 100 percent solution of this product to freshly cut surface immediately after cutting. Delay in applying this product may result in reduced performance. For best results, trees should be cut during periods of active growth and full leaf expansion.

When used according to directions for cut stump application, this product will CONTROL, PARTIALLY CONTROL, or SUPPRESS most woody brush and tree species, some of which are listed below:

- Alder**  
*Alnus spp.*
- Coyote brush\***  
*Baccharis consanguinea*
- Dogwood\***  
*Cornus spp.*
- Eucalyptus**  
*Eucalyptus spp.*
- Hickory\***  
*Carya spp.*
- Madrone**  
*Arbutus menziesii*
- Maple\***  
*Acer spp.*
- Oak**  
*Quercus spp.*
- Poplar\***  
*Populus spp.*
- Reed, giant**  
*Arundo donax*
- Salt cedar**  
*Tamarix spp.*

# GLYPHOSATE 5.4

# Specimen Label

## Sweet gum\*

*Liquidambar styraciflua*

## Sycamore\*

*Platanus occidentalis*

## Tan oak

*Lithocarpus densiflorus*

## Willow

*Salix spp.*

\*This product is not approved for this use on these species in the state of California.

## INJECTION AND FRILL APPLICATIONS

Woody vegetation may be controlled by injection or frill application of this product. Apply this product using suitable equipment which must penetrate into living tissue. Apply the equivalent of 1 mL of this product per 2 to 3 inches of trunk diameter. This is best achieved by applying 25 to 100 percent concentration of this product either to a continuous frill around the tree or as cuts evenly spaced around the tree below all branches. As tree diameter increases in size, better results are achieved by applying dilute material to a continuous frill or more closely spaced cuttings. Avoid application techniques that allow runoff to occur from frill or cut areas in species that exude sap freely after frills or cutting. In species such as these, make frill or cut at an oblique angle so as to produce a cupping effect and use undiluted material. For best results, applications should be made during periods of active growth and full leaf expansion.

This treatment WILL CONTROL the following woody species:

### Oak

*Quercus spp.*

### Poplar

*Populus spp.*

### Sweet gum

*Liquidambar styraciflua*

### Sycamore

*Platanus occidentalis*

This treatment WILL SUPPRESS the following woody species:

### Black gum\*

*Nyssa sylvatica*

### Dogwood

*Cornus spp.*

### Hickory

*Carya spp.*

### Maple, red

*Acer rubrum*

\*This product is not approved for this use on these species in the state of California.

## CHRISTMAS TREES

**TYPES OF APPLICATIONS:** Post-directed, spot treatment, site preparation

### Post-directed, Spot treatment

**USE INSTRUCTIONS:** This product may be used as a post-directed spray and spot treatment around established Christmas trees.

**PRECAUTIONS, RESTRICTIONS:** Desirable plants may be protected from the spray solution by using shields or coverings made of cardboard or other impermeable material. **DO NOT USE THIS PRODUCT AS AN OVER-THE-TOP BROADCAST SPRAY IN CHRISTMAS TREES.** Care must be exercised to avoid contact of spray, drift or mist with foliage or green bark of established Christmas trees.

### Site preparation

**USE INSTRUCTIONS:** This product may be used prior to planting Christmas trees.

**PRECAUTIONS, RESTRICTIONS:** Precautions should be taken to protect nontarget plants during site preparation applications.

## SILVICULTURAL SITES AND UTILITY RIGHTS-OF-WAY

**TYPES OF APPLICATIONS:** This product can be used for the control or partial control of woody brush, trees and herbaceous weeds. This product is labeled for use in forestry and utility sites. This product can also be used for use in preparing or establishing wildlife openings within these sites and maintaining logging roads, and for side trimming along utility rights-of-way.

In forestry, use this product for site preparation prior to planting any tree species, including Christmas trees and silvicultural nursery sites.

In utilities, this product can be used along electrical power, pipeline and telephone rights-of-way, and in other utility sites associated with these rights-of-way, such as substations.

### APPLICATION RATES AND TIMING:

Application	Glyphosate 5.4	Spray Volume (Gal/A)
<b>Broadcast</b>		
Aerial	1.5 to 7.5 qts./A	5 to 30
Ground	1.5 to 7.5 qts./A	10 to 60
<b>Spray-to-Wet</b>		
Handgun, Backpack, Mistblower	0.6% to 2% by volume	spray-to-wet
<b>Low Volume Directed Spray</b>		
Handgun, Backpack, Mistblower	4% to 7.5% by volume	partial coverage*

\*For low volume directed spray applications, coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the plant is important for best results.

In forestry site preparation and utility rights-of-way applications, this product requires use with

a nonionic surfactant. Use a nonionic surfactant with greater than 80 percent active ingredient and labeled for use with herbicides. Use of this product without surfactant will result in reduced performance. Refer to the "MIXING" section of this label for more information.

Mix 2 or more quarts of the nonionic surfactant per 100 gallons of spray solution (0.5 percent or more by spray volume). Do not use surfactant concentrations greater than 1.5 percent by spray volume with handgun applications or 2.5 percent by spray volume with broadcast applications.

Use higher rates of this product within the specified range for control or partial control of woody brush, trees and hard-to-control perennial herbaceous weeds. For best results, apply to actively growing woody brush and trees after full leaf expansion and before fall color and leaf drop. Increase rates within the specified range for control of perennial herbaceous weeds any time after emergence and before seedheads, flowers or berries appear.

Use the lower rates of this product within the specified range for control of annual herbaceous weeds and actively growing perennial herbaceous weeds after seedheads, flowers or berries appear. Apply to the foliage of actively growing annual herbaceous weeds any time after emergence.

This product has no herbicidal or residual activity in the soil. Where repeat applications are necessary, do not exceed 8 quarts of this product per acre per year.

### Tank Mixtures

Tank mixtures of this product may be used to increase the spectrum of vegetation controlled. When tank mixing, read and carefully observe the label claims, cautionary statements and all information on the labels of both products used. Use according to the most restrictive precautionary statements for each product in the mixture. Any listed rate of this product may be used in a tank mix.

**NOTE:** For forestry site preparation, make sure the tank-mix product is approved for use prior to planting the desired species. Observe planting interval restrictions. For side trimming treatments in utility rights-of-way, do not use tank mixtures with Arsenal® 2WSL. For side trimming treatments, use this product alone, or as a tank mixture with Garlon® 4 or Triclopyr 4 EC.

Product	Broadcast Rate	Use Sites
Arsenal® Applicators Concentrate or Imazapyr 4 SL**	2 to 16 fl. oz./A	Forestry site preparation
Chopper® or Rotary**	4 to 32 oz./A	Forestry site preparation
Escort®** or Metsulfuron Methyl DF**	½ to 3 ½ oz./A	Forestry site preparation
Oust® or SFM 75	1 to 4 oz./A	Forestry site preparation, Utility sites
Garlon® 3A*, Garlon® 4, Triclopyr 4 EC**, Triclopyr 3A**	1 to 4 qts.	Forestry site preparation, Utility sites
Arsenal® 2WSL**	4 to 32 fl. oz./A	Utility sites

Product	Spray-to-Wet Rates	Use Sites
Arsenal® Applicators Concentrate or Imazapyr 4 SL**	1/32 % to ½ % by volume	Forestry site preparation
Arsenal® 2WSL**	1/16 % to ½ % by volume	Utility sites

Product	Low Volume Directed Spray Rates	Use Sites
Arsenal® Applicators Concentrate or Imazapyr 4 SL**	1/8 % to ½ % by volume	Forestry site preparation
Arsenal® 2WSL**	1/8 % to ½ % by volume	Utility sites

\*Ensure that Garlon® 3A (or Triclopyr 3A) are thoroughly mixed with water according to label directions before adding this product. Have spray mixture agitating at the time this product is added to avoid spray compatibility problems.

\*\*Not registered in the state of California.

For control of herbaceous weeds, use the lower specified tank mixture rates. For control of dense stands or tough-to-control woody brush and trees, use the higher specified rates.

## FORESTRY CONIFER AND HARDWOOD RELEASE

### Directed Spray and Selective Equipment

This product may be applied as a directed spray or by using selective equipment in forestry conifer and hardwood sites, including Christmas tree plantations and silvicultural nurseries. Mix 2 to 6 quarts of a nonionic surfactant per 100 gallons of spray solution (0.5 to 1.5 percent by spray volume) for all spray applications. Use a surfactant with greater than 80 percent active ingredient.

In hardwood plantations, tank mixtures with Oust® (or SFM 75) may be used. In pine plantations, tank mixtures with Garlon® 4 (or Triclopyr 4 EC) or Arsenal® AC (or Imazapyr 4 SL) may be used. Comply with all site restrictions, forestry species limitations and precautions on the tank mix product label.

Avoid contact of spray, drift, mist or drips with foliage, green bark or non-woody surface roots of desirable species.

See all sections in the "APPLICATION EQUIPMENT AND TECHNIQUES" portion of this label for specific equipment and precautions.

For spray-to-wet applications, use a 1.5 percent spray solution for the control of undesirable woody brush and trees. To control herbaceous weeds, use a 0.75 to 1.5 percent solution.

# GLYPHOSATE 5.4

# Specimen Label

For low volume directed spray applications, use a 4 to 7.5 percent spray solution. Coverage should be uniform with at least 50 percent of the foliage contacted. Coverage of the top one-half of the unwanted vegetation is important.

For equipment calibrated for broadcast applications, use 1.5 to 7.5 quarts of this product per acre. Apply in 10 to 60 gallons of clean water per acre. Shielded application equipment may be used to avoid contact of the spray solution with desirable plants. Shields should be adjusted to prevent spray contact with the foliage or green bark of desirable vegetation.

Wiper application equipment may be used. Wiper applicators are devices that physically wipe appropriate amounts of this product directly onto the weed.

Equipment must be designed, maintained and operated to prevent the herbicide solution from contacting desirable vegetation. Operate this equipment at ground speeds no greater than 5 mph. Performance may be improved by reducing speed in areas of heavy weed infestations to ensure adequate wiper saturation. Better results may be obtained if 2 applications are made in opposite directions.

Avoid leakage or dripping onto desirable vegetation. Adjust height of applicator to ensure adequate contact with weeds. Keep wiping surfaces clean. Be aware that, on sloping ground, the herbicide solution may migrate, causing dripping on the lower end and drying of the wicks on the upper end of a wiper applicator.

Do not use wiper equipment when weeds are wet.

Mix only the amount of solution to be used during a 1-day period, as reduced activity may result from use of leftover solutions. Clean wiper parts immediately after using this product by thoroughly flushing with water.

Use a nonionic surfactant at a rate of 10 percent by volume of total herbicide solution with all wiper applications.

For Rope or Sponge Wick Applicators – Mix 3 quarts of this product in 2 gallons of water to prepare a 25 percent solution. Apply this solution to weeds listed in this section.

For Porous-Plastic Applicators – Solutions ranging from 25 to 100 percent of this product in water may be used in porous-plastic wiper applicators.

## **Broadcast Spray**

Except where specified below, use only where conifers have been established for more than one year.

**Application must be made after formation of final conifer resting buds in the fall or prior to initial bud swelling in the spring.**

Injury may occur to conifers treated for release, especially where spray patterns overlap or the higher rates are applied. Damage can be accentuated if applications are made when conifers are actively growing, or are under stress from drought, flood water, improper planting, insects, animal damage or diseases.

This product may require use with a surfactant. Unless otherwise directed in this section, use Entry™ II surfactant at 10 to 30 fluid ounces per acre. Follow the instructions under the "MIXING AND APPLICATION INSTRUCTIONS" portion of this label.

**For release of the following conifer species outside the Southeastern United States:**

## **Douglas fir**

*Pseudotsuga menziesii*

## **Fir**

*Abies spp.*

## **Hemlock\*\***

*Tsuga spp.*

## **Pines\***

*Pinus spp.*

## **Redwood, California\*\***

*Sequoia spp.*

## **Spruce**

*Picea spp.*

\*Includes all species except loblolly pine, longleaf pine, shortleaf pine or slash pine.

\*\*Use of a surfactant is not recommended for release of hemlock species or California redwood. In mixed conifer stands, injury to these species may result if a surfactant is used.

Apply 0.75 to 1.5 quarts of this product per acre as a broadcast spray.

**Note:** For release of Douglas fir with this product or specified tank mixtures of this product, Entry™ II or a nonionic surfactant recommended for over-the-top foliar sprays may be used. To avoid possible conifer injury, Entry™ II rates should not exceed 20 fluid ounces per acre at elevations above 1500 feet, or 10 fluid ounces per acre in the coastal range or at elevations below 1500 feet in Washington and Oregon. Nonionic surfactants may be used at 2 fluid ounces per acre at elevations above 1500 feet, or 1 fluid ounce per acre in the coastal range or at elevations below 1500 feet. Use of surfactant rates exceeding those listed above may result in unacceptable conifer injury and are not recommended. Ensure that the nonionic surfactant has been adequately tested for Douglas fir safety before use.

In Maine, up to 2.25 quarts per acre of this product or a tank mix with 1 oz./A of Arsenal® Applicators Concentrate (or Imazapyr 4 SL) may be used for the control of difficult species. To release Douglas fir, pine and spruce species at the end of the first growing season (except in California), apply 0.75 to 1.125 quarts of this product per acre. Ensure that the conifers are well hardened off.

**Oust® (or SFM 75) Tank Mixtures** – To release jack pine, white pine and white spruce, apply 0.75 to 1.5 quarts of this product with 1 to 3 ounces (1 to 1.5 for white pine) of Oust® (or SFM 75) per acre. Make applications to actively growing weeds as a broadcast spray over the top

of established conifers. Applications at these rates should be made after formation of conifer resting buds in the late summer or fall.

**Arsenal® Applicators Concentrate (or Imazapyr 4 SL) Tank Mixtures** – This product may be tank mixed with Arsenal® Applicators Concentrate (or Imazapyr 4 SL) for release of Douglas fir. Use 0.75 to 1.125 quarts of this product tank mixed with 2 to 6 fluid ounces of Arsenal® (or Imazapyr 4 SL) per acre. For release of balsam fir and red spruce, apply a mixture of 1.5 quarts of this product and 1 to 2.5 fluid ounces of Arsenal® Applicators Concentrate (or Imazapyr 4 SL) per acre.

**For release of the following conifer species in the Southeastern United States:**

## **Eastern white pine**

*Pinus strobus*

## **Loblolly pine**

*Pinus taeda*

## **Longleaf pine**

*Pinus palustris*

## **Shortleaf pine**

*Pinus echinata*

## **Slash pine**

*Pinus elliottii*

## **Virginia pine**

*Pinus virginiana*

Apply 1.125 to 1.875 quarts of this product per acre as a broadcast spray during late summer or early fall after the conifers have hardened off. For applications at the end of the first growing season, use 0.75 quart per acre of this product alone or in a recommended tank mixture.

**Arsenal® Applicators Concentrate (or Imazapyr 4 SL) Tank Mixtures** – Apply 0.75 to 1.5 quarts of this product with 2 to 16 fluid ounces of Arsenal® Applicators Concentrate (or Imazapyr 4 SL) per acre as a broadcast spray for conifer release. Use only on conifer species that are labeled for over-the-top sprays for both products. Use the higher specified rates for dense, tough-to-control woody brush and trees.

Read and carefully observe the label claims, cautionary statements and all information on the labels of each product used in these tank mixtures. Use according to the most restrictive precautionary statements for each product in the mixture.

---

## HERBACEOUS RELEASE

---

When applied as directed, this product plus listed residual herbicides provides postemergence control of the annual weeds and control or suppression of the perennial weeds listed in this label, and residual control of the weeds listed in the residual herbicide label. Make applications to actively growing weeds as a broadcast spray over the top of labeled conifers.

**Oust® (or SFM 75) Tank Mixtures** – To release loblolly pines, apply 12 to 18 fluid ounces of this product, plus 2 to 4 ounces of Oust® (or SFM 75) per acre. To release slash pines, apply 9 to 12 fluid ounces of this product, plus 2 to 4 ounces of Oust® (or SFM 75) per acre.

Mix up to 3.2 fluid ounces per acre of Entry™ II with the specified rate of this product plus Oust® (or SFM 75). Applications can be made over newly planted pines after the emergence of herbaceous weeds in the spring or early summer. Best results are obtained from applications made in May and June.

Weed control may be reduced if water volumes exceed 25 gallons per acre for these treatments.

**Atrazine Tank Mixtures** – To release Douglas fir, apply 0.75 quart of this product, plus 4 pounds active ingredient of atrazine per acre. Apply only over Douglas fir that has been established for at least one full growing season. Apply in the early Spring, usually mid-March through early April. Injury will occur if applications are made after bud swell in the Spring. Do not add surfactant to this mix for this use.

Always read and follow the manufacturer's label recommendations for all herbicides and surfactants used.

---

## INDUSTRIAL TURF

---

Apply 3 to 5 fluid ounces of this product per acre alone or in a recommended tank mixture. Use spray volumes of 10 to 40 gallons per acre.

When using this product, mix 2 quarts of a nonionic surfactant per 100 gallons of spray solution.

This product can be used for growth and seedhead suppression of:

Tall Fescue  
Smooth Brome

For best results, apply this product in a recommended tank mixture to actively growing turfgrasses after greenup in the spring of the year. For suppression of seedheads, applications must be made before boot-to-seedhead stage of development. Applications made from seedhead emergence until maturity may result in turf discoloration or injury.

After mowing or removal of seedheads, this product in a recommended tank mixture may also be used to suppress the growth of certain turfgrasses. Allow turf to recover from stress caused by heat, drought or mowing before making applications. Applications made to turf under stress may increase the potential for discoloration or injury.

## **Annual Grasses**

For growth suppression of some annual grasses such as annual ryegrass, wild barley and wild oats, apply 3 to 4 ounces of this product in 10 to 40 gallons of spray solution per acre. Applications should be made when annual grasses are actively growing and before the

# GLYPHOSATE 5.4

# Specimen Label

seedheads are in the boot stage of development. Treatments made after seedhead emergence may cause injury to the desired grasses.

## TANK MIXTURES FOR INDUSTRIAL TURFGRASSES

For the following tank mixtures, consult each product label for weeds controlled and the proper stage of application. Do not treat turf under stress.

### Tank Mixtures plus 2,4-D Amine

For additional weed control benefits, up to 1 quart per acre of 2,4-D amine may be added to the following tank mixtures.

#### TALL FESCUE

##### Glyphosate 5.4 plus Telar®

For suppression of tall fescue growth and seedheads, and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to ½ ounce of Telar® per acre.

This tank mixture can also be applied after mowing or removal of tall fescue seedheads for turf growth suppression and control or partial control of some annual weeds. Make only one of the above applications per growing season.

##### Glyphosate 5.4 plus Oust® or SFM 75

For suppression of tall fescue growth and seedheads, and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to ¼ ounce of Oust® or SFM 75 per acre.

##### Glyphosate 5.4 plus Escort® or Metsulfuron Methyl DF

This tank mixture can be applied after mowing or removal of tall fescue seedheads for turf growth suppression and control or partial control of some annual weeds. Use up to 1/3 ounce of Escort® or Metsulfuron Methyl DF per acre.

#### SMOOTH BROME

##### Glyphosate 5.4 plus Oust® or SFM 75

For suppression of smooth brome growth and seedheads and control or partial control of some annual weeds, apply this tank mixture after greenup and prior to boot-to-seedhead stage of development. Use up to ¼ ounce of Oust® or SFM 75 per acre.

## RELEASE OF BERMUDAGRASS OR BAHIAGRASS ON NONCROP SITES

### RELEASE OF DORMANT BERMUDAGRASS AND BAHIAGRASS

When applied as directed, this product will provide control or suppression of many winter annual weeds and tall fescue for effective release of dormant bermudagrass or bahiagrass. Make applications to dormant bermudagrass or bahiagrass.

For best results on winter annuals, treat when weeds are in an early growth stage (below 6 inches in height) after most have germinated. For best results on tall fescue, treat when fescue is in or beyond the 4 to 6-leaf stage.

#### WEEDS CONTROLLED

Rates for control or suppression of winter annuals and tall fescue are listed below. Apply the listed rates of this product in 10 to 25 gallons of water per acre plus 2 quarts nonionic surfactant per 100 gallons of total spray volume.

#### WEEDS CONTROLLED OR SUPPRESSED

NOTE: C = Control  
S = Suppression

WEED SPECIES	Glyphosate 5.4 oz/acre					
	6	9	12	18	24	48
<b>Barley, little</b> <i>Hordeum pusillum</i>	S	C	C	C	C	C
<b>Bedstraw, catchweed</b> <i>Galium aparine</i>	S	C	C	C	C	C
<b>Bluegrass, annual</b> <i>Poa annua</i>	S	C	C	C	C	C
<b>Chervil</b> <i>Chaerophyllum tainturieri</i>	S	C	C	C	C	C
<b>Chickweed, common</b> <i>Stellaria media</i>	S	C	C	C	C	C
<b>Clover, crimson</b> <i>Trifolium incarnatum</i>	•	S	S	C	C	C
<b>Clover, large hop</b> <i>Trifolium campestre</i>	•	S	S	C	C	C
<b>Speedwell, corn</b> <i>Veronica arvensis</i>	S	C	C	C	C	C
<b>Fescue, tall</b> <i>Festuca arundinacea</i>	•	•	•	•	S	S
<b>Geranium, Carolina</b> <i>Geranium carolinianum</i>	•	•	S	S	C	C
<b>Henbit</b> <i>Lamium amplexicaule</i>	•	S	C	C	C	C
<b>Ryegrass, Italian</b> <i>Lolium multiflorum</i>	•	•	S	C	C	C
<b>Vetch, common</b> <i>Vicia sativa</i>	•	•	S	C	C	C

\*These rates apply only to sites where an established competitive turf is present.

### RELEASE OF ACTIVELY GROWING BERMUDAGRASS

NOTE: USE ONLY ON SITES WHERE BAHIAGRASS OR BERMUDAGRASS ARE DESIRED FOR GROUND COVER AND SOME TEMPORARY INJURY OR YELLOWING

OF THE GRASSES CAN BE TOLERATED.

When applied as directed, this product will aid in the release of bermudagrass by providing control of annual species listed in the "Weeds Controlled" section in this label, and suppression or partial control of certain perennial weeds.

For control or suppression of those annual species listed in this label, use ¾ to 2 ¼ pints of this product as a broadcast spray in 10 to 25 gallons of spray solution per acre, plus 2 quarts of a nonionic surfactant per 100 gallons of total spray volume. Use the lower rate when treating annual weeds below 6 inches in height (or length of runner in annual vines). Use the higher rate as size of plants increases or as they approach flower or seedhead formation.

Use the higher rate for partial control or longer-term suppression of the following perennial species. Use lower rates for shorter-term suppression of growth.

Bahiagrass  
Dallisgrass  
Fescue (tall)  
Johnsongrass\*\*  
Trumpetcreeper\*  
Vaseygrass  
\*Suppression at the higher rate only.  
\*\*Johnsongrass is controlled at the higher rate.

Use only on well-established bermudagrass. Bermudagrass injury may result from the treatment but regrowth will occur under moist conditions. Do not make repeat applications in the same season since severe injury may result.

## BAHIAGRASS SEEDHEAD AND VEGETATIVE SUPPRESSION

When applied as directed in the "Noncrop Sites" section in this label, this product will provide significant inhibition of seedhead emergence and will suppress vegetative growth for a period of approximately 45 days with single applications and approximately 120 days with sequential applications.

Apply this product 1 to 2 weeks after full green-up of bahiagrass or after the bahiagrass has been mowed to a uniform height of 3 to 4 inches. Applications must be made prior to seedhead emergence. Apply 5 fluid ounces per acre of this product, plus 2 quarts of an approved nonionic surfactant per 100 gallons of total spray volume in 10 to 25 gallons of water per acre.

Sequential applications of this product plus nonionic surfactant may be made at approximately 45-day intervals to extend the period of seedhead and vegetative growth suppression. For continued vegetative growth suppression, sequential applications must be made prior to seedhead emergence.

Apply no more than 2 sequential applications per year. As a first sequential application, apply 3 fluid ounces of this product per acre plus nonionic surfactant. A second sequential application of 2 to 3 fluid ounces per acre plus nonionic surfactant may be made approximately 45 days after the last application.

### ANNUAL GRASS GROWTH SUPPRESSION

For growth suppression of some annual grasses, such as annual ryegrass, wild barley and wild oats growing in coarse turf on roadsides or other industrial areas, apply 3 to 4 ounces of this product in 10 to 40 gallons of spray solution per acre. Mix 2 quarts of a nonionic surfactant per 100 gallons of spray solution. Applications should be made when annual grasses are actively growing and before the seedheads are in the boot stage of development. Treatments made after seedhead emergence may cause injury to the desired grasses.

### CONDITION OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

To the extent consistent with applicable law, upon purchase or use of this product, purchaser and user agree to the following terms:

**Warranty:** Alligare, LLC (the Company) warrants that this product conforms to the chemical description on the label in all material respects and is reasonably fit for the purpose referred to in the directions for use, subject to the exceptions noted below, which are beyond the Company's control. To the extent consistent with applicable law, the Company makes no other representation or warranty, express or implied, concerning the product, including no implied warranty of merchantability or fitness for a particular purpose. No such warranty shall be implied by law, and no agent or representative is authorized to make any such warranty on the Company's behalf.

**Terms of Sale:** The Company's directions for use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, and the manner of use or application (including failure to adhere to label directions), all of which are beyond the Company's control. To the extent consistent with applicable law, all such risks are assumed by the user.

**Limitation of Liability:** To the extent consistent with applicable law, the exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damages, and in no event shall damages or any other recovery of any kind exceed the price of the product which caused the alleged loss, damage, injury or other claim. To the extent consistent with applicable law, under no circumstances shall the Company be liable for any special, indirect, incidental or consequential damages of any kind, including loss of profits or income, and any such claims are hereby waived. Some states do not allow the exclusion or limitation of incidental or consequential damages.

The Company and the seller offer this product, and the purchaser and user accept this product, subject to the foregoing warranty, terms of sale and limitation of liability, which may be varied or modified only by an agreement in writing signed on behalf of the Company by an authorized representative.

Arsenal® and Chopper® are registered trademarks of BASF.

Garlon® is a registered trademark of Dow AgroSciences LLC.

Escort®, Oust®, and Telar® are registered trademarks of E.I. duPont de Nemours and Company.

EPA 20121113

# MATERIAL SAFETY DATA SHEET

## Glyphosate 5.4

Alligare, LLC

Emergency Phone: Chemtrec 800-424-9300

Effective Date: April 6, 2007

EPA Reg. No. 81927-8

---

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME: Glyphosate 5.4**

Active Ingredient: Glyphosate (in the form of its isopropylamine salt)

Chemical Name: N-(phosphonomethyl)glycine

Chemical Formula:  $C_6H_{17}N_2O_5P$

**COMPANY IDENTIFICATION:**

Alligare, LLC

13 North 8<sup>th</sup> Street

Opelika, KS 36801

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

Glyphosate Isopropylamine Salt	CAS No. 38641-94-0	53.8%
--------------------------------	--------------------	-------

### 3. HAZARD IDENTIFICATION

#### EMERGENCY OVERVIEW

Harmful if inhaled. Avoid breathing vapor or spray mist. Avoid contact with eyes, skin or clothing. Remove and wash contaminated clothing before reuse.

**POTENTIAL HEALTH HAZARDS:**

**EYE –** Slight eye irritant. Undiluted product may cause pain, redness and tearing.

**SKIN -** May be slightly irritating to the skin.

**INGESTION -** No more than slightly toxic and no significant adverse health effects are expected to develop if a small amount (less than a mouthful) is swallowed.

**POTENTIAL PHYSICAL HAZARDS:**

May react with metals such as galvanized or mild steel to produce hydrogen gas, potentially forming a highly combustible gas mixture.

### 4. FIRST AID

**IF INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration (preferably by mouth-to-mouth) if possible.

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or a doctor.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information..

## 5. FIRE-FIGHTING MEASURES

**Flash point:** Not applicable

**Flammable Limits (LFL-UFL):** N/A

**Means of Extinction:** Use water spray, foam or dry chemical.

**Fire Fighting Instructions:** Evacuate area and fight fire from a safe distance. Approach from upwind to avoid hazardous vapors and decomposition products. A foam or dry chemical fire extinguishing system is preferred to prevent environmental damage from excessive water run off. If water is used, avoid heavy hose streams. If possible, dike and collect water used to fight fire to prevent/minimize run off.

**Firefighting Equipment:** Self-contained breathing apparatus with full face piece. Wear full firefighting turn-out gear (Bunker gear).

**Hazardous Combustion Products:** Carbon monoxide, nitrogen oxides, phosphorous oxides.

## 6. ACCIDENTAL RELEASE MEASURES

Clean up spills immediately. Isolate and post spill area. Wear protective clothing and personal protective equipment as prescribed in Section 8 "Exposure Controls/Personal Protection". Keep unprotected persons and animals out of area.

**SMALL SPILL:** Absorb spill with inert material such as dry sand, vermiculite or fuller's earth, then place in a chemical waste container.

**LARGE SPILL:** Dike large spills using absorbent or impervious material such as clay or sand. Recover and contain as much free liquid as possible for reuse. Allow absorbed material to solidify and scrape up for disposal. After removal, scrub the area with detergent and water and neutralize with dilute alkaline solutions of soda ash or lime.

## 7. HANDLING AND STORAGE

**Keep out of reach of children and animals.** Do not contaminate other pesticides, fertilizers, water, food or feed by storage or disposal. Wash thoroughly after handling this product.

Store above 10°F (-12°C) to keep product from crystallizing.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Engineering Controls:** To keep exposure to airborne contaminants below exposure limits, proper ventilation is required when handling or using this product. Local mechanical exhaust ventilation may be required. Facilities storing or using this material should be equipped with an eyewash facility and a safety shower.

**Eyewear:** Safety goggles are recommended when mixing, loading or cleaning equipment.

**Clothing:** Wear long-sleeved shirt and long pants and shoes plus socks.

**Gloves:** Waterproof gloves are recommended when mixing, loading or cleaning equipment.

**NOTE:** Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Pale yellow, clear viscous liquid

**Odor:** Slight amine odor

**pH:** 4.6

**Flashpoint (PMA-4):** N/A

**Specific Gravity:** 1.2016 g/ml

**Solubility in Water:** Soluble

## 10. STABILITY AND REACTIVITY

**CONDITIONS TO AVOID:** Avoid temperatures above 115°F (46°C) and below 25°F (-5°C)

**CHEMICAL STABILITY:** Product is normally stable. However, product may decompose if heated.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Heat and fire may result in thermal decomposition and the release of nitrogen oxides, phosphorous oxides and carbon monoxide.

**INCOMPATIBILITY WITH OTHER MATERIALS:** Strong oxidizers and bases, unlined and galvanized steel.

**POLYMERIZATION:** Will not occur.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE ORAL TOXICITY

Oral LD<sub>50</sub> (rat): > 5,000 mg/kg

### ACUTE DERMAL TOXICITY

Dermal LD<sub>50</sub> (rat, male): > 5,000 mg/kg

### ACUTE INHALATION TOXICITY

Inhalation LC<sub>50</sub> (rat): > 7.03 mg/L

### EYE IRRITANT

None to Slight

### SKIN IRRITATION

None to Slight

### SENSITIZATION

Guinea pig – Non-Sensitizer

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known.

### CARCINOGENICITY:

**ACGIH:** Not listed

**IARC:** Not listed

**NTP:** Not listed

**OSHA:** Not listed

**MUTAGENIC DATA:** No evidence of mutagenic effects during *in vivo* and *in vitro* assays.

**ADDITIONAL DATA:** None.

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL DATA:** Do not contaminate water when cleaning equipment or disposing of equipment washwaters. Treatment of aquatic weeds can result in oxygen depletion due to decomposition of dead plants. This oxygen loss can cause fish suffocation.

### **MAMMILIAN TOXICITY**

This product is considered to be relatively nontoxic to dogs and other domestic animals; however, ingestion of this product or large amounts of freshly sprayed vegetation may result in temporary gastrointestinal irritation (vomiting, diarrhea, colic, etc.). If such symptoms are observed, provide the animal with plenty of fluids to prevent dehydration. Call a veterinarian if symptoms persist for more than 24 hours.

### **FISH TOXICITY**

96 hour LC<sub>50</sub>, Rainbow trout – 8.2 µg/L (technical)

96 hour LC<sub>50</sub>, Bluegill – 5.8 µg/L (technical)

### **AVIAN TOXICITY**

Oral LD<sub>50</sub>, Bobwhite quail – > 3,800 mg/kg (technical)

**BEE TOXICITY:** Non-toxic.

## 13. DISPOSAL CONSIDERATIONS

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or in accordance with applicable Federal, state or local procedures. Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned, or destroyed.

**CONTAINER DISPOSAL:** For plastic containers, triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For refillable containers, do not reuse the container except for refill in accordance with a valid Alligare Repackaging or Toll Repackaging Agreement. If not refilled or returned to the authorized repackaging facility, triple rinse container, then puncture and dispose of in a sanitary landfill, or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For bulk containers, triple rinse (or equivalent) and wash with appropriate cleaners before reusing.

## 14. TRANSPORT INFORMATION

DOT PROPER SHIPPING NAME: Not regulated by DOT.

DOT HAZARD CLASS OR DIVISION: N/A

DOT UN/NA NUMBER: N/A

DOT PACKING GROUP: N/A

REPORTABLE QUANTITY: None

MARINE POLLUTANT: Not Listed

DOT EMERGENCY RESPONSE GUIDE: N/A

## 15. REGULATORY INFORMATION

### FIFRA –

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

OSHA HAZARD COMMUNICATION STANDARD STATUS: Not Regulated

SARA Title III – Section 302 Extremely Hazardous Substances  
Not listed

SARA Title III – Section 311/312 Hazard Categories  
Immediate

SARA Title III – Section 312 Threshold Planning Quantity

The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

SARA Title III – Section 313 Reportable Ingredients  
None

CERCLA –  
None

CALIFORNIA PROP 65 STATUS –  
Not listed

## 16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

### **DISCLAIMER:**

Alligare, LLC (the Company) warrants that this product conforms to the chemical description on the label in all material respects and is reasonably fit for the purpose referred to in the directions for use, subject to the exceptions noted below, which are beyond the Company's control. To the extent consistent with applicable law, the Company makes no other representation or warranty, express or implied, concerning the product, including no implied warranty of merchantability or fitness for a particular purpose. No such warranty shall be implied by law, and no agent or representative is authorized to make any such warranty on the Company's behalf.

To the extent consistent with applicable law, the exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damages, and in no event shall damages or any other recovery of any kind exceed the price of the product which caused the alleged loss, damage, injury or other claim. To the extent consistent with applicable law, under no circumstances shall the Company be liable for any special, indirect, incidental or consequential damages of any kind, including loss of profits or income, and any such claims are hereby waived. Some states do not allow the exclusion or limitation of incidental or consequential damages.



# IMAZAPYR 4 SL

## SPECIMEN LABEL

For the control of undesirable vegetation in forestry sites, aquatic sites, grass pasture, rangeland, fence rows, maintenance of wildlife openings, and industrial noncropland areas including railroad, utility, pipeline rights-of-way, utility plant sites, petroleum tank farms, pumping installations, storage areas, building perimeters, irrigation and non-irrigation ditchbanks, roads, transmission lines, and industrial bare ground areas.

In the State of New York, aquatic uses are not allowed.

### ACTIVE INGREDIENT:

Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)\* . . . . .52.6%

OTHER INGREDIENTS . . . . .47.4%

TOTAL . . . . .100.0%

\*Equivalent to 42.9% 2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid or 4 pounds acid per gallon.

EPA Reg. No. 81927-24 EPA Est. No. 37429-GA-001<sup>BT</sup>; 37429-GA-002<sup>BO</sup>; 81927-AL-001<sup>PM</sup>  
Letter(s) in lot number correspond(s) to superscript in EPA Est. No.

## KEEP OUT OF REACH OF CHILDREN CAUTION!/PRECAUCION!

**PRECAUCION AL USUARIO:** Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

FIRST AID	
<b>If swallowed:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li><b>DO NOT</b> induce vomiting unless told to do so by the poison control center or doctor.</li> <li><b>DO NOT</b> give anything by mouth to an unconscious person.</li> </ul>
<b>If in eyes:</b>	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If on skin or clothing:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If inhaled:</b>	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor for further treatment advice.</li> </ul>
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor or going for treatment. For medical emergencies involving this product, call 1-800-424-9300.	

Manufactured for: Alligare, LLC  
13 N. 8th Street • Opelika, AL 36801

### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION!** Harmful if swallowed or absorbed through skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove and wash contaminated clothing and wash before reuse.

### Personal Protective Equipment (PPE):

Some materials that are chemical-resistant to this product are listed below. If you want more options, follow the instructions for Category A on an EPA chemical-resistant category selection chart.

Mixers, loaders, applicators, and other handlers must wear:

- Long-sleeve shirt and long pants
- Shoes plus socks
- Chemical-resistant gloves for all mixers and loaders, plus applicators using handheld equipment

Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(6)].

### User Safety Recommendations:

- Users should wash hands with plenty of soap and water before eating, drinking, chewing gum, using tobacco or using the toilet.
- Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

This product is toxic to plants. Drift and run-off may be hazardous to plants in water adjacent to treated areas. Do not apply to water except as specified on this label. Treatment of aquatic weeds may result in oxygen depletion or loss due to decomposition of dead plants. Do not treat more than one-half the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatments along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas. Do not contaminate water when disposing of equipment washwaters or rinsate. See Directions for Use for additional precautions and requirements.

### PHYSICAL AND CHEMICAL HAZARDS

Spray solutions of **Alligare Imazapyr 4 SL** should be mixed, stored and applied only in stainless steel, fiberglass, plastic, and plastic-lined steel containers.

**DO NOT** mix, store or apply **Alligare Imazapyr 4 SL** or spray solutions of **Alligare Imazapyr 4 SL** in unlined steel (except stainless steel) containers or spray tanks.

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

**DO NOT** apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**Alligare Imazapyr 4 SL** should be used only in accordance with directions on the booklet label. Keep containers closed to avoid spills and contamination.

**Alligare Imazapyr 4 SL** may be applied using helicopters, ground operated sprayers, low-volume hand-operated spray equipment such as back-pack and pump-up sprayers, and tree injection equipment.

Observe all cautions and limitations in the labels of products used in combination with **Alligare Imazapyr 4 SL**.

### AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard. The requirements in this box apply to use on trees being grown for sale or other commercial use, or for commercial seed production, or for production of timber or wood products, or for research purposes.

**DO NOT** enter or allow worker entry into treated areas during the restricted entry interval (REI) of **48 hours**.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material
- Protective eyewear

### NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Do not enter treated areas until sprays have dried.

### IMPORTANT

**DO NOT** use on food or feed crops. **DO NOT** use on Christmas trees. **DO NOT** apply this product within one-half mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within one-half mile of an active potable water intake in a standing body of water, such as a lake, pond or reservoir. **DO NOT** apply to water used for irrigation except as described in **APPLICATION TO WATERS USED FOR IRRIGATION** section of this label. Keep from contact with fertilizers, insecticides, fungicides, and seeds to prevent unintentional exposure of desirable vegetation to this product. **DO NOT** apply or drain or flush equipment on or near sensitive desirable plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. **DO NOT** drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the treated soil may be washed or moved into contact with their roots. **DO NOT** apply to lawns. **DO NOT** side trim desirable vegetation with this product unless severe injury and plant death can be tolerated. Prevent drift of spray to desirable plants. Clean application equipment after using this product by thoroughly flushing with water.

# IMAZAPYR 4 SL

# Specimen Label

## RESISTANCE

When herbicides with the same mode of action are used repeatedly over several years to control the same weed species in the same application site, naturally occurring resistant weed biotypes may survive a correctly applied herbicide treatment, propagate and become dominant in that site. These resistant weed biotypes may not be adequately controlled. Using herbicides with different modes of action within these sites can aid in delaying the proliferation and possible dominance of herbicide resistant weed biotypes. It is advisable that each user of this product check with the local extension service for a current list of resistant weed biotypes.

## PRODUCT INFORMATION

**Alligare Imazapyr 4 SL** is an aqueous solution intended to be mixed in water and surfactants(s) and applied as a post-emergent spray for control of most annual and perennial grasses, broadleaf weeds, vines, brambles, hardwood brush, trees for forestry site preparation and release of conifers from woody and herbaceous competition. This product may be used for selective woody and herbaceous weed control in natural regeneration of certain conifers (see pine release). This product may also be mixed in water and used for stump and cut-stem treatment for control of unwanted woody vegetation. This product can be applied along forest roads to control undesirable vegetation. This product can be used for the control of undesirable vegetation along non-irrigation ditchbanks and for the establishment and maintenance of wildlife openings. See use directions for stump and cut stem treatments and herbaceous weed control and use directions for spot treatment of undesirable hardwood vegetation.

This product may be applied on forestry sites that contain areas of temporary surface water caused by the collection of water between planting beds, in equipment ruts, or in other depressions created by forest management activities, except in the states of California and New York. It is permissible to treat drainage ditches, intermittent drainage, intermittently flooded low lying sites, seasonally dry flood plains, and transitional areas between upland and lowland sites when no water is present, except in the states of California and New York. Only the edge of drainage ditches can be treated for drainage ditches that contain water. It is also permissible to treat marshes, swamps, and bogs after water has receded, as well as seasonally dry flood deltas, except in the states of California and New York.

When applied postemergence to weeds, **Alligare Imazapyr 4 SL** will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species. **Alligare Imazapyr 4 SL** will provide residual control of labeled weeds which germinate in the treated areas. Postemergence application with a surfactant is the method of choice in most situations, particularly for perennial weeds. For maximum affect, weeds should be growing vigorously at postemergence application and the spray solution should include a surfactant. **Alligare Imazapyr 4 SL** solutions may be broadcast by using ground or aerial equipment, or may be applied as a spot treatment by using low-volume techniques. In addition, **Alligare Imazapyr 4 SL** may be used for stump and cut stem treatments.

**Alligare Imazapyr 4 SL** controls vegetation by absorption through foliage and roots, from which it is translocated rapidly throughout the plant, where it accumulates in rapidly-growing meristematic tissue. Treated plants stop growing soon after spray treatment. Chlorosis (yellowing of plant tissue) first appears in the newest leaves and necrosis spreads from this point. In perennials, **Alligare Imazapyr 4 SL** is translocated into and kills the roots and underground storage tissues to prevent most regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species for several weeks after application and may take months for various woody plants, brush and trees.

## PRECAUTIONS FOR AVOIDING INJURY TO NON-TARGET PLANTS

Untreated desirable plants can be affected by root uptake of this product from treated soil. Injury or loss of desirable plants may result if this product is applied on or near desirable plants, on areas where their roots extend, or in locations where the treated soil may be washed or moved into contact with their roots. When making applications along shorelines where desirable plants may be present, caution should be exercised to avoid spray contact with their foliage or spray application to the soil in which they are rooted. Shoreline plants that have roots that extend into the water in an area where this product has been applied generally will not be adversely affected by uptake of the herbicide from the water.

If treated vegetation is to be removed from the application site, **DO NOT** use the vegetative matter as mulch or compost on or around desirable species.

Untreated trees can occasionally be affected by root uptake of this product through movement into the top soil. Injury or loss of desirable trees or other plants may result if this product is applied on or near desirable trees or other plants, on areas where their roots extend or in locations where the treated soil may be washed or moved into contact with their roots.

## SPRAY DRIFT MANAGEMENT

Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions.

Spray drift from applying this product may damage sensitive plants adjacent to the treatment area. Only apply this product when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, or non-target crops) is minimal. **DO NOT** apply when the following conditions exist that increase the likelihood of spray drift from intended targets: high or gusty winds, high temperatures, low humidity, temperature inversions.

The best drift management strategy and most effective way to reduce drift potential are to apply large droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see **WIND, TEMPERATURE AND HUMIDITY AND TEMPERATURE INVERSIONS**).

## Controlling Droplet Size:

• Volume – Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.

- Pressure – **DO NOT** exceed the nozzle manufacturer's recommended pressures. For many nozzle types, lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- Number of Nozzles – use the minimum number of nozzles that provide uniform coverage.
- Nozzle Orientation – Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is recommended practice. Significant deflection from the horizontal will reduce droplet size and increase drift potential.
- Nozzle Type – Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift. **DO NOT** use nozzles producing a mist droplet spray.

**Application Height:** Making applications at the lowest possible height (aircraft, ground driven spray boom) that is safe and practical reduces exposure of droplets to evaporation and wind.

**Swath Adjustment:** When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the application equipment (e.g. aircraft, ground) upwind. Swath adjustment distance should increase with increasing drift potential (higher wind, smaller droplets, etc.).

**Wind:** Drift potential is lowest between wind speeds of 3-10 mph. However, many factors, including droplet size and equipment type, determine drift potential at any given speed. Application should be avoided below 3 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

**Temperature and Humidity:** When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

**Temperature Inversions:** Drift potential is high during a temperature inversion. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud, which can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified 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.

**Wind Erosion:** Avoid treating powdery dry or light sandy soils when conditions are favorable for wind erosion. Under these conditions, the soil surface should first be settled by rainfall or irrigation.

**Aerial Application Methods and Equipment:** Use 2 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

## Aerial Applications:

1. Applicators are required to use a coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater for release heights below 10 feet; Applicators are required to use a very coarse or coarser droplet size or, if specifically using a spinning atomizer nozzle, applicators are required to use a VMD of 475 microns or greater for release heights above 10 feet; Applicators must consider the effects of nozzle orientation and flight speed when determining droplet size.
2. Applicators are required to use upwind swath displacement.
3. The boom length must not exceed 60% of the wingspan or 90% of the rotor blade diameter to reduce spray drift.
4. Applications with wind speed less than 3 mph and with wind speeds greater than 10 mph are prohibited.
5. Applications into temperature inversions are prohibited.

**Ground Application (Broadcast):** Use 5 or more gallons of water per acre. The actual minimum spray volume per acre is determined by the spray equipment used. Use adequate spray volume to provide accurate and uniform distribution of spray particles over the treated area and to avoid spray drift.

## Ground Boom Applications:

1. Applicators are required to use a nozzle height below 4 feet above the ground or plant canopy and coarse or coarser droplet size (ASABE S572) or, if specifically using a spinning atomizer nozzle, applicators are required to use a volume mean diameter (VMD) of 385 microns or greater.
2. Applications with wind speeds greater than 10 mph are prohibited.
3. Applications into temperature inversions are prohibited.

The use of treated waters on irrigated crops within 120 days is prohibited.

## ADJUVANTS

Postemergence applications of this product may require the addition of a spray adjuvant for optimum herbicide performance. Only use spray adjuvants that are labeled for the specific use sites. When using for conifer release treatments, please refer to the conifer release section of this label. The addition of a Chemical Producers and Distributors Associations (CPDA) certified adjuvant may increase control. A CPDA certified drift control agent may also be used.

**Nonionic Surfactants:** Use a nonionic surfactant at the rate of 0.25% v/v or higher (see manufacturer's label) of the spray solution (0.25% v/v is equivalent to 1 quart in 100 gallons). For best results, select a nonionic surfactant with a HLB (hydrophilic to lipophilic balance) ratio between 12 and 17 with at least 90% surfactant in the formulated product (alcohols, fatty

# IMAZAPYR 4 SL

# Specimen Label

acids, oils, ethylene glycol or diethylene glycol should not be considered as surfactants to meet the above requirements).

**Methylated Seed Oils or Vegetable Oil Concentrates:** Instead of a surfactant, a methylated seed oil or vegetable-based seed oil concentrate may be used at the rate of 1.5 to 2 pints per acre. When using spray volumes greater than 30 gallons per acre, methylated seed oil or vegetable based seed oil concentrates should be mixed at a rate of 1% of the total spray volume, or alternatively use a nonionic surfactant as described above. Research indicates that these oils may aid in product deposition and uptake by plants under moisture or temperature stress.

**Silicone Based Surfactants:** See manufacturer's label for specific rates instructions. Silicone-based surfactants may reduce the surface tension of the spray droplet, allowing greater spreading on the leaf surface as compared to conventional nonionic surfactants. However, some silicone-based surfactants may dry too quickly, limiting herbicide uptake.

**Invert emulsions:** This product can be applied as an invert emulsion. Consult the invert chemical label for proper mixing directions.

**Fertilizer/Surfactant Blends:** Nitrogen based liquid fertilizers such as 28%N, 32%N, 10-34-0 or ammonium sulfate, may be added at the rate of 2 to 3 pints per acre in combination with the specified rate of nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate. The use of fertilizers in a tank mix without a nonionic surfactant, methylated seed oil or vegetable/seed oil concentrate is not recommended.

**Other:** An antifoaming agent, spray pattern indicator or drift reducing agent may be applied at the product labeled rate if necessary or desired.

## WEEDS CONTROLLED

**Alligare Imazapyr 4 SL** provides postemergence control and some residual control of the following target weed species. The degree of control is both species and rate dependent. Use **Alligare Imazapyr 4 SL** only in accordance with the directions on this label.

### GRASSES:

The species of annual and perennial grasses controlled by **Alligare Imazapyr 4 SL** include the following:

Annual bluegrass (*Poa annua*)  
Bahigrass (*Paspalum notatum*)  
Barnyardgrass (*Echinochloa crus-galli*)  
Beardgrass (*Andropogon* spp.)  
Bermudagrass (*Cynodon dactylon*)<sup>1</sup>  
Big bluestem (*Andropogon gerardii*)  
Broadleaf signalgrass (*Brachiaria platyphylla*)  
Canada bluegrass (*Poa compressa*)  
Cattail (*Typha* spp.)  
Cheat (*Bromus secalinus*)  
Cogongrass (*Imperata cylindrica*)<sup>2</sup>  
Crabgrass (*Digitaria* spp.)  
Crowfootgrass (*Dactyloctenium aegyptium*)  
Dallisgrass (*Paspalum dilatatum*)  
Downy brome (*Bromus tectorum*)  
Fall panicum (*Panicum dichotomiflorum*)  
Feathertop (*Pennisetum villosum*)  
Fescue (*Festuca* spp.)  
Foxtail (*Setaria* spp.)  
Giant reed (*Arundo donax*)  
Goosegrass (*Eleusine indica*)  
Guineagrass (*Panicum maximum*)  
Italian ryegrass (*Lolium multiflorum*)  
Itchgrass (*Rottboellia exaltata*)  
Johnsongrass (*Sorghum halepense*)<sup>1</sup>  
Junglerice (*Echinochloa colonum*)  
Kentucky bluegrass (*Poa pratensis*)  
Lovegrass (*Eragrostis* spp.)<sup>1</sup>  
Orchardgrass (*Dactylis glomerata*)  
*Panicum* spp.  
Paragrass (*Brachiaria mutica*)  
Phragmites (*Phragmites australis*)  
Prairie cordgrass (*Spartina pectinata*)  
Prairie threeawn (*Aristida oligantha*)  
Quackgrass (*Agropyron repens*)  
Reed canarygrass (*Phalaris arundinacea*)  
Saltgrass (*Distichlis stricta*)  
Sand dropseed (*Sporobolus cryptandrus*)  
Sambur (*Cenchrus* spp.)  
Smooth brome (*Bromus inermis*)  
Sprangletop (*Leptochloa* spp.)  
Timothy (*Phleum pratense*)  
Torpedograss (*Panicum repens*)  
Vaseygrass (*Paspalum urvillei*)  
Wild barley (*Hordeum* spp.)  
Wild oats (*Avena fatua*)  
Wirestem muhly (*Muhlenbergia frondosa*)  
Witchgrass (*Panicum capillare*)  
Woolly cupgrass (*Eriochloa villosa*)

<sup>1</sup> Use higher labeled rates.

<sup>2</sup> Use minimum of 24 oz. per acre.

### BROADLEAF WEEDS:

The species of annual and perennial broadleaf weeds controlled by **Alligare Imazapyr 4 SL** include the following:

Arrowwood (*Pluchea sericea*)  
Broom snakeweed (*Gutierrezia sarothrae*)

Bull thistle (*Cirsium vulgare*)  
Burdock (*Medicago* spp.)  
Burdock (*Arctium* spp.)  
Camphorweed (*Heterothecha subaxillaris*)  
Canada thistle (*Cirsium arvense*)  
Carolina geranium (*Geranium carolinianum*)  
Carpetweed (*Mullugo verticillata*)  
Chickweed, mouseear (*Cerastium vulgatum*)  
Clover (*Trifolium* spp.)  
Cocklebur (*Xanthium strumarium*)  
Common chickweed (*Stellaria media*)  
Common ragweed (*Ambrosia artemisiifolia*)  
Cudweed (*Gnaphalium* spp.)  
Dandelion (*Taraxacum officinale*)  
Desert camelthorn (*Alhagi pseudalhagi*)  
Diffuse knapweed (*Centaurea diffusa*)  
Dock (*Rumex* spp.)  
Dogfennel (*Eupatorium capillifolium*)  
Fiddleneck (*Amsinckia intermedia*)  
Filaree (*Erodium* spp.)  
Fleabane (*Erigeron* spp.)  
Giant ragweed (*Ambrosia trifida*)  
Goldenrod (*Solidago* spp.)  
Gray rabbitbrush (*Chrysothamnus nauseosus*)  
Henbit (*Lamium alexicaule*)  
Hoary vervain (*Verbena stricta*)  
Horseweed (*Coryza canadensis*)  
Indian mustard (*Brassica juncea*)  
Japanese bamboo/knotweed (*Polygonum cuspidatum*)  
Knotweed, prostrate (*Polygonum aviculare*)  
Kochia (*Kochia scoparia*)  
Lambsquarters (*Chenopodium album*)  
Little mallow (*Malva parviflora*)  
Milkweed (*Asclepias* spp.)  
Miners lettuce (*Montia perfoliata*)  
Mullein (*Verbascum* spp.)  
Nettleleaf goosefoot (*Chenopodium murale*)  
Oxeye daisy (*Chrysanthemum leucanthemum*)  
Pepperweed (*Lepidium* spp.)  
Pigweed (*Amaranthus* spp.)  
Plantain (*Plantago* spp.)  
Pokeweed (*Phytolacca americana*)  
Primrose (*Oenothera kunthiana*)  
Puncturevine (*Tribulus terrestris*)  
Purple loosestrife (*Lythrum salicaria*)  
Purslane (*Portulaca* spp.)  
Pusley, Florida (*Richardia scabra*)  
Rocket, London (*Sisymbrium irio*)  
Rush skeletonweed (*Chondrilla juncea*)  
Russian knapweed (*Centaurea repens*)  
Russian thistle (*Salsola kali*)  
Saltbush (*Atriplex* spp.)  
Shepherd's purse (*Capsella bursa-pastoris*)  
Silverleaf nightshade (*Solanum elaeagnifolium*)  
Smartweed (*Polygonum* spp.)  
Sorell (*Rumex* spp.)  
Sowthistle (*Sonchus* spp.)  
Spurge, annual (*Euphorbia* spp.)  
Stinging nettle (*Urtica dioica*)  
Sunflower (*Helianthus* spp.)  
Sweet clover (*Melilotus* spp.)  
Tansymustard (*Descurainia pinnata*)  
Texas thistle (*Cirsium texanum*)  
Velvetleaf (*Abutilon theophrasti*)  
Western ragweed (*Ambrosia psilostachya*)  
Wild carrot (*Daucus carota*)  
Wild lettuce (*Lactuca* spp.)  
Wild parsnip (*Pastinaca sativa*)  
Wild turnip (*Brassica campestris*)  
Woollyleaf bursage (*Ambrosia grayi*)  
Yellow starthistle (*Centaurea solstitialis*)  
Yellow woodsorrel (*Oxalis stricta*)

### VINES AND BRAMBLES:

The species of vines and brambles controlled by **Alligare Imazapyr 4 SL** include the following:

Field bindweed (*Convolvulus arvensis*)  
Hedge bindweed (*Calystegia sepium*)  
Honeysuckle (*Lonicera* spp.)<sup>1</sup>  
Morningglory (*Ipomoea* spp.)  
Poison ivy (*Rhus radicans*)  
Redvine (*Brunnichia cirrhosa*)  
Trumpet creeper (*Campsis radicans*)  
Virginia creeper (*Parthenocissus quinquefolia*)  
Wild buckwheat (*Polygonum convolvulus*)  
Wild grape (*Vitis* spp.)  
Wild rose (*Rosa* spp.)<sup>1</sup>  
Including: Multiflora rose (*Rosa multiflora*)  
Macartney rose (*Rosa bracteata*)

<sup>1</sup> Use higher labeled rates.

# IMAZAPYR 4 SL

# Specimen Label

## WOODY BRUSH AND TREES:

The species of woody brush and trees controlled by **Alligare Imazapyr 4 SL** include the following:

Alder (*Alnus* spp.)  
American beech (*Fagus grandifolia*)  
Ash (*Fraxinus* spp.)<sup>1</sup>  
Aspen (*Populus* spp.)  
Autumn olive (*Elaeagnus umbellata*)  
Bald cypress (*Taxodium distichum*)  
Bigleaf Maple (*Acer macrophyllum*)  
Birch (*Betula* spp.)<sup>1</sup>  
Black oak (*Quercus kelloggii*)  
Blackgum (*Nyssa sylvatica*)<sup>2</sup>  
Boxelder (*Acer negundo*)  
Brazilian peppertree (*Schinus terebinthifolius*)  
Ceanothus (*Ceanothus* spp.)  
Cherry (*Prunus* spp.)<sup>2</sup>  
Chinaberry (*Melia azedarach*)  
Chinese tallow-tree (*Sapium sebiferum*)  
Chinquapin (*Castanopsis chrysophylla*)  
Cottonwood (*Populus trichocarpa* and *Populus deltoides*)  
Cypress (*Taxodium* spp.)  
Dogwood (*Cornus* spp.)<sup>1</sup>  
Eucalyptus (*Eucalyptus* spp.)  
Hawthorn (*Crataegus* spp.)  
Hickory (*Carya* spp.)<sup>1</sup>  
Huckleberry (*Gaylussacia* spp.)  
*Lyonia* spp.  
Including: Fetterbush (*Lyonia lucida*)  
Staggerbush (*Lyonia mariana*)  
Madrone (*Arbutus menziesii*)  
Maple (*Acer* spp.)  
Melaleuca (*Melaleuca quinquenervia*)  
Mulberry (*Morus* spp.)<sup>3</sup>  
Oak (*Quercus* spp.)<sup>2</sup>  
Persimmon (*Diospyros virginiana*)<sup>2</sup>  
Poison oak (*Rhus diversiloba*)  
Popcorn-tree (*Sapium sebiferum*)  
Poplar (*Populus* spp.)  
Privet (*Ligustrum vulgare*)  
Red Alder (*Alnus rubra*)  
Red Maple (*Acer rubrum*)  
Saltcedar (*Tamarix pentandra*)  
Sassafras (*Sassafras albidum*)  
Sourwood (*Oxydendrum arboreum*)<sup>2</sup>  
Sumac (*Rhus* spp.)  
Sweetgum (*Liquidambar styraciflua*)  
Sycamore (*Platanus occidentalis*)  
Tanoak (*Lithocarpus densiflorus*)<sup>1</sup>  
TITI (*Cyrilla racemiflora*)<sup>2</sup>  
Tree of heaven (*Ailanthus altissima*)  
*Vaccinium* spp.  
Including: Blueberry (*Vaccinium* spp.)  
Sparkleberry (*Vaccinium arboreum*)

Willow (*Salix* spp.)

Yellow poplar (*Liriodendron tulipifera*)<sup>1</sup>

<sup>1</sup> Use higher labeled rates.

<sup>2</sup> Best control with applications prior to formation of fall leaf color.

<sup>3</sup> The degree of control may be species dependent.

<sup>4</sup> For Water oak (*Quercus nigra*), Laurel oak (*Q. lauriflora*), Willow oak (*Q. phellos*) and Live oak (*Q. virginiana*) use higher labeled rates.

<sup>5</sup> Suppression only.

## MIXING AND APPLICATION INSTRUCTIONS

### HELICOPTER EQUIPMENT:

Thoroughly mix the specified amount of **Alligare Imazapyr 4 SL** in 5 to 30 gallons of water per acre and apply uniformly with properly calibrated helicopter equipment. Use a nonionic surfactant to improve weed control. A drift control agent may be used at its specified label rate. An anti-foam agent may be added, if needed. Exercise all precautions to minimize or eliminate spray drift. Avoid applications during windy or gusty conditions. Use of a Microfoil™ boom, Thru-Valve™ boom, raindrop nozzles, controlled droplet booms and nozzle configurations is recommended. Maintain adequate buffer zones to minimize potential impacts to desirable vegetation.

**IMPORTANT: DO NOT** make applications by fixed wing aircraft.

Thoroughly clean mixing and application equipment by thoroughly flushing with water immediately after using this product. Prolonged exposure of uncoated/unpainted steel (except stainless steel) surfaces to this product may result in corrosion and failure of the exposed part. Maintaining painted surfaces may prevent corrosion.

### GROUND EQUIPMENT:

Thoroughly mix and apply the specified amount of **Alligare Imazapyr 4 SL** in 5 to 100 gallons of water per acre. Use a nonionic surfactant to enhance weed control. A drift control agent and an anti-foam agent may also be added at the specified label rates, if needed. If desired, a spray pattern indicator may be used at the specified label rate. To minimize spray drift, select proper nozzles to avoid spraying a fine mist, use pressures less than 50 psi and **DO NOT** spray under gusty or windy conditions (also refer to **SPRAY DRIFT MANAGEMENT** section). Maintain adequate buffer zones to minimize potential impacts to desirable vegetation.

For best results, apply the spray solution to uniformly cover the foliage of the undesirable vegetation to be controlled.

Clean mixing and application equipment immediately after using this product by thoroughly flushing with water.

## FOLIAR APPLICATIONS

### Low Volume Foliar:

For low volume, select proper nozzles to avoid over-application. Moisten, but do not drench target vegetation causing spray solution to run off. Proper application is critical to ensure desirable results. Best results are achieved when the spray covers the crown and approximately 70 percent of the plant.

### DIRECTED FOLIAR OR SPOT SPRAY EQUIPMENT:

For directed or spot spray applications with helicopter, ground equipment or low-volume hand-operated spray equipment, thoroughly mix 1.0 to 5.0% **Alligare Imazapyr 4 SL** by volume (v/v) in water with at least 1/4% nonionic surfactant by volume, according to the table below.

## MIXING GUIDE FOR ALLIGARE IMAZAPYR 4 SL

SOLUTION VOLUME	Alligare Imazapyr 4 SL CONCENTRATION (%)			NONIONIC SURFACTANT
	1.0	2.5	5.0	
1 gallon	1-1/3 oz.	3-1/3 oz.	6-2/3 oz.	1/3 oz.
5 gallons	6-2/3 oz.	1 pint	2 pints	1-2/3 oz.
10 gallons	13-1/3 oz.	2 pints	4 pints	3-1/3 oz.
25 gallons	2 pints	5 pints	10 pints	8 oz.
100 gallons	1 gal.	2.5 gal.	5 gal.	2 pints

2 tablespoons = 1 fluid ounce

For optimum performance and efficacy, apply spray to uniformly cover the target vegetation foliage. Direct spray to avoid contacting desirable conifers. Avoid direct application to desired plant species as injury may occur.

**IMPORTANT: DO NOT** over apply to cause run-off from treated foliage. **DO NOT** exceed specified dosage rate per acre.

### CUT STUBBLE:

This product can be applied within 2 weeks after mechanical mowing or cutting of brush. To suppress or control resprouting, uniformly apply a spray solution of this product at the rate of 1 to 2 pints per acre to the cut area. This product may be tank-mixed with picloram, or equivalent labeled product for this use to aid in control or suppression of brush. The addition of 5% (v/v) or more of a penetrating agent can aid in uptake through the bark or exposed roots.

Cut stubble applications are made to the soil and cut brush stumps. This type of application may increase ground cover injury. However, vegetation will recover. Making applications of this product directly to the soil can increase potential root uptake causing injury or death of desirable trees.

Efficacy can be increased and root uptake by desirable vegetation can be decreased if the brush is allowed to regrow and the foliage is treated. See the Brush Control section of this label.

## STUMP AND CUT STEM TREATMENTS

**Alligare Imazapyr 4 SL** will control undesirable woody vegetation in forest management when applied as a water solution to the cambium area of freshly-cut stump surfaces or to cuts on the stem of the target woody vegetation. Applications can be made at any time of the year except during periods of heavy sap flow in the spring. Tree injection and cut stem treatments are most effective in late summer and early fall. **DO NOT** over-apply to cause run-off or puddling of spray solution.

### MIXING:

Mix **Alligare Imazapyr 4 SL** as either a concentrate or dilute solution for stump and cut stem treatments. Apply dilute solutions to the surface of the stump or to cuts on the stem of the target woody vegetation. Apply concentrate solutions to cuts on the stem. Use of the concentrate solutions permits application to fewer cuts on the stem, especially for large diameter trees. Follow the application directions below to determine proper application techniques for each type of solution.

To prepare a dilute solution, mix 4 to 6 fluid ounces of **Alligare Imazapyr 4 SL** with one gallon of water. Except in the state of California, if temperatures are such that freezing of the spray mixture may occur, antifreeze (ethylene glycol) may be added according to manufacturer's label to prevent freezing. The use of a surfactant or penetrating agent may improve herbicide uptake through partially callused cambium tissue.

To prepare a concentrated solution, use undiluted **Alligare Imazapyr 4 SL** product or mix up to 75% water, by volume.

### APPLICATION WITH DILUTE SOLUTIONS:

**For cut stump treatments:** Spray or brush the solution onto the cambium area of the freshly cut stump surface. Thoroughly wet the entire cambium area (the wood next to the bark of the stump).

**For tree injection treatments:** Using standard injection equipment, apply 1 milliliter of solution at each injection site around the tree with no more than one inch intervals between cut edges. Insure that the injector completely penetrates the bark at each injection site.

**For frill or girdle treatments:** Use a hatchet, machete or similar implement to make cuts through the bark around the tree at intervals no more than two inches between cut edges. Spray or brush **Alligare Imazapyr 4 SL** solution into each cut until thoroughly wet.

### APPLICATION WITH CONCENTRATED SOLUTIONS:

**For tree injection treatments:** Using standard injection equipment, apply 1 milliliter of solu-

# IMAZAPYR 4 SL

# Specimen Label

tion at each injection site. Make at least one injection cut for every three inches of Diameter at Breast Height (DBH) on the target tree. For example, a three inch DBH tree will receive 1 injection cut while a six inch DBH tree will receive 2 injection cuts. On trees requiring more than one injection site, place the injection cuts at approximately equal intervals around the tree.

**For hack and squirt treatments:** Use a hatchet, machete or similar implement to make cuts at a downward angle completely through the bark and cambium at approximately equal intervals around the tree. Make at least one cut for every 3 inches of DBH on the target tree as described above, using a squirt bottle, syringe, or similar device apply about 1 milliliter of concentrate solution into each cut, ensuring that the solution does not run out of the cut.

**NOTE:** Injury may occur to desirable woody plants if the shoots extend from the same root system or their root systems are grafted to those of the treated tree.

## SITE PREPARATION TREATMENTS

**Alligare Imazapyr 4 SL** will control labeled grass and broadleaf weeds, vines, brambles, woody brush and trees on forest sites when applied before replanting the following conifer crop species:

Crop Species	Rate (fl oz./A)
Loblolly Pine ( <i>Pinus taeda</i> )	24 - 40
Loblolly X Pitch Hybrid	24 - 40
Longleaf Pine ( <i>Pinus palustris</i> )	24 - 40
Shortleaf Pine ( <i>Pinus echinata</i> )	24 - 40
Virginia Pine ( <i>Pinus virginiana</i> )	24 - 40
Slash Pine ( <i>Pinus elliotii</i> )	20 - 32
Douglas-Fir ( <i>Pseudotsuga menziesii</i> )	12 - 24
Coastal Redwood ( <i>Sequoia sempervirens</i> )	12 - 24
Western Hemlock ( <i>Tsuga heterophylla</i> )	12 - 24
California Red Fir ( <i>Abies magnifica</i> )	12 - 20
California White Fir ( <i>Abies concolor</i> )	12 - 20
Jack Pine ( <i>Pinus banksiana</i> )	12 - 16
Lodgepole Pine ( <i>Pinus contorta</i> )	12 - 16
Pitch Pine ( <i>Pinus rigida</i> )	12 - 16
Ponderosa Pine ( <i>Pinus ponderosa</i> )	12 - 16
Sugar Pine ( <i>Pinus lambertiana</i> )	12 - 16
White Pine ( <i>Pinus strobus</i> )	12 - 16
Black Spruce ( <i>Picea mariana</i> )	12 - 16
Red Spruce ( <i>Picea rubens</i> )	12 - 16
White Spruce ( <i>Picea glauca</i> )	12 - 16

Apply the specified rate of **Alligare Imazapyr 4 SL** per acre as a broadcast foliar spray for long-term control of labeled woody plants and residual control of herbaceous annual and perennial weeds. Within 4 to 6 weeks of treatment, herbaceous weeds will be controlled and may provide fuel to facilitate a site preparation burn for controlling conifers or other species tolerant to the herbicide.

For helicopter applications, apply the specified rate of **Alligare Imazapyr 4 SL** per acre in 5 to 30 gallons total spray solution. For mechanical ground sprays and backpack applications, apply the specified rate of **Alligare Imazapyr 4 SL** per acre in 5 to 100 gallons total spray solution. Use at least 1/2% percent by volume nonionic surfactant. Use the higher label rates of **Alligare Imazapyr 4 SL** and higher spray volumes to control especially dense, multi-layered canopies of hardwood stands or difficult to control species.

Tank mixes may be necessary to control conifers and other species that are tolerant to **Alligare Imazapyr 4 SL**. Observe all precautions and restrictions on the tank mix partner label. Always follow the most restrictive label. NOTE that some other products labeled for forest site preparation may kill plants such as legumes and blackberry that are desirable for wildlife habitat.

Where quick initial brown out (deadening of foliage) is desired for burning, apply a tank mixture of 16 to 32 fluid oz. **Alligare Imazapyr 4 SL** plus 16 to 64 fluid oz. Accord® or 16 to 48 fluid oz. Garlon 4™ per acre. To control seedling pines, apply 16 to 32 fluid oz. **Alligare Imazapyr 4 SL** plus 3 to 4 quarts Accord®. For site preparation, rates less than 24 oz. **Alligare Imazapyr 4 SL** will provide suppression of hardwood brush and trees; however, some resprouting may occur.

**DO NOT** plant seedlings of Black Spruce (*Picea mariana*) or White Spruce (*Picea glauca*) on sites that have been broadcast treated with **Alligare Imazapyr 4 SL** or into the treated zone of spot or banded applications for at least three months after treatment or injury may occur.

## HERBACEOUS WEED CONTROL

Use **Alligare Imazapyr 4 SL** for selective weed control in the following conifers:

Crop Species	Rate (fl. oz./A)
Loblolly Pine ( <i>Pinus taeda</i> )	6 - 10
Loblolly X Pitch Hybrid	6 - 10
Virginia Pine ( <i>Pinus virginiana</i> )	6 - 10
Longleaf Pine ( <i>Pinus palustris</i> ) <sup>1</sup>	4 - 6
Shortleaf Pine ( <i>Pinus echinata</i> ) <sup>1</sup>	4 - 6
Slash Pine ( <i>Pinus elliotii</i> ) <sup>1</sup>	4 - 6
Douglas-Fir ( <i>Pseudotsuga menziesii</i> ) <sup>1</sup>	4 - 6

<sup>1</sup> Use of surfactant is not recommended.

**Alligare Imazapyr 4 SL** may be broadcast, banded over tree rows or directed for release of young conifers from herbaceous weeds. To diminish the possibility of conifer injury, **DO NOT** apply **Alligare Imazapyr 4 SL** when conifers are under stress from drought, diseases, animal

or winter injury, planting shock or other stresses that may reduce conifer vigor. Broadcast applications may be made by helicopter, ground or backpack sprayer. For best results, apply **Alligare Imazapyr 4 SL** to newly emerged weeds. Use the higher labeled rates for hard-to-control weeds. Where herbaceous weeds have over-topped conifer seedlings, add a nonionic surfactant at up to 1/4% of the spray solution volume to improve weed control (except for Slash Pine, Longleaf Pine, and Douglas-fir). Conifers in the treated area may exhibit minor growth inhibition, especially when treatments are applied during periods of active conifer growth.

**Alligare Imazapyr 4 SL** may also be applied by backpack or hand-held sprayers to control herbaceous weeds around individual conifer seedlings. Mix 0.4 to 0.6 fluid oz. **Alligare Imazapyr 4 SL** and 0.2 fluid oz. nonionic surfactant per gallon of water. Direct the spray to the weeds and minimize spray contact with conifer seedlings to avoid seedling damage. **DO NOT** exceed the maximum labeled rates listed above.

**Alligare Imazapyr 4 SL** can also be tank mixed with a sulfometuron-methyl product to broaden the weed control spectrum. For loblolly pine only, apply 4 to 6 fluid oz. **Alligare Imazapyr 4 SL** plus a sulfometuron-methyl product at the specified label rate per acre. Application of **Alligare Imazapyr 4 SL** plus Oust® to other conifer species, however, may cause growth suppression.

## CONIFER RELEASE TREATMENTS

**Alligare Imazapyr 4 SL** may be applied as a broadcast or directed spray to suppress the labeled brush, tree and herbaceous weed species. In conifer stands of all ages, use directed low-volume sprays onto unwanted vegetation and avoid direct contact to the conifers. **DO NOT** exceed the maximum labeled rates listed below.

Use broadcast applications of **Alligare Imazapyr 4 SL** for release of the following conifers from hardwood competition:

Crop Species	Rate (fl. oz./A)
Loblolly Pine ( <i>Pinus taeda</i> ) <sup>1</sup>	12 - 20
Loblolly X Pitch Hybrid <sup>2</sup>	12 - 20
Virginia Pine ( <i>Pinus virginiana</i> ) <sup>3</sup>	12 - 20
Longleaf Pine ( <i>Pinus palustris</i> )	12 - 16
Pitch Pine ( <i>Pinus rigida</i> )	12 - 16
Shortleaf Pine ( <i>Pinus echinata</i> )	12 - 16
Slash Pine ( <i>Pinus elliotii</i> )	12 - 16
White Pine ( <i>Pinus strobus</i> ) <sup>3</sup>	8 - 16
California Red Fir ( <i>Abies magnifica</i> )	8 - 12
California White Fir ( <i>Abies concolor</i> )	8 - 12
Lodgepole Pine ( <i>Pinus contorta</i> ) <sup>4</sup>	8 - 12
Douglas-Fir ( <i>Pseudotsuga menziesii</i> ) <sup>4</sup>	8 - 12
Jack Pine ( <i>Pinus banksiana</i> ) <sup>4</sup>	6 - 12
Black Spruce ( <i>Picea mariana</i> ) <sup>4</sup>	6 - 12
Red Spruce ( <i>Picea rubens</i> ) <sup>4</sup>	6 - 12
White Spruce ( <i>Picea glauca</i> ) <sup>4</sup>	6 - 12

<sup>1</sup> **DO NOT** make applications to white pine stands younger than three years old. To minimize potential injury to White Pine, release treatments should not be made prior to July 15.

<sup>2</sup> Applications should be made after formation of final conifer resting buds in the fall or height growth inhibition may occur.

<sup>3</sup> Mid-rotation release: For broadcast applications below the pine canopy in established stands of Loblolly Pine, Loblolly X pitch hybrid, and Virginia Pine use 16-32 oz. product per acre. For mid-rotation release of other species use rates listed above.

Apply the specified rate of **Alligare Imazapyr 4 SL** per acre when applying broadcast sprays by helicopter or ground spray equipment. Refer to mixing and application instructions for proper spray volumes. A nonionic surfactant may be added but at no more than 1/4% by volume of the finished spray. Use the higher label rates of **Alligare Imazapyr 4 SL** when controlling especially dense stands or hard to control species.

Conifers may exhibit some minor growth inhibition when release treatments are made during periods of active conifer growth. To minimize potential growth inhibition, **DO NOT** make broadcast applications to conifer stands, except loblolly pine, before the end of the second growing season and, then, not until late in the growing season. To reduce the possibility of conifer injury, **DO NOT** apply **Alligare Imazapyr 4 SL** when conifers are under stress from drought, diseases, animal or winter injury, or other stresses that reduce conifer vigor.

**For release of loblolly pine seedlings during the first growing season following planting or for one-year-old natural loblolly pine regeneration:** For one-year-old loblolly pine release, apply 12-20 fluid oz./A **Alligare Imazapyr 4 SL** after July 15. Use rates below 16 fluid oz./A for growth suppression of hardwoods; however, some hardwood resprouting should be expected.

**For release of 2-to-5 year old slash pine and longleaf pine from undesirable woody plants:** Broadcast release treatments over the top of pines after August 15 and only in stands 2 to 5 years old. **DO NOT** add surfactant to the spray solution and use the lower labeled rates on areas with sandy soils.

**For release of slash pine over 5 years old by aerial application:** Apply **ONLY** after September 15 after height growth has stopped and buds have set. Use 12 to 14 fluid oz. **Alligare Imazapyr 4 SL** per acre but only 12 fluid oz on areas with sandy soils. **DO NOT** add surfactant to the spray solution. **DO NOT** over apply by overlapping the spray pattern or dressing up around the edges of a tract. Since this treatment may cause some inhibition in height growth or terminal dieback, it should not be used if such affects are unacceptable.

**For use ONLY in Maine for release of Jack Pine, Black Spruce, Red Spruce and White Spruce:** For hardwood growth suppression, apply **Alligare Imazapyr 4 SL** at rates less than 6 fluid oz. per acre when tank mixed with glyphosate. Use a nonionic surfactant at rates greater than 0.25% v/v. The use of **Alligare Imazapyr 4 SL** with more than 0.25% v/v non-

# IMAZAPYR 4 SL

# Specimen Label

ionic surfactant can result in conifer growth inhibition or mortality, and should not be used if this type of conifer injury is unacceptable.

The use of **Alligare Imazapyr 4 SL** rates below 6 oz./A are intended for hardwood brush growth suppression and hardwood brush resprouting should be expected.

## USE FOR SPOT TREATMENT OF UNDESIRABLE BRUSH AND HARDWOOD VEGETATION

Apply Alligare Imazapyr 4 SL as a directed foliar or cut stem application in conifer stands of all ages for the conifer species listed above. Mix and apply as described above for directed foliar or cut stem applications. **DO NOT** exceed the maximum labeled rates listed above. Cut stem applications may be used for spot treatment of undesirable hardwoods in Ponderosa Pine stands using 12 oz. or less of product per acre.

Avoid direct spray contact to desired plant species as injury may occur. Injury may occur to non-target or desirable hardwoods or conifers if they extend from the same root system or their root systems are grafted to those of the treated tree or if their roots extend into the treated zone.

## LATE ROTATION VEGETATION CONTROL IN WESTERN CONIFERS

In California, the Pacific Northwest and Inland Northwest, broadcast aerial applications of this product up to 24 fl. oz./A are permissible in conifer stands that are targeted for harvesting the year following treatment. Use minimum spray volume of 15 gallons per acre. Do not use this treatment if conifer injury or mortality cannot be tolerated.

## BAG AND SPRAY APPLICATIONS FOR CONIFER RELEASE

In Douglas fir and Ponderosa pine stands, broadcast applications of this product up to 16 fl. oz./A are permissible when the trees are covered by bags prior to the application. The bags must prevent the spray mix from contacting the conifer foliage. On sites with coarse textured soils (e.g., decomposed granite, pumice, sandy or rocky sites) or low levels of soil organic matter (generally 5% or less) significant conifer growth inhibition and mortality is possible. Do not use this treatment on these types of sites if conifer growth inhibition and mortality cannot be tolerated.

## AQUATIC USE SECTION

### USE PRECAUTIONS AND RESTRICTIONS FOR AQUATICS

**In the state of New York, Aquatic Uses are Not Allowed.**

Applications may only be made for the control of undesirable emergent and floating aquatic vegetation in and around standing and flowing water, including estuarine and marine sites. Applications may be made to control undesirable wetland, riparian and terrestrial vegetation growing in or around surface water.

Aerial application is restricted to helicopter only.

Application of this product can only be made by federal or state agencies, such as Water Management District personnel, municipal officials and the U.S. Army Corps of Engineers, or those applicators who are licensed or certified as aquatic pest control applicators and are authorized by the state or local government.

**Applications to private water:** Applications may be made to private waters that are still, such as ponds, lakes and drainage ditches where there is minimal or no outflow to public waters.

**Application to public waters:** Applications may be made to public waters such as ponds, lakes, reservoirs, marshes, bayous, drainage ditches, canals, streams, rivers, and other slow-moving or quiescent bodies of water for control of aquatic weeds or for control of riparian and wetland weed species.

Consult local state fish and game agency and water control authorities before applying this product to public water. Permits may be required to treat such water.

**Recreational Use of Water in Treatment Area:** There are no restrictions on the use of water in the treatment area for recreational purposes, including swimming and fishing.

**Livestock Use of Water in/from Treatment Area:** There are no restrictions on livestock consumption of water from the treatment area.

**Precautions for Potable Water Intakes:** Do not apply this product directly to water within one-half mile upstream of an active potable water intake in flowing water (i.e., river, stream, etc.) or within one-half mile of an active potable water intake in a standing body of water such as lake, pond or reservoir. To make aquatic applications around and within one-half mile of active potable water intakes, the water intake must be turned off during application and for a minimum of 48 hours after the application. These aquatic applications may be made only in the cases where there are alternative water sources or holding ponds, which would permit the turning off of an active potable water intake for a minimum period of 48 hours after the applications. Note: Existing potable water intakes which are no longer in use, such as those replaced by connections to wells or a municipal water system, are not considered to be active potable water intakes. This restriction does not apply to intermittent, inadvertent over spray of water in terrestrial use sites.

## APPLICATION TO WATERS USED FOR IRRIGATION

The use of treated waters on irrigated crops within 120 days of treatment is prohibited.

**Seasonal Irrigation Water:** This product may be applied during the off-season to surface waters that are used for irrigation on a seasonable basis, provided that there is a minimum of 120 days between product application and the first use of treated water for irrigation purposes or until product residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

**Irrigation Canals/Ditches:** Do not apply this product to irrigation canals/ditches unless the 120-day restriction on irrigation water usage can be observed or product residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less. Do not apply this product to dry irrigation canals/ditches.

**Quiescent or Slow Moving Waters:** In lakes and reservoirs DO NOT apply this product with-

in one (1) mile of an active irrigation water intake during the irrigation season. Applications less than one (1) mile from an active irrigation water intake may be made during the off-season, provided that the irrigation intake will remain active for a minimum 120 days after application or until product residue levels are determined by laboratory analysis, or other appropriate means of analysis, to be 1.0 ppb or less.

**Moving Water:** Do not apply within one-half mile downstream of an active irrigation water intake. When making applications upstream from an active irrigation water intake, the intake must be turned off for a period of time sufficient to allow the upstream portion of treated water to completely flow past the irrigation intake before use can resume. Shut off time will be determined by the speed of water flow and the distance and length of water treated upstream from the intake. Consult local, state and/or federal authorities before making any applications upstream from an active irrigation water intake.

**Use Sites:** This product is an aqueous solution to be mixed with water and a surfactant and applied as a spray solution to control floating and emergent undesirable vegetation (see AQUATIC WEEDS CONTROLLED section and the ADDITIONAL WEEDS CONTROLLED section) in or near bodies of water which may be flowing, non-flowing, or transient. This product may be applied to specified aquatic sites that include lakes, rivers, streams, ponds, seeps, drainage ditches, canals, reservoirs, swamps, bogs, marshes, estuaries, bays, brackish water, transitional areas between terrestrial and aquatic sites and seasonal wet areas. See AQUATIC USE section of this label for precautions, restrictions, and instructions on aquatic uses.

Read and observe the following directions if aquatic sites are present in terrestrial non-crop areas and are part of the intended treatment area:

**Herbicidal Activity:** This product will control most annual and perennial grasses and broadleaf weeds in addition to many brush and vine species with some residual control of undesirable species that germinate above the waterline. This product is readily absorbed through emergent leaves and stems and is translocated rapidly throughout the plant, with accumulation in the meristematic regions. Treated plants stop growing soon after spray application. Chlorosis appears first in the newest leaves, and necrosis spreads from this point. In perennials, the herbicide is translocated into, and kills, underground or submerged storage organs, which prevents regrowth. Chlorosis and tissue necrosis may not be apparent in some plant species until two or more weeks after application. Complete kill of plants may not occur for several weeks. Performance of this product may be reduced if rainfall occurs within 2 hours of application. **This product does not control plants which are completely submerged or have a majority of their foliage under water.**

**Application Methods:** This product must be applied to the emergent foliage of the target vegetation and has little to no activity on submerged aquatic vegetation. Product concentrations resulting from direct application to water are not expected to be of sufficient concentration or duration to provide control of target vegetation. Application should be made in such a way as to maximize spray interception by the target vegetation while minimizing the amount of over spray that enters the water. For maximum activity, weeds should be growing vigorously at the time of application and the spray solution should include a surfactant (See ADJUVANTS section for specific recommendations). This product may be selectively applied by using low-volume directed application techniques or may be broadcast-applied by using ground equipment, watercraft or by helicopter. In addition, this product may also be used for cut stump, cut stem and frill and girdle treatments within aquatic sites (see AERIAL APPLICATIONS and GROUND APPLICATIONS sections for additional details).

This product should be applied with surface or helicopter application equipment in a minimum of 5 gallons of water per acre. When applying by helicopter, follow directions under the AERIAL APPLICATIONS section of this label; otherwise refer to section on GROUND APPLICATIONS when using surface equipment.

Applications made to moving bodies of water should be made while travelling upstream to prevent concentration of this herbicide in water. Do not apply to bodies of water or portions of bodies of water where emergent and/or floating weeds do not exist.

When application is to be made to target vegetation that covers a large percentage of the surface area of impounded water, treating the area in strips may avoid oxygen depletion due to decaying vegetation. Oxygen depletion may result in the suffocation of some sensitive aquatic organisms. Do not treat more than one half of the surface area of the water in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow aquatic organisms to move into untreated areas.

Apply this product at 1 to 3 pints per acre depending on species present and weed density. Do not exceed the maximum label rate of 3 pints per acre (1.5 lb. ai/A) per year. Use the higher labeled rates for heavy weed pressure. Consult the AQUATIC WEEDS CONTROLLED section and the ADDITIONAL WEEDS CONTROLLED section of this label for specific rates.

This product may be applied as a draw down treatment in areas described above. Apply this product to weeds after water has been drained and allow 14 days before reintroduction of water.

## AQUATIC SPECIES CONTROLLED

This product will control the following target species as specified in the INSTRUCTIONS section of the label. Rates are expressed in terms of product volume for broadcast applications and as a percent solution for directed applications including spot treatments. For percent solution applications, DO NOT apply more than the equivalent of 1.5 quarts of this product per acre.

# IMAZAPYR 4 SL

# Specimen Label

COMMON NAME	SCIENTIFIC NAME	INSTRUCTIONS
<b>Floating Species</b>		
*Duckweed	<i>Lemna minor</i>	1 – 1 ½ pints/acre (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Duckweed, Giant	<i>Spirodela polyrriza</i>	1 – 1 ½ pints/acre (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Frogbit	<i>Limnobium spongia</i>	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Spatterdock	<i>Nuphar luteum</i>	Apply a tank-mix of 1-2 pints/acre of this product + 4-6 pints/acre glyphosate (0.5% this product + 1.5% glyphosate) in 100 GPA water for best control. Ensure 100% coverage of actively growing, emergent foliage.
*Water Hyacinth	<i>Eichhornia crassipes</i>	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water to actively growing foliage.
*Water Lettuce	<i>Pistia stratiotes</i>	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
<b>Emerged Species</b>		
*Alligatorweed	<i>Alternanthera philoxeroides</i>	½ – 2 pints/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing emergent foliage. Tank-mix with glyphosate is NOT recommended, and may reduce alligatorweed control, requiring higher product rates.
*Arrowhead, Duck-potato	<i>Sagittaria</i> spp.	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Bacopa, lemon	<i>Bacopa</i> spp.	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Parrot feather	<i>Myriophyllum aquaticum</i>	Must be foliage above water for sufficient product uptake. Apply 1 – 2 pints to actively growing emergent foliage.
*Pennywort	<i>Hydrocotyle</i> spp.	½ – 1 pint/acre (0.5% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Pickerelweed	<i>Pontederia cordata</i>	1 – 1½ pints/acre (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Taro, wild; Dashen; Elephant's Ear; Coco Yam	<i>Colocasia esculentum</i>	2 – 3 pints/acre (1.5% solution) applied in 100 GPA with a high quality 'sticker' adjuvant. Ensure good coverage of actively growing, emergent foliage.
*Water lily	<i>Nymphaea odorata</i>	1 – 1 ½ pints/acre (1% solution) applied in 100 GPA water mix. Ensure 100% coverage of actively growing, emergent foliage.
*Water primrose	<i>Ludwigia uruguayensis</i>	2 – 3 pints/acre (1.5% solution), ensure 100% coverage of actively growing, emergent foliage. Tank-mix with glyphosate is NOT recommended and may reduce water primrose control.
<b>Terrestrial/Marginal</b>		
*Soda Apple, aquatic, Nightshade	<i>Solanum tampicense</i>	1 pint/acre applied to foliage
*Bamboo, Japanese	<i>Phyllostachys</i> spp.	1 ½ – 2 pints/acre applied to the foliage when plant is actively growing. Before setting seed head. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Brazilian Pepper; Christmasberry	<i>Schinus terebinthifolius</i>	1 – 2 pints/acre applied to foliage.
Cattail	<i>Typha</i> spp.	1 – 2 pints (1% solution) applied to actively growing, green foliage after full leaf elongation. Lower rates will control cattail in the north; higher rates are needed in the south.
Chinese Tallow Tree	<i>Sapium sebiferum</i>	8 – 12 ounces applied to foliage.
Cogongrass	<i>Imperata cylindrica</i>	Burn foliage, till area, that Fall spray 1 quart/acre this product + MSO applied to new growth.
Cordgrass, prairie	<i>Spartina</i> spp.	2 – 3 pints applied to actively growing foliage.
Cutgrass	<i>Zizaniopsis miliacea</i>	2 – 3 pints applied to actively growing foliage.
*Elephant Grass; Napier Grass	<i>Pennisetum purpureum</i>	1½ pints/acre applied to actively growing foliage.
*Flowering rush	<i>Butumu typha</i>	1 – 1½ pints applied to actively growing foliage.
Giant Reed, Wild Cane	<i>Arundo donax</i>	2 – 3 pints/acre applied in spring to actively growing foliage.

COMMON NAME	SCIENTIFIC NAME	INSTRUCTIONS
<b>Terrestrial/Marginal</b>		
*Golden Bamboo	<i>Phyllostachys aurea</i>	1½ – 2 pints/acre applied to the foliage when plant is actively growing before plants set seed heads. More foliage will result in greater herbicide uptake, resulting in greater root kill.
Junglerice	<i>Echinochloa colonum</i>	1½ – 2 pints applied to actively growing foliage.
Knapweeds	<i>Centaurea species</i>	Russian Knapweed – 1 to 1½ pints + 1 quart/acre MSO fall applied after senescence begins
Knotweed, Japanese (see Fallopia japonica)	<i>Polygonum cuspidatum</i>	1½ – 2 pints/acre applied postemergence to actively growing foliage.
Melaleuca; Paperbark Tree	<i>Melaleuca quinquenervia</i>	For established stands, apply 2 pints/acre of this product + 6 pints/acre glyphosate + spray adjuvant. For best results, use 4 quarts/A methylated seed oil as an adjuvant. For ground foliar application, uniformly apply to ensure 100% coverage. For broadcast foliar control, apply aerially in a minimum of two passes at 10 gallons/acre applied cross treatment. For spot treatment, use a 25% solution of this product + 25% solution of glyphosate + 1.25% MSO in water applied as a frill or stump treatments.
*Nutgrass; Kill'p'opu	<i>Cyperus rotundus</i>	1 pint of this product + 1 quart/acre MSO applied early postemergence.
*Nutsedge	<i>Cyperus</i> spp.	1 – 1½ pints postemergence to foliage or pre-emergence incorporated, non-incorporated pre-emergence applications will not control.
Phragmites; Common Reed	<i>Phragmites australis</i>	1½ – 2 pints/acre applied to actively growing, green foliage after full leaf elongation, ensure 100% coverage. If stand has a substantial amount of old stem tissue, mow or burn, allow to regrow to approximately 5' tall before treatment. Lower rates will control phragmites in the north; higher rates are needed in the south.
*Poison Hemlock	<i>Conium maculatum</i>	1 pint of this product + 1 quart/acre MSO applied pre-emergence to early postemergence to rosette, prior to flowering.
Purple Loosestrife	<i>Lythrum salicaria</i>	½ pint/acre applied to actively growing foliage.
Reed canarygrass	<i>Phalaris arundinacea</i>	1½ – 2 pints/acre applied to actively growing foliage.
Rose, swamp	<i>Rosa palustris</i>	1 – 1½ pints/acre applied to actively growing foliage.
Russian-Olive	<i>Elaeagnus angustifolia</i>	1 – 2 pints/acre or a 1% solution, applied to foliage.
Saltcedar; Tamarisk	<i>Tamarix species</i>	Aerial apply 1 quart of this product + 0.25% v/v NIS applied to actively growing foliage during flowering. For spot spraying, use 1% solution of this product + 0.25% v/v NIS and spray to wet foliage. After application, wait at least two years before disturbing treated saltcedar. Earlier disturbance can reduce overall control.
Smartweed	<i>Polygonum</i> spp.	1 pint/acre applied early postemergence.
Sumac	<i>Rhus</i> spp.	1 – 1½ pints/acre applied to foliage.
Swamp Morning Glory; Water Spinach; Kangkong	<i>Ipomoea aquatic</i>	½ – 1 pint/acre of this product + 1 quart/ acre MSO applied early postemergence.
Torpedo Grass	<i>Panicum repens</i>	2 pints/acre (1 – 1.5% solution), ensure good coverage to actively growing foliage.
*White Top; Hoary Cress	<i>Cardaria draba</i>	½ – 1 pint/acre of this product applied to actively growing foliage, ensure good coverage.
Willow	<i>Salix</i> spp.	1 – 1 ½ pints/acre of this product applied to actively growing foliage, ensure good coverage.

\*Not approved for use in California.

## TANK MIXES

This product may be tank mixed with other aquatic use herbicides for the control of emergent and floating aquatic vegetation provided that the tank mix herbicide label does not prohibit such mixing. Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label instructions and restrictions when making an application involving tank mixes.

## TANK MIXES FOR WEED AND BRUSH CONTROL

This product may be tank mixed with other registered herbicide products to provide control of species tolerant to this product.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank mixes. Tank mixing with 2,4-D or products which contain 2,4-D could result in reduced performance of this product when 2,4-D is used at high rates.

## INVERT EMULSIONS:

This product can be applied as an invert emulsion. Consult the invert chemical label for proper mixing directions.

# IMAZAPYR 4 SL

# Specimen Label

## FOR CONTROL OF UNDESIRABLE WEEDS UNDER PAVED SURFACES

This product can be used under asphalt, pond liners and other paved areas ONLY in industrial sites or where the pavement has a suitable barrier along the perimeter that prevents encroachment of roots of desirable plants.

This product should be used only where the area to be treated has been prepared according to good construction practices. If rhizomes, stolons, tubers or other vegetative plant parts are present in the site, they should be removed by scalping with a grader blade to a depth sufficient to ensure their complete removal.

**IMPORTANT:** Paving should follow applications of this product as soon as possible. DO NOT apply where the chemical may contact the root of desirable trees or other plants.

The product is not recommended for use under pavement on residential properties such as driveways or parking lots, nor is it recommended for use in recreational areas such as under bike or jogging paths, golf cart paths, or tennis courts, or where the landscape plantings could be anticipated.

Injury or death of desirable plants may result if this product is applied where roots are present or where they may extend into the treated area. Roots of trees and shrubs may extend a considerable distance beyond the branch extremities or so-called drip line.

## APPLICATION DIRECTIONS FOR PAVED SURFACES:

Applications should be made to the soil surface only when final grade is established. Do not move soil following application of this product. Apply this product in sufficient water (at least 100 gals. per acre) to ensure thorough and uniform wetting of the soil surface, including the shoulder areas. Add this product at a rate of 3 pints per acre (1.1 fluid ounces per 1000 square feet) to clean water in the spray tank during the filling operation. Agitate before spraying.

If the soil is not moist prior to treatment, incorporation of this product is needed for herbicide activation. This product can be incorporated into the soil to a depth of 4 to 6 inches using a rototiller or disc. Rainfall or irrigation of 1 inch will also provide uniform incorporation. Do not allow treated soil to wash or move into untreated areas.

## FOR CONTROL OF UNDESIRABLE WEEDS IN UNIMPROVED DORMANT BERMUDAGRASS AND BAHAGRASS

This product may be used on unimproved dormant bermudagrass and bahiagrass turf on roadsides and utility rights-of-way. The application of this product on established common and coastal bermudagrass and bahiagrass provides control of labeled broadleaf and grass weeds. Competition from these weeds is eliminated, releasing the bermudagrass and bahiagrass. Treatment of bermudagrass with this product results in a compacted growth habit and seedhead inhibition.

Uniformly apply with properly calibrated ground equipment using at least 10 gallons of water per acre with a spray pressure 20 to 50 psi.

**IMPORTANT:** Temporary yellowing of grass may occur when treatment is made after growth commences. DO NOT add surfactant in excess of the specified rate (1 fluid ounce per 25 gallons of spray solution). DO NOT APPLY to grass during its first growing season. DO NOT APPLY to grass that is under stress from drought, disease, insects, or other causes.

## DOSAGE RATES AND TIMING:

**Bermudagrass** – Apply this product at 3 to 6 fluid ounces per acre when the bermudagrass is dormant. Apply this product at 3 to 4 fluid ounces per acre after the bermudagrass has reached full green-up. Applications made during green-up will delay green-up. Include a surfactant in the spray solution (see **IMPORTANT** statement above).

For additional pre-emergence control of annual grasses and small seeded broadleaf weeds, add Endurance® or Pendulum® herbicide at the rate of 3.3 to 6.6 pounds per acre. Consult the Endurance® or Pendulum® label for weeds controlled and for other use directions and precautions.

For control of johnsongrass in bermudagrass turf, apply this product at 4 fluid ounces per acre plus a registered herbicide with addition of an approved surfactant. For additional control of broadleaves and vines, a registered herbicide may be added to the above mix at the rate of 1 to 2 pints per acre. Observe all precautions and restrictions of the labels.

**Bahiagrass** – Apply this product at 2 to 4 fluid ounces per acre when the bahiagrass is dormant or after the grass has initiated green-up but has not exceeded 25% green-up. Include in the spray solution a surfactant (See Adjuvant section for specific recommendations on surfactants).

## WEEDS CONTROLLED

Bedstraw (*Galium* spp.)  
Bishopweed (*Ptilimnium capillaceum*)  
Buttercup (*Ranunculus parviflorus*)  
Carolina geranium (*Geranium carolinianum*)  
Fescue (*Festuca* spp.)  
Foxtail (*Setaria* spp.)  
Little barley (*Hordeum pusillum*)  
Seedling Johnsongrass (*Sorghum halepense*)  
Wild carrot (*Daucus carota*)  
White clover (*Trifolium repens*)  
Yellow woodsorrel (*Oxalis stricta*)

## GRASS GROWTH AND SEEDHEAD SUPPRESSION

This product may be used to suppress growth and seedhead development of certain turfgrasses in unimproved areas. When applied to desirable turf, this product may result in temporary turf damage, death, and/or discoloration. Effects to the desirable turf may vary with environmental conditions. For optimum performance, application should be made prior to culm elongation. Applications may be made before or after mowing. If applied prior to mowing, allow at least three days of active growth before mowing. If following a mowing, allow sufficient time for the grasses

to recover before applying this product or injury may be amplified.

DO NOT APPLY to turf under stress (drought, cold, insect damaged, etc) or severe injury or death may occur.

**Bermudagrass** – Apply this product at 3 to 4 fluid ounces per acre from early green-up to prior to seedhead initiation. DO NOT add a surfactant for this application.

**Cool Season Unimproved Turf** – Apply this product at 1 fluid ounce per acre plus 0.25% nonionic surfactant. For increased suppression, this product may be tank-mixed with other products suitable for this use.

Tank-mixes may increase injury to desired turf. Consult each product label for recommended turf species and other use directions and precautions. Tank mixes with 2,4-D or products containing 2,4-D at higher rates may decrease the effectiveness of this product.

## TOTAL VEGETATION CONTROL WHERE BAREGROUND IS DESIRED

This product is an effective herbicide for preemergence or postemergence control of many annual and perennial broadleaf and grass weeds where bare ground is desired. This product is particularly effective on hard-to-control perennial grasses. This product at 0.75 to 3 pints per acre can be used alone or in tank mix with Diuron, Simazine, Vanquish®, or other registered herbicides labeled for this use. The degree and duration of control are dependent on the rate of this product used, tank-mix partner, the volume of carrier, soil texture, rainfall and other conditions.

Consult manufacturer's labels for specific rates and weeds controlled. Always follow the more restrictive label when making an application involving tank-mixes.

Applications of these products may be made anytime of the year. Use equipment calibrated to deliver desired gallons per acre spray volume and uniformly distribute the spray pattern over the treated area.

**Postemergence Applications:** Always use a spray adjuvant (See ADJUVANTS section of this label) when making a postemergence application. For optimum performance on tough to control annual grasses, apply 100 gallons per acre or less. For spot treatments, this product may be used as a follow-up treatment to control escapes or weed encroachment in a bare ground situation. To prepare the spray solution, thoroughly mix in each gallon of water 0.5 to 5% of this product plus an adjuvant.

## FOR SPOT TREATMENT WEED CONTROL IN GRASS PASTURE AND RANGELAND

For the control of undesirable vegetation in grass pasture and rangeland this product may be applied as a spot treatment at a rate of 1 to 24 fluid ounces of product per treated acre using any of the described ground application methods. Spot applications to grass pasture and rangeland may not exceed more than one tenth of the area to be grazed or cut for hay. See appropriate sections of this label for specific use directions for the application method and vegetation control desired. DO NOT apply more than 48 fluid ounces per acre per year.

Grazing and haying restrictions: There are no grazing restrictions following application of this product. DO NOT cut forage grass for hay for seven days after application of this product.

## GUIDELINES FOR RANGELAND USE

This product may be applied to rangeland for the control of undesirable vegetation in order to achieve one or more of the following vegetation management objectives:

1. The control of undesirable (non-native, invasive and noxious) plant species.
2. The control of undesirable vegetation in order to aid in the establishment of desirable rangeland plant species.
3. The control of undesirable vegetation in order to aid in the establishment of desirable rangeland vegetation following a fire.
4. The control of undesirable vegetation for purposes of wildlife fuel reduction.
5. The release of existing desirable rangeland plant communities from the competitive pressure of undesirable plant species.
6. The control of undesirable vegetation for purposes of wildlife habitat improvement.

To ensure the protection of threatened and endangered plants when applying this product to rangeland:

1. Federal agencies must follow NEPA regulations to ensure protection of threatened and endangered plants.
2. State agencies must work with the Fish and Wildlife Service or the Service's designated state conservation agency to ensure protection of threatened and endangered plants.
3. Other organizations or individuals must operate under a Habitat Conservation Plan if threatened or endangered plants are known to be present on the land to be treated.

## ROTATIONAL CROP INSTRUCTIONS

Rotational crops may be planted twelve months after applying this product at the specified pasture and rangeland rate. Following twelve months after an application of this product, and before planting any crop, a successful field bioassay must be completed. The field bioassay consists of a test strip of the intended rotational crop planted in the previously treated area in the grass pasture/rangeland and grown to maturity. The test strip should include low areas and knolls, and include variations in soil type and pH within the treated area. If no crop injury is evident in the test strip, the intended rotational crop may be planted the following year.

Use of this product in accordance with label directions is expected to result in normal growth or rotational crops in most situations; however, various environmental and agronomic factors make it possible to eliminate all risks associated with the use of this product and, therefore, rotational crop injury is always possible.

## ADDITIONAL WEEDS CONTROLLED

In terrestrial sites, this product will provide preemergence or postemergence control with residual control of the following target vegetation species at the rates listed. Residual control refers to control of newly germinating seedlings in both annuals and perennials. In general, annual weeds may be controlled by preemergence or postemergence applications of this product. For established biennials and perennials postemergence applications of this product are recommended.

# IMAZAPYR 4 SL

# Specimen Label

The rates shown below pertain to broadcast applications and indicate the relative sensitivity of these weeds. The relative sensitivity should be referenced when preparing low volume spray solutions (see Low Volume section of Ground Applications); low volume applications may provide control of the target species with less product per acre than is shown for the broadcast treatments. This product should be used only in accordance with the directions on this label.

The relative sensitivity of the species listed below can also be used to determine the relative risk of causing non-target plant injury if any of the below listed species are considered to be desirable within the area to be treated.

**Resistant Biotypes:** Naturally occurring biotypes (a plant within a given species that has a slightly different, but distinct, genetic makeup from other plants of the same species) of some weeds listed on this label may not be effectively controlled. If naturally occurring resistant biotypes are present in an area, this product should be tank-mixed or applied sequentially with an appropriate registered herbicide having a different mode of action to ensure control.

GRASSES		
COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
<b>Apply 1.0 – 1.5 pints per acre<sup>1</sup></b>		
Annual bluegrass	( <i>Poa annua</i> )	A
Broadleaf signalgrass	( <i>Brachiaria platyphylla</i> )	A
Canada bluegrass	( <i>Poa compressa</i> )	P
Downy brome	( <i>Bromus tectorum</i> )	A
Fescue	( <i>Festuca</i> spp.)	A/P
Foxtail	( <i>Setaria</i> spp.)	A
Italian ryegrass	( <i>Lolium multiflorum</i> )	A
Johnsongrass	( <i>Sorghum halepense</i> )	P
Kentucky bluegrass	( <i>Poa pratensis</i> )	P
Lovegrass	( <i>Eragrostis</i> spp.)	A/P
*Napier grass	( <i>Pennisetum purpureum</i> )	P
Orchardgrass	( <i>Dactylis glomerata</i> )	P
Paragrass	( <i>Brachiaria mutica</i> )	P
Quackgrass	( <i>Agropyron repens</i> )	P
Sandbur	( <i>Cenchrus</i> spp.)	A
Sand dropseed	( <i>Sporobolus cryptandrus</i> )	P
Smooth brome	( <i>Bromus inermis</i> )	P
Vaseygrass	( <i>Paspalum urvillei</i> )	P
Wild oats	( <i>Avena fatua</i> )	A
Witchgrass	( <i>Panicum capillare</i> )	A
<b>Apply 1.5 – 2.0 pints per acre<sup>1</sup></b>		
Barnyardgrass	( <i>Echinochloa crus-gali</i> )	A
Beardgrass	( <i>Andropogon</i> spp.)	P
Bluegrass, Annual	( <i>Poa annua</i> )	A
*Bulrush	( <i>Scirpus validus</i> )	A
Cheat	( <i>Bromus secalinus</i> )	A
Crabgrass	( <i>Digitaria</i> spp.)	A
Crowfootgrass	( <i>Dactyloctenium aegyptium</i> )	A
Fall panicum	( <i>Panicum dichotomiflorum</i> )	A
Giant Reed	( <i>Arundo donax</i> )	A
Goosegrass	( <i>Eleusine indica</i> )	A
Itchgrass	( <i>Rottboellia exaltata</i> )	A
Junglerice	( <i>Echinochloa colonum</i> )	A
Lovegrass	( <i>Eragrostis</i> spp.)	A
*Maidencane	( <i>Panicum hemitomon</i> )	A
Panicum, Browntop	( <i>Panicum tasciculatum</i> )	A
Panicum, Texas	( <i>Panicum texanum</i> )	A
Prairie threeawn	( <i>Aristida oligantha</i> )	P
Reed canarygrass	( <i>Phalaris arundinacea</i> )	P
Sandbur, Field	( <i>Cenchrus incertus</i> )	A
Signalgrass	( <i>Brachiaria platyphylla</i> )	A
Torpedograss	( <i>Panicum repens</i> )	P
Wild barley	( <i>Hordeum</i> spp.)	A
Wooly Cupgrass	( <i>Eriochloa villosa</i> )	A
<b>Apply 2.0 – 3.0 pints per acre<sup>1</sup></b>		
Bahiagrass	( <i>Paspalum notatum</i> )	P
Bermudagrass <sup>3</sup>	( <i>Cynodon dactylon</i> )	P
Big bluestem	( <i>Andropogon gerardii</i> )	P
Cattail	( <i>Typha</i> spp.)	P
Cogongrass	( <i>Imperata cylindrical</i> )	P
Dallisgrass	( <i>Paspalum dilatatum</i> )	P
Feathertop	( <i>Pennisetum villosum</i> )	P
Guineagrass	( <i>Panicum maximum</i> )	P
Phragmites	( <i>Phragmites australis</i> )	P
Prairie cordgrass	( <i>Spartina pectinata</i> )	P
Saltgrass <sup>3</sup>	( <i>Distichlis stricta</i> )	P
Sand dropseed	( <i>Sporobolus cryptandrus</i> )	P
Sprangletop	( <i>Leptochloa</i> spp.)	A
Timothy	( <i>Phleum pretense</i> )	P
Wirestem muhly	( <i>Muhlenbergia frondosa</i> )	P

BROADLEAF WEEDS		
COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
<b>Apply 1.0 – 1.5 pints per acre<sup>1</sup></b>		
Alligatorweed	( <i>Alternanthera philoxeroides</i> )	A/P
Burdock	( <i>Arctium</i> spp.)	B
Goosegrass	( <i>Eleusine indica</i> )	A
Camphorweed	( <i>Heterotheca subaxillaris</i> )	P

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
<b>Apply 1.0 – 1.5 pints per acre<sup>1</sup></b>		
Carolina geranium	( <i>Geranium carolinianum</i> )	A
Clover	( <i>Trifolium</i> spp.)	A/P
Common chickweed	( <i>Stellaria media</i> )	A
Common ragweed	( <i>Ambrosia artemisiifolia</i> )	A
Dandelion	( <i>Taraxacum officinale</i> )	P
Dog fennel	( <i>Eupatorium capillifolium</i> )	A
Filaree	( <i>Erodium</i> spp.)	A
Fleabane	( <i>Erigeron</i> spp.)	A
Hoary vervain	( <i>Verbena stricta</i> )	P
Horseweed	( <i>Coryza canadensis</i> )	A
Indian mustard	( <i>Brassica juncea</i> )	A
Kochia	( <i>Kochia scoparia</i> )	A
Lambsquarters	( <i>Chenopodium album</i> )	A
*Lespedeza	( <i>Lespedeza</i> spp.)	P
Miners lettuce	( <i>Montia perfoliata</i> )	A
Mullein	( <i>Verbascum</i> spp.)	B
Nettleleaf goosefoot	( <i>Chenopodium murale</i> )	A
Oxeye daisy	( <i>Chrysanthemum leucanthemum</i> )	P
Pepperweed	( <i>Lepidium</i> spp.)	A
Pigweed	( <i>Amaranthus</i> spp.)	A
Plantain	( <i>Plantago</i> spp.)	P
Puncturevine	( <i>Tribulus terrestris</i> )	A
Russian thistle	( <i>Salsola kali</i> )	A
Smartweed	( <i>Polygonum</i> spp.)	A/P
Sorrell	( <i>Rumex</i> spp.)	P
Sunflower	( <i>Helianthus</i> spp.)	A
Sweet clover	( <i>Melilotus</i> spp.)	A/B
Tansymustard	( <i>Descurainia pinnata</i> )	A
Western ragweed	( <i>Ambrosia psilostachya</i> )	P
Wild carrot	( <i>Daucus carota</i> )	B
Wild lettuce	( <i>Lactuca</i> spp.)	A/B
Wild parsnip	( <i>Pastinaca sativa</i> )	B
Wild turnip	( <i>Brassica campestris</i> )	B
Woollyleaf bursage	( <i>Franseria tomentosa</i> )	P
Yellow woodsorrel	( <i>Oxalis stricta</i> )	P
<b>Apply 1.5 – 2.0 pints per acre<sup>1</sup></b>		
Broom snakeweed <sup>4</sup>	( <i>Gutierrezia sarothrae</i> )	P
Bull thistle	( <i>Cirsium vulgare</i> )	B
Burclover	( <i>Medicago</i> spp.)	A
Chickweed, Mouseear	( <i>Cerastium vulgatum</i> )	A
Clover, Hop	( <i>Trifolium procumbens</i> )	A
Cocklebur	( <i>Xanthium strumarium</i> )	A
Cudweed	( <i>Gnaphalium</i> spp.)	A
Desert Camelthorn	( <i>Alhagi pseudalhagi</i> )	P
Diffuse knapweed	( <i>Centaurea diffusa</i> )	A
Dock	( <i>Rumex</i> spp.)	P
Fiddleneck	( <i>Amsinckia intermedia</i> )	A
Goldenrod	( <i>Solidago</i> spp.)	P
Henbit	( <i>Lamium alexicaule</i> )	A
Knotweed, prostrate	( <i>Polygonum aviculare</i> )	A/P
Pokeweed	( <i>Phytolacca americana</i> )	P
Purple loosestrife	( <i>Lythrum salicaria</i> )	P
Purslane	( <i>Portulaca</i> spp.)	A
Pusley, Florida	( <i>Richardia scabra</i> )	A
Rocket, London	( <i>Sisymbrium irio</i> )	A
Rush skeletonweed <sup>4</sup>	( <i>Chondrilla juncea</i> )	B
Saltbrush	( <i>Atriplex</i> spp.)	A
Shepherd's-purse	( <i>Capsella bursa-pastoris</i> )	A
Spurge, Annual	( <i>Euphorbia</i> spp.)	A
Stinging nettle <sup>4</sup>	( <i>Urtica dioica</i> )	P
Velvetleaf	( <i>Abutilon theophrasti</i> )	A
Yellow starthistle	( <i>Centaurea solstitialis</i> )	A
<b>Apply 2.0 – 3.0 pints per acre<sup>1</sup></b>		
Arrowweed	( <i>Pluchea sericea</i> )	A
Canada thistle	( <i>Cirsium arvense</i> )	P
Giant ragweed	( <i>Ambrosia trifida</i> )	A
Grey rabbitbrush	( <i>Chrysothamnus nauseosus</i> )	P
Little mallow	( <i>Malva parviflora</i> )	B
Milkweed	( <i>Asclepias</i> spp.)	P
Primrose	( <i>Oenothera kunthiana</i> )	P
Russian knapweed	( <i>Centaurea repens</i> )	P
Silverleaf nightshade	( <i>Solanum eleagnifolium</i> )	P
Sowthistle	( <i>Sonchus</i> spp.)	A
Texas thistle	( <i>Cirsium texanum</i> )	P

VINES AND BRAMBLES		
COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
<b>Apply 0.5 pint per acre</b>		
Field bindweed	( <i>Convolvulus arvensis</i> )	P
Hedge bindweed	( <i>Calystegia sepium</i> )	A
<b>Apply 1.0 – 1.5 pints per acre<sup>1</sup></b>		
Wild buckwheat	( <i>Polygonum convolvulus</i> )	P

# IMAZAPYR 4 SL

# Specimen Label

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
	<b>Apply 1.5 – 2.0 pints per acre<sup>1</sup></b>	
Greenbriar	( <i>Smilax</i> spp.)	P
Honeysuckle	( <i>Lonicera</i> spp.)	P
Morningglory	( <i>Ipomoea</i> spp.)	A/P
Poison ivy	( <i>Rhus radicans</i> )	P
Redvine	( <i>Brunnichis cirrhosa</i> )	P
Wild rose	( <i>Rosa</i> spp.)	P
Including: Multiflora rose	( <i>Rosa multiflora</i> )	P
McCartney rose	( <i>Rosa bracteata</i> )	P

	<b>Apply 2.0 – 3.0 pints per acre<sup>1</sup></b>	
Blackberry	( <i>Rubus</i> spp.)	P
Dewberry	( <i>Rubus</i> spp.)	P
*Kudzu <sup>3</sup>	( <i>Pueraria lobata</i> )	P
Trumpet creeper	( <i>Campsis radicans</i> )	P
Virginia creeper	( <i>Parthenocissus quinquefolia</i> )	P
Wild grape	( <i>Vitis</i> spp.)	P

## BRUSH SPECIES

COMMON NAME	SPECIES	GROWTH HABIT <sup>2</sup>
	<b>Apply 2.0 – 3.0 pints per acre<sup>1</sup></b>	
American beech	( <i>Fagus grandifolia</i> )	P
Ash	( <i>Fraxinus</i> spp.)	P
Bald cypress	( <i>Taxodium distichum</i> )	P
Bigleaf maple	( <i>Acer macrophyllum</i> )	P
Black locust <sup>4</sup>	( <i>Robinia pseudoacacia</i> )	P
Blackgum	( <i>Nyssa sylvatica</i> )	P
Boxelder	( <i>Acer negundo</i> )	P
Brazilian peppertree	( <i>Schinus terebinthifolius</i> )	P
Cherry	( <i>Prunus</i> spp.)	P
Chinaberry	( <i>Melia azadarach</i> )	P
Chinese tallowtree	( <i>Sapium sebiferum</i> )	P
Dogwood	( <i>Cornus</i> spp.)	P
Elm <sup>5</sup>	( <i>Ulmus</i> spp.)	P
Hawthorn	( <i>Crataegus</i> spp.)	P
Hickory	( <i>Carya</i> spp.)	P
Honeylocust <sup>4</sup>	( <i>Gleditsia triacanthos</i> )	P
Maple	( <i>Acer</i> spp.)	P
Melaleuca	( <i>Melaleuca quinquenervia</i> )	P
Mulberry	( <i>Morus</i> spp.)	P
Oak	( <i>Quercus</i> spp.)	P
Persimmon	( <i>Diospyros virginiana</i> )	P
*Pine <sup>6</sup>	( <i>Pinus</i> spp.)	P
Poplar	( <i>Populus</i> spp.)	P
Privet	( <i>Ligustrum vulgare</i> )	P
Red Alder	( <i>Alnus rubra</i> )	P
Red Maple	( <i>Acer rubrum</i> )	P
Rubber rabbitbrush	( <i>Chrysothamnus nauseosus</i> )	P
Russian Olive	( <i>Eleagnus angustifolia</i> )	P
Sassafras	( <i>Sassafras albidum</i> )	P
Saltcedar	( <i>Tamarix ramosissima</i> )	P
Sourwood	( <i>Oxydendrum arboretum</i> )	P
Sumac	( <i>Rhus</i> spp.)	P
Sweetgum	( <i>Liquidambar styraciflua</i> )	P
*Water willow	( <i>Justica americana</i> )	P
Willow	( <i>Salix</i> spp.)	P
Yellow poplar	( <i>Liriodendron tulipifera</i> )	P

\*Not approved for use in California

<sup>1</sup>The higher rates should be used where heavy or well-established infestations occur.

<sup>2</sup>Growth Habit – A=Annual, B=Biennial, P=Perennial

<sup>3</sup>Use a minimum of 75 GPA – Control of established stands may require repeat applications

<sup>4</sup>For best results, early postemergence applications are required.

<sup>5</sup>Tank-mix with glyphosate or triclopyr.

<sup>6</sup>Tank-mix with glyphosate.

## STORAGE AND DISPOSAL

**DO NOT** contaminate water, food or feed by storage or disposal.

**PESTICIDE STORAGE:** DO NOT store below 10°F.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying.

(Nonrefillable ≤ 5 gallons): Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

(Nonrefillable > 5 gallons): Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**IMPORTANT:** Read the entire **DIRECTIONS FOR USE** and the **CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY** before using this product. If terms are not acceptable, return the unopened product container at once.

### CONDITION OF SALE AND LIMITATION OF WARRANTY AND LIABILITY

To the extent consistent with applicable law, upon purchase or use of this product, purchaser and user agree to the following terms:

**Warranty:** Alligare, LLC (the Company) warrants that this product conforms to the chemical description on the label in all material respects and is reasonably fit for the purpose referred to in the directions for use, subject to the exceptions noted below, which are beyond the Company's control. To the extent consistent with applicable law, the Company makes no other representation or warranty, express or implied, concerning the product, including no implied warranty of merchantability or fitness for a particular purpose. No such warranty shall be implied by law, and no agent or representative is authorized to make any such warranty on the Company's behalf.

**Terms of Sale:** The Company's directions for use of this product must be followed carefully. It is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, and the manner of use or application (including failure to adhere to label directions), all of which are beyond the Company's control. To the extent consistent with applicable law, all such risks are assumed by the user.

**Limitation of Liability:** To the extent consistent with applicable law, the exclusive remedy against the Company for any cause of action relating to the handling or use of this product is a claim for damages, and in no event shall damages or any other recovery of any kind exceed the price of the product which caused the alleged loss, damage, injury or other claim. To the extent consistent with applicable law, under no circumstances shall the Company be liable for any special, indirect, incidental or consequential damages of any kind, including loss of profits or income, and any such claims are hereby waived. Some states do not allow the exclusion or limitation of incidental or consequential damages.

The Company and the seller offer this product, and the purchaser and user accept this product, subject to the foregoing warranty, terms of sale and limitation of liability, which may be varied or modified only by an agreement in writing signed on behalf of the Company by an authorized representative.

Microfoil is a trademark of Rhone Poulenc Ag. Company.

Thru-Valve is a trademark of Waldrum Specialties.

Accord is a registered trademark of Monsanto Company

Oust is a registered trademark of E.I. DuPont de Nemours and Company.

Garlon is a trademark of Dow AgroSciences Company.

Pendulum is a registered trademark of BASF.

Endurance and Vanquish are registered trademarks of Syngenta Group Company.

EPA 20120809

# MATERIAL SAFETY DATA SHEET

## Alligare Imazapyr 4 SL

Emergency Phone: Chemtrec 800-424-9300

Effective Date: April 29, 2008

### 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Alligare Imazapyr 4 SL

**DESCRIPTION:** A liquid herbicide.

**EPA Reg. No.:** 81927-24

**COMPANY IDENTIFICATION:**

Alligare, LLC  
13 North 8<sup>th</sup> Street  
Opelika, AL 36801

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	Chemical Name	Formula	CAS #	Composition
Isopropylamine salt of Imazapyr	(2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid)	C <sub>9</sub> H <sub>10</sub> Cl <sub>2</sub> N <sub>2</sub> O	330-54-1	52.6%

### 3. HAZARD IDENTIFICATION

**Health Hazards:** Harmful if swallowed or absorbed through skin. Causes moderate eye irritation.

**Physical Hazards:** May release irritating or toxic fumes if burned.

**Environmental Hazards:** Non-target plants may be adversely affected by spray drift. Do not apply when weather conditions favor drift from areas treated. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water by cleaning of equipment or disposal of wastes. Cover or incorporate spills.

### 4. FIRST AID

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-424-9300 for emergency medical treatment information.

**IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**IF IN EYES:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**IF SWALLOWED:** Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

**IF INHALED:** Move person to fresh air and if not breathing, call 911 or an ambulance and then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

## 5. FIRE-FIGHTING MEASURES

**Flash point:** Not combustible.

**Flammable Limits (LFL-UFL):** N/A

**Fire and Explosion Hazards:** Data not available.

**Extinguishing Medium:** Foam, CO<sub>2</sub>, dry chemical, or water spray.

**Fire Fighting Equipment:** Firefighters should be equipped with self-contained positive pressure breathing apparatus and turnout gear.

**Fire Fighting Instructions:** Evacuate area of all unnecessary personnel and fight fire from a safe distance upwind. Contain contaminated water / firefighting water; do not allow to enter drains or waterways. Foam or dry chemical fire extinguishing systems are preferred to prevent environmental damage from excessive water runoff.

**NFPA Ratings:** Health – 1 / Flammability – 1 / Reactivity - 0

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions:** Isolate area and keep unnecessary and unprotected personnel from entering. Wear suitable personal protective clothing and equipment as described in Section 8 of this document. Extinguish sources of ignition nearby and downwind and ensure adequate ventilation.

**Environmental Precautions:** Do not discharge into soil / subsoil or into drains / surface water / groundwater. Contain contaminated water / firefighting water.

**Spill Cleanup:** Dike spillage. Pick up with suitable absorbent material. Place into suitable container for reuse or disposal in a licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever possible. If application of spilled substance/product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect washwater for approved disposal.

## 7. HANDLING AND STORAGE

**Handling:** Wear appropriate personal protective clothing and equipment (see Section 8 below). Use only in a well-ventilated area. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

**Storage:** Keep out of reach of children and animals. Do not store below 10°F. Store product in original container only, away from other pesticides, fertilizer, food, or feed.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Pesticide Applicators and Workers:** Refer to the product label attached to the product.

**Engineering Controls:** Workplace should be equipped with a shower and eye-wash station.

**Personal Protective Equipment (PPE):**

Handlers must wear long-sleeved shirt and long pants, chemical-resistant gloves made of any waterproof material (such as polyethylene or polyvinylchloride), and shoes plus socks.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Transparent blue, slightly viscous liquid

**Odor:** Not available

**pH:** 5.0 – 5.5

**Relative Density:** 1.2 g/mL

**Solubility:** Soluble

## 10. STABILITY AND REACTIVITY

**CHEMICAL STABILITY:** Stable under normal use and storage conditions. May decompose if heated.

**CONDITIONS TO AVOID:** All sources of ignition (sparks, open flame and excessive heat). Prolonged exposure to extreme temperatures. Electrostatic discharge. Prolonged storage.

**SUBSTANCES TO AVOID:** Strong alkalis, oxidizing agents.

**HAZARDOUS REACTIONS:** This product is chemically stable and no hazardous reactions should occur if stored and handled as prescribed / indicated.

**HAZARDOUS DECOMPOSITION PRODUCTS:** When thermally decomposed, may release hazardous and / or toxic fumes.

**HAZARDOUS POLYMERIZATION:** Does not occur.

## 11. TOXICOLOGICAL INFORMATION

### ACUTE ORAL TOXICITY

LD<sub>50</sub> (rat): > 2,000 mg/kg

### ACUTE DERMAL TOXICITY

LD<sub>50</sub> (rabbit): > 2,000 mg/kg

### ACUTE INHALATION TOXICITY

LC<sub>50</sub> (rat): > 4.72 mg/L (4-hour)

**EYE IRRITATION:** Minimally irritating

**SKIN IRRITATION:** Non-irritating

**SKIN SENSITIZATION:** Not a contact sensitizer

### CARCINOGENICITY:

**ACGIH:** Not Listed

**IARC:** Not Listed

**NTP:** Not Listed

**OSHA:** Not Listed

**MUTAGENIC TOXICITY:** There is no evidence of mutagenic effects during *in vivo* and *in vitro* analyses.

**REPRODUCTIVE TOXICITY:** No evidence in animal studies.

## 12. ECOLOGICAL INFORMATION

Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters. Do not contaminate water used for irrigation or domestic purposes.

## 13. DISPOSAL CONSIDERATIONS

**PESTICIDE DISPOSAL:** Do not contaminate water, food, or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

### CONTAINER DISPOSAL:

**FOR 2.5 GALLON AND 30 GALLON CONTAINERS:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in an approved sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**FOR BULK CONTAINERS:** When this container is empty, replace the cap and seal all openings that have been opened during use and return the container to the point of purchase or to a designated location. This container must only be refilled with the pesticide product. DO NOT reuse the container for any other purpose. Prior to refilling, inspect carefully for damage such as cracks, punctures, abrasions, worn out threads and closure devices. Check for leaks after refilling and before transport. DO NOT transport if this container is damaged or leaking. If the container is damaged or leaking, or obsolete and not returned to the point of purchase or to a designated location, triple rinse emptied container and offer for recycling. Disposal of container must be in compliance with state and local regulations.

## 14. TRANSPORT INFORMATION

DOT Proper Shipping Name: Not Regulated by DOT

MARINE POLLUTANT: No

## 15. REGULATORY INFORMATION

### FIFRA –

All pesticides are governed under the Federal Insecticide, Fungicide, and Rodenticide Act. The regulatory information presented below is pertinent only when this product is handled outside of the normal use and application as a pesticide.

### SARA Title III – Section 302 Extremely Hazardous Substances

Not listed

### SARA Title III – Section 311/312 Hazard Categories

Immediate

### SARA Title III – Section 312 Threshold Planning Quantity

The threshold planning quantity (TPQ) for this product treated as a mixture is 10,000 lbs. This product contains no ingredients with a TPQ of less than 10,000 lbs.

### SARA Title III – Section 313 Reportable Ingredients

None

### CERCLA –

N/A

### California Prop 65 Status –

This product does not contain any materials known to the state of California to cause cancer or reproductive damage.

## 16. OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.

### DISCLAIMER:

THE INFORMATION IN THIS MSDS IS BASED ON DATA AVAILABLE AS OF THE REVISION DATE GIVEN HEREIN, AND BELIEVED TO BE CORRECT. CONTACT ALLIGARE, LLC TO CONFIRM IF YOU HAVE THE MOST CURRENT MSDS. JUDGMENTS AS TO THE SUITABILITY OF THE INFORMATION HEREIN FOR THE INDIVIDUAL'S OWN USE OR PURPOSES IS NECESSARILY THE INDIVIDUAL'S OWN RESPONSIBILITY. ALTHOUGH REASONABLE CARE HAS BEEN TAKEN IN THE PREPARATION OF SUCH INFORMATION, ALLIGARE, LLC EXTENDS NO WARRANTIES, MAKES NO REPRESENTATIONS, AND ASSUMES NO RESPONSIBILITY AS TO THE ACCURACY OR SUITABILITY OF SUCH INFORMATION FOR APPLICATION TO THE INDIVIDUAL'S PURPOSES OR THE CONSEQUENCES OF ITS USE.

This Material Safety Data Sheet (MSDS) serves different purposes than and DOES NOT REPLACE OR MODIFY THE EPA-APPROVED PRODUCT LABELING (attached to and accompanying the product container). This MSDS provides important health, safety, and environmental information for employers, employees, emergency responders and others handling large quantities of the product in activities generally other than product use, while the labeling provides that information specifically for product use in the ordinary course.

# Specimen Label



# Milestone®

## Specialty Herbicide

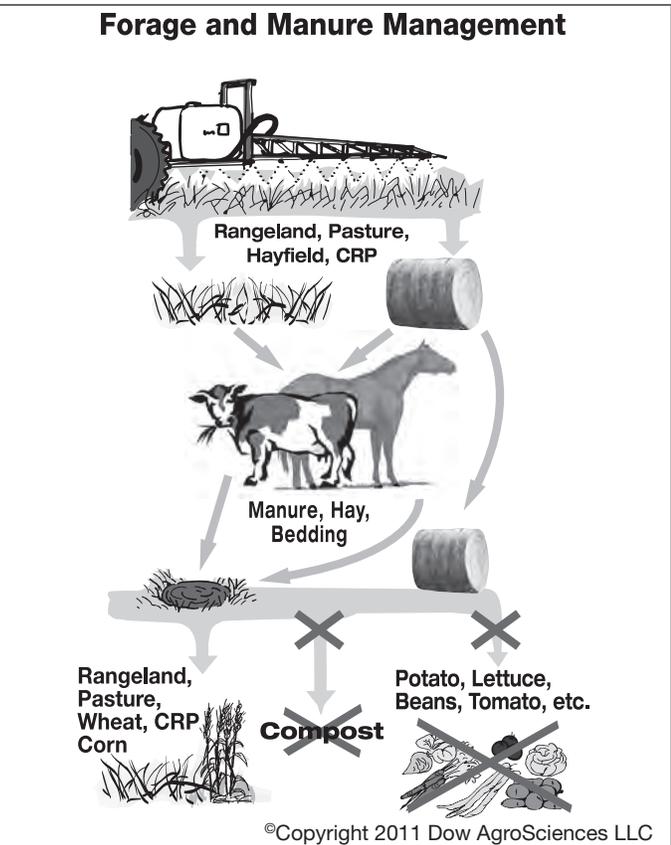
®Trademark of Dow AgroSciences LLC

- For control of susceptible weeds and certain woody plants, including invasive and noxious weeds, on rangeland, permanent grass pastures (including grasses grown for hay\*), Conservation Reserve Program (CRP) acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites.

\*Hay from grass treated with Milestone within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling

**IMPORTANT USE PRECAUTIONS AND RESTRICTIONS TO PREVENT INJURY TO DESIRABLE PLANTS**

- Carefully read the section “*Restrictions in Hay or Manure Use* .”
- It is mandatory to follow the “*Use Precautions and Restrictions*” section of this label.
- Manure and urine from animals consuming grass or hay treated with this product may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
- Hay can only be used on the farm or ranch where product is applied unless allowed by supplemental labeling.
- Consult with a Dow AgroSciences representative if you do not understand the “*Use Precautions and Restrictions*”. Call [1-(800) 263-1196] Customer Information Group.



Not For Sale, Distribution, or Use in New York State.

<b>GROUP</b>	<b>4</b>	<b>HERBICIDE</b>
--------------	----------	------------------

Active Ingredient:

Triisopropanolammonium salt of 2-pyridine carboxylic acid, 4-amino-3,6-dichloro-.....	40.6%
Other Ingredients .....	59.4%
Total .....	100.0%

Acid Equivalent: aminopyralid (2-pyridine carboxylic acid, 4-amino-3,6-dichloro-) - 21.1% - 2 lb/gal

### Container Use Directions

<p><b>1 - Tip</b></p> <p>Tilt container to angle as shown and fill head to desired amount – use vertical scale for measuring. Container should be closed.</p>	<p><b>2 - Level</b></p> <p>Hold container up-right and check the amount for accuracy. Add or subtract as needed, using pour-back scale as guide.</p>	<p><b>3 - Dispense</b></p> <p>Remove cap on head and pour into sprayer or other devices. No fluid will pour from the main container. Replace cap for storage in sealed condition.</p>
---	--	---

## Precautionary Statements

### Hazards to Humans and Domestic Animals

EPA Reg. No. 62719-519

# CAUTION

**Causes Moderate Eye Irritation**

**Avoid contact with eyes or clothing.**

### Personal Protective Equipment (PPE)

**Applicators and other handlers must wear:**

- Long-sleeved shirt and long pants
- Shoes plus socks

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

### User Safety Recommendations

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

### First Aid

**If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. Call a poison control center or doctor for treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact 1-800-992-5994 for emergency medical treatment information.

### Environmental Hazards

Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

This chemical has properties and characteristics associated with chemicals detected in groundwater. The use of this chemical in areas where soils are permeable, particularly where the water table is shallow, may result in groundwater contamination.

### Directions for Use

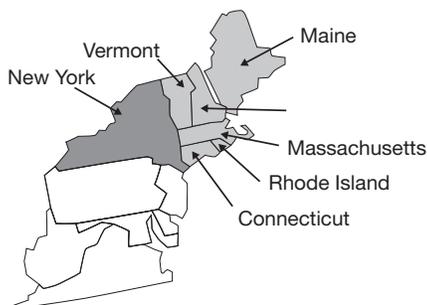
It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read all Directions for Use carefully before applying.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

**Not For Sale, Distribution, or Use in New York State.**

**Not for use on pastures in Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. All other labeled uses are permitted in these states including grazed areas in and around these sites.**



Light grey = states where use in pastures is not permitted  
Dark grey = NY where the product is not registered

### Agricultural Use Requirements

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about Personal Protective Equipment (PPE) and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours.

PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water, is:

- Coveralls
- Chemical-resistant gloves made of any waterproof material as polyethylene or polyvinyl chloride
- Shoes plus socks
- Protective eyewear

### Non-Agricultural Use Requirements

The requirements in this box apply to uses of this product that are NOT within the scope of the Worker Protection Standard for Agricultural Pesticides (40 CFR Part 170). The WPS does not pertain to non-agricultural use on sites, such as, rangeland, permanent grass pastures, or non-cropland. See the Agricultural Use Requirements section below for information where the WPS applies.

**Entry Restrictions for Non-WPS Uses:** For applications on rangeland and permanent grass pastures (not harvested for hay) and non-cropland areas, do not enter or allow worker entry into treated areas until sprays have dried.

### Storage and Disposal

Do not contaminate water, food, feed or fertilizer by storage or disposal. Open dumping is prohibited.

**Pesticide Storage:** If this product is exposed to subfreezing temperatures, the active ingredient may crystallize and settle out of solution. Under these conditions the product should be warmed to at least 40°F and agitated well to dissolve any crystallized active ingredient prior to use.

**Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

**Nonrefillable containers 5 gallons or less:**

**Container Handling:** Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

**Refillable containers larger than 5 gallons:**

**Container Handling:** Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or a mix tank. Fill the container about 10% full with water. Agitate vigorously or recirculate water with the pump for two minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times.

## Storage and Disposal (Cont.)

**Nonrefillable containers larger than 5 gallons:**

**Container Handling:** Nonrefillable container. Do not reuse or refill this container. Offer for recycling if available, or puncture and dispose of in a sanitary landfill, or by incineration, or by other procedures allowed by state and local authorities.

Triple rinse or pressure rinse container (or equivalent) promptly after emptying. **Triple rinse** as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. **Pressure rinse** as follows: Empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 psi for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

### Resistance Management Guidelines

- Development of plant populations resistant to this herbicide mode of action is usually not a problem on rangeland, permanent grass pastures, Conservation Reserve Program (CRP), or non-cropland sites since these sites receive infrequent pesticide applications.
- In croplands, use an effective integrated pest management (IPM) program, integrating tillage or other mechanical methods, crop rotation or other cultural control methods into weed control programs whenever practical.
- Similar looking biotypes of a given weed species occurring in a treated area may vary in their susceptibility to a herbicide. Application of a herbicide below its labeled rate may allow more tolerant weeds to survive and a shift to more tolerant biotypes within the treated area.
- Where identified, spreading of resistant weeds to other fields may be prevented by cleaning harvesting and tillage equipment before moving to other areas and by planting weed-free seed.
- Contact your extension specialist, certified crop consultant, or Dow AgroSciences representative for the latest resistance management information.

### Rangeland, Permanent Grass Pastures, CRP Acres, Non-Cropland Areas, Non-Irrigation Ditch Banks, Natural Areas, and Grazed Areas In and Around These Sites

Milestone® specialty herbicide may be applied by aerial or ground equipment to control susceptible broadleaf weeds and certain woody plants, including invasive and noxious weeds on rangeland, permanent grass pastures (including grasses grown for hay\*), CRP acres, non-cropland areas including industrial sites, rights-of-way (such as roadsides, electric utility and communication transmission lines, pipelines, and railroads), non-irrigation ditch banks, natural areas (such as wildlife management areas, wildlife openings, wildlife habitats, recreation areas, campgrounds, trailheads and trails), and grazed areas in and around these sites without injury to most grasses.

**\*Hay from grass treated with Milestone within the preceding 18-months can only be used on the farm or ranch where the product is applied unless allowed by supplemental labeling.**

It is permissible to treat non-irrigation ditch banks, seasonally dry wetlands (such as flood plains, deltas, marshes, swamps, or bogs) and transitional areas between upland and lowland sites. Milestone can be used to the waters edge. Do not apply directly to water and take precautions to minimize spray drift onto water.

### Use Precautions and Restrictions

**Consult with a Dow AgroSciences representative if you do not understand the "Use Precautions and Restrictions." Call (1-800-263-1196) for more information.**

### Pasture and Rangeland Restrictions

- **Do not use grasses treated with Milestone in the preceding 18-months for hay intended for export outside the United States.**

- **Hay from areas treated with Milestone in the preceding 18-months CAN NOT be distributed or made available for sale off the farm or ranch where harvested unless allowed by supplemental labeling.**
- **Hay from areas treated with Milestone in the preceding 18-months CAN NOT be used for silage, haylage, baylage and green chop unless allowed by supplemental labeling.**
- **Do not move hay made from grass treated with Milestone within the preceding 18-months off farm unless allowed by supplemental labeling.**
- **Do not use hay or straw from areas treated with Milestone within the preceding 18-months or manure from animals feeding on hay treated with Milestone in compost.**
- **Do not use grasses treated with Milestone in the preceding 18-months for seed production.**

**Maximum Application Rate:** On all labeled use sites do not broadcast apply more than 7 fl oz per acre of Milestone per year. The total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year. Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per annual growing season as a result of broadcast, spot or repeat applications.

- **Avoiding Injury to Non-Target Plants:** Do not aerially apply Milestone within 50 feet of a border downwind (in the direction of wind movement), or allow spray drift to come in contact with, any broadleaf crop or other desirable broadleaf plants, including, but not limited to, alfalfa, cotton, dry beans, flowers, grapes, lettuce, potatoes, radishes, soybeans, sugar beets, sunflowers, tobacco, tomatoes or other broadleaf or vegetable crop, fruit trees, ornamental plants, or soil where sensitive crops are growing or will be planted. Avoid application under conditions that may allow spray drift because very small quantities of spray may seriously injure susceptible crops. Read and consider the "Precautions for Avoiding Spray Drift and Spray Drift Advisory" at the end of this label to help minimize the potential for spray drift.
- **Milestone is highly active against many broadleaf plant species.** Do not use this product on areas where loss of broadleaf plants, including legumes, cannot be tolerated.
- **Chemigation:** Do not apply this product through any type of irrigation system.
- **Do not contaminate water intended for irrigation or domestic purposes.** Do not treat inside banks or bottoms of irrigation ditches, either dry or containing water, or other channels that carry water that may be used for irrigation or domestic purposes.
- Do not apply this product to lawns, turf, ornamental plantings, urban walkways, driveways, tennis courts, golf courses, athletic fields, commercial sod operations, or other high-maintenance, fine turfgrass areas, or similar areas.
- Trees adjacent to or in a treated area can occasionally be affected by root uptake of Milestone. Do not apply Milestone within the root zone of desirable trees unless such injury can be tolerated. Use special caution near roses, and leguminous trees such as locusts, redbud, mimosa, and caragana.
- Applications made during periods of intense rainfall, to soils saturated with water, surfaces paved with materials such as asphalt or concrete, or soils through which rainfall will not readily penetrate may result in runoff and movement of Milestone. Injury to crops may result if treated soil and/or runoff water containing Milestone is washed, or moved onto land used to produce crops. Exposure to Milestone may injure or kill susceptible crops and other plants, such as grapes, soybeans, tobacco, sensitive ornamentals. Do not treat frozen soil where runoff could damage sensitive plants.
- **Grass revegetation:**
  - Milestone can be used to control broadleaf plants in grass revegetation programs where desirable rangeland or reclamation grass species are being established in rangeland, permanent grass pastures, CRP, non-cropland, or other areas. Consult Dow AgroSciences' literature for more details about Milestone applications and grass stand establishment.
- **Application before seeding grasses**
  - Milestone can be applied in the spring through fall to control broadleaf weeds prior to grass planting. Grasses can be seeded as a dormant planting (in the late fall or early winter) in the year

of application or grasses can be seeded the following spring. The grasses should be planted when soil temperatures are low enough to ensure that the seeds will not germinate and emerge until the following spring.

- **Postemergence applications on grass:** During the season of establishment, Milestone should be applied only after perennial grasses are well established (have developed a good secondary root system and show good vigor. Most perennial grasses are tolerant to Milestone at this stage of development. Milestone may suppress certain established grasses, such as smooth brome grass (*Bromus inermis*), especially when plants are stressed by adverse environmental conditions. Plants should recover from this transient suppression with the onset of environmental conditions favorable to grass growth and upon release from weed competition.
- Grass seed germination and seedling development can be adversely effected by many factors such as seed viability and seedling vigor, soil condition (sub-optimal soil temperatures or soil water content), weather after planting, seedbed preparation and seed placement, disease, insects, or animals. Milestone applications will help to reduce competition from weeds and improve the chance for successful grass stand establishment. Some grass species are more sensitive to Milestone; consult Dow AgroSciences' literature for more details.
- **Seeding Legumes:** Do not plant forage legumes until a soil bioassay has been conducted to determine if aminopyralid concentration remaining in the soil will adversely affect the legume establishment.
  - **Grazing and Haying Restrictions:** There are no restrictions on grazing or grass hay harvest following application of Milestone at labeled rates. Cutting hay too soon after spraying weeds will reduce weed control. Wait 14 days after herbicide application to cut grass hay to allow herbicide to work. Do not transfer grazing animals from areas treated with Milestone to areas where sensitive broadleaf crops occur without first allowing 3 days of grazing on an untreated pasture. Otherwise, urine and manure may contain enough aminopyralid to cause injury to sensitive broadleaf plants.
  - **Grazing Poisonous Plants:** Herbicide application may increase palatability of certain poisonous plants. Do not graze treated areas until poisonous plants are dry and no longer palatable to livestock.
- **Restrictions in Hay or Manure Use:**
  - ◆ Do not use treated plant residues, including hay or straw from areas treated within the preceding 18-months, in compost, mulch or mushroom spawn.
  - ◆ Do not use manure from animals that have grazed forage or eaten hay harvested from treated areas within the previous 3 days, in compost, mulch or mushroom spawn.
  - ◆ Do not spread manure from animals that have grazed or consumed forage or eaten hay from treated areas within the previous 3 days on land used for growing susceptible broadleaf crops.
  - ◆ Manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas within the previous 3 days may only be used on pasture grasses, grass grown for seed, wheat and corn.
  - ◆ Do not plant a broadleaf crop (including soybeans, sunflower, tobacco, vegetables, field beans, peanuts, and potatoes) in fields treated with manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
  - ◆ Do not plant a broadleaf crop in fields treated in the previous year with manure from animals that have grazed forage or eaten hay harvested from aminopyralid-treated areas until an adequately sensitive field bioassay is conducted to determine that the aminopyralid concentration in the soil is at level that is not injurious to the crop to be planted.
  - ◆ To promote herbicide decomposition, plant residues should be evenly incorporated in the surface soil or burned. Breakdown of aminopyralid in plant residues or manure is more rapid under warm, moist soil conditions and may be enhanced by supplemental irrigation.
- **Crop Rotation:** Do not rotate to any crop from rangeland, permanent pasture or CRP acres within one year following treatment. Cereals and corn can be planted one year after treatment. Most broadleaf crops are

more sensitive and can require **at least 2 years** depending on the crop and environmental conditions. Do not plant a broadleaf crop until an adequately sensitive field bioassay shows that the level of aminopyralid present in the soil will not adversely affect that broadleaf crop.

**Field Bioassay Instructions:** In fields previously treated with this product, plant short test rows of the intended rotational crop across the original direction of application in a manner to sample variability in field conditions such as soil texture, soil organic matter, soil pH, rainfall pattern or drainage. The field bioassay can be initiated at any time between harvest of the treated crop and the planting of the intended rotational crop. Observe the test crop for symptoms of herbicidal activity, such as poor stand (effect on seed germination), chlorosis (yellowing), and necrosis (dead leaves or shoots), or stunting (reduced growth). If herbicidal symptoms do not occur, the test crop can be grown. If there is apparent herbicidal activity, do not plant the field to the intended rotational crop; plant only to wheat, forage grasses, native grasses or grasses grown for hay.

#### Sprayer Clean-Out Instructions

**It is recommended to use separate spray equipment on highly sensitive crops such as tobacco, soybeans, peanuts and tomatoes.**

Do not use spray equipment used to apply Milestone for other applications to land planted to, or to be planted to, broadleaf plants unless it has been determined that all residues of this herbicide have been removed by thorough cleaning of equipment.

Equipment used to apply Milestone should be thoroughly cleaned before reusing to apply any other chemicals as follows:

1. Rinse and flush application equipment thoroughly after use. Dispose of rinse water in non-cropland area away from water supplies.
2. Rinse a second time, adding 1 quart of household ammonia or tank cleaning agent for every 25 gallons of water. Circulate the solution through the entire system so that all internal surfaces are contacted (15 to 20 minutes). Let the solution stand for several hours, preferably overnight.
3. Flush the solution out of the spray tank through the boom.
4. Rinse the system twice with clean water, recirculating and draining each time.
5. Spray nozzles and screens should be removed and cleaned separately.

- Do not apply this product with mist blower systems that deliver very fine spray droplets. Use of mist blower equipment can reduce control achieved with the herbicide and increase spray drift potential.

#### Application Methods

Apply the specified rate of Milestone as a coarse low-pressure spray. Do not apply this product with mist blower systems that deliver very fine spray droplets. Spray volume should be sufficient to uniformly cover foliage. Increase spray volume to ensure thorough and uniform coverage when target vegetation is tall and/or dense. To enhance foliage wetting and coverage, an approved non-ionic agricultural surfactant may be added to the spray mixture as specified by the surfactant label.

**Ground Broadcast Application:** Higher spray volumes (greater than 10 gallons per acre) generally provide better coverage and better control, particularly in dense and/or tall foliage.

**Aerial Broadcast Application:** Do not apply less than 2 gallons per acre total spray volume. Five gallons per acre or greater will generally provide better coverage and better control, particularly in dense and/or tall foliage.

**High-Volume Foliar Application:** High volume foliar treatments may be applied at rates equivalent to a maximum of 7 fl oz per acre per annual growing season. Use sufficient spray volume to thoroughly and uniformly wet foliage and stems.

**Spot Application:** Spot treatments may be applied at an equivalent broadcast rate of up to 0.22 lb acid equivalent (14 fl oz of Milestone) per acre per annual growing season; however, not more than 50% of an acre may be treated at that rate. Do not apply more than a total of 0.11 lb acid equivalent (7 fl oz) per acre of Milestone per annual growing season as a result of broadcast, spot or repeat applications.) Spray volume should be sufficient to thoroughly and uniformly wet weed foliage, but not to the point of runoff. Repeat treatments may be made, but the total amount of Milestone applied must not exceed 7 fl oz per acre per year. To prevent misapplication, spot treatments should be applied with a calibrated sprayer.

Note: Table 1 below shows mixes for various sprayer outputs in gallons per acre (GPA).

**Table 1:** Amount of Milestone (in mL) to mix in 1 gallon of water

Gallons per acre	Milestone amount (in mL) to mix with various application rates		
	5 fl oz/a	7 fl oz/a	14 fl oz/a
20	7.5	10.5	21.0
30	5.0	7.0	14.0
40	3.8	5.3	10.5
50	3.0	4.2	8.4
60	2.5	3.5	7.0
70	2.1	3.0	6.0
80	1.9	2.6	5.3
90	1.7	2.3	4.7
100	1.5	2.1	4.2

Use a syringe to measure cc

**Conversions:**

1 tsp = 5 mL      30 ml = 1 fluid ounce      1 cc = 1 mL  
 3 tsp = 1 Tbsp      2 Tbsp = 1 fluid ounce

**Table 2:** Application rates in the table below are based on treating an area of 1000 sq ft. An area of 1000 sq ft is about 10.5 by 10.5 yards in size. Mix the amount of Milestone (fl oz or milliliters) corresponding to the desired broadcast rate in 0.5 to 2.5 gallons of water, depending upon the spray volume required to treat 1000 sq ft. A delivery volume of 0.5 to 2.5 gallons per 1000 sq ft is equivalent to 22 to 109 gallons per acre.

Table 2: Amount of Milestone per 1000 sq ft to Equal Broadcast Rate

Broadcast Rate (fl oz/acre)	Amount of Milestone per 1000 sq ft to Equal Broadcast Rate	
	(fl oz)	(Milliliters)
3	0.069	2
5	0.115	3.4
7	0.161	4.8

**Note:** 1 fluid ounce (fl oz) = 29.6 milliliters (mL) = 2 tablespoons = 6 teaspoons

**To calculate the amount of Milestone for areas larger than 1000 sq ft:** Multiply the table value (fl oz or milliliters) by the area to be treated in "thousands" of square feet. For example, if the area to be treated is 3500 sq ft, multiply the table value by 3.5 (3500 sq ft divided by 1000 sq ft = 3.5).

**Mixing Instructions**

**Mixing with Water:** To prepare the spray, add about half the required amount of water in the spray tank. Then, with agitation, add the specified amount of Milestone and other registered tank mix herbicides. Finally, with continued agitation, add the rest of the water and additives such as surfactants or drift control and deposition aids.

**Addition of Surfactants or Adjuvants on All Labeled Use Sites:** The addition of a high quality non-ionic surfactant (of at least 80% active ingredient) at 0.25 to 0.5 % volume per volume (1 to 2 quarts per 100 gallons of spray) is recommended to enhance herbicide activity under adverse environmental conditions (such as, high temperature, low relative humidity, drought conditions, dusty plant surfaces) or when weeds are heavily pubescent or more mature.

**Tank Mixing with Other Herbicides:** Milestone at rates of up to 7 fl oz per acre may be mixed with labeled rates of other herbicides registered for application on all labeled use sites. Milestone may be applied in tank mix combination with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated and (2) mixing is not prohibited by the label of the registered tank mixed products, and (3) that the tank mix combination is physically compatible (see tank mix compatibility testing below). When tank mixing, use only in accordance with the restrictions, precautions and limitations on the respective product labels.

- Read carefully and follow all applicable use directions, precautions, and limitations on the respective product labels.
- Do not exceed specified application rates. If products containing the same active ingredient are mixed, do not exceed the maximum allowable active ingredient use rates.
- For direct injection or other spray equipment where the product formulations will be mixed in undiluted form, special care should be taken to ensure tank mix compatibility.
- Always perform a jar test to ensure the compatibility of products to be used in tank mixture.

**Tank Mix Compatibility Testing:** Perform a jar test prior to mixing in a spray tank to ensure compatibility of Milestone and other pesticides or carriers. Use a clear glass jar with lid and mix ingredients in the same order and proportions as will be used in the spray tank. The mixture is compatible if the materials mix readily when the jar is inverted several times. The mixture should remain stable after standing for 1/2 hour or, if separation occurs, should readily remix if agitated. An incompatible mixture is indicated by separation into distinct layers that do not readily remix when agitated and/or the presence of flakes, precipitates, gels, or heavy oily film in the jar. Use of an appropriate compatibility aid may resolve mix incompatibility. If the mixture is incompatible do not use that tank mix partner in tank mixtures.

**Mixing with Sprayable Liquid Fertilizer Solutions:** Milestone is usually compatible with liquid fertilizer solutions. It is anticipated that Milestone will not require a compatibility agent for mixing with fertilizers; however, a compatibility test (jar test) should be made prior to mixing. Jar tests are particularly important when a new batch of fertilizer or pesticide is used, when water sources change, or when tank mixture ingredients or concentrations are changed. Compatibility may be determined by mixing the spray components in the desired order and proportions in a clear glass jar before large scale mixing of spray components in the spray tank.

**Note:** The lower the temperature of the liquid fertilizer, the greater the likelihood of mixing problems. Use of a compatibility aid may be required if Milestone is mixed with a 2,4-D-containing product and liquid fertilizer. **Mixing Milestone and 2,4-D in N-P or N-P-K liquid fertilizer solutions is more difficult than mixing with straight nitrogen fertilizer and should not be attempted without first conducting a successful compatibility jar test.** Agitation in the spray tank must be vigorous to be comparable with jar test agitation. Apply the spray mixture the same day it is prepared while maintaining continuous agitation. Rinse the spray tank thoroughly after use.

**Note:** Foliar-applied liquid fertilizers themselves can cause yellowing of the foliage of forage grasses and other vegetation.

**Use Rates and Timing**

Milestone may be applied post emergence as a broadcast spray or as a spot application to control weeds including, but not limited to, those listed on this label. When a rate range is given use the higher rate to control weeds at advanced growth stages, or under less than favorable growing conditions, or for longer residual control. Best results are obtained when spray volume is sufficient to provide uniform coverage of treated weeds. For optimum uptake and translocation of Milestone, avoid mowing, haying, shredding, burning or soil disturbance in treated areas for at least 14 days following application.

Milestone also provides preemergence control of emerging seedlings of susceptible weeds, and re-growth of certain perennial weeds following application. Preventing establishment of weeds will depend upon application rate, season of application, and environmental conditions after application.

Milestone can provide long-term control of susceptible weeds. The length of control is dependent upon the application rate, condition and growth stage of target weeds, environmental conditions at and following application, and the density and vigor of competing desirable vegetation. Long-term weed control is most effective where grass vegetation is allowed to recover from overgrazing, drought, etc., and compete with weeds.

Milestone can be an important component of integrated vegetation management programs designed to renovate or restore desired plant communities. To maximize and extend the benefits of weed control provided by Milestone, it is important that other vegetation management practices, including proper grazing management, biological control agents, replanting, fertilization, prescribed fire, etc., be used in appropriate sequences and combinations to further alleviate the adverse effects of weeds on desirable plant species and to promote development of desired plant communities. Agricultural and natural resources specialists with federal and state government agencies can provide guidance on best management practices and development of integrated vegetation management programs.

## Weeds Controlled

The following weeds will be controlled with the rates of Milestone indicated below (table 3). For best results, most weeds should be treated when they are actively growing and under conditions favorable for growth. Use a higher rate in the rate range when growing conditions are less than favorable or when weed foliage is tall and dense, or when residual control is desired. Milestone also provides preemergence control of germinating seeds or seedlings of susceptible weeds following application.

**Table 3: Weeds Controlled**

**Note:** Numbers in parentheses (-) refer to specific use directions for a particular weeds species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
amaranth, spiny	<i>Amaranthus spinosus</i>	4 to 7	annual	Amaranthaceae
bedstraw	<i>Galium spp.</i>	4 to 7	perennial	Rubiaceae
beggarticks	<i>Bidens spp.</i>	4 to 7	annual	Asteraceae
blackeyed-susan	<i>Rudbeckia hirta</i>	4 to 7	Annual	Asteraceae
broomweed, annual	<i>Amphiachyris dracunculoides</i>	4 to 7	annual	Asteraceae
burdock, common*, **	<i>Arctium minus</i>	4 to 7	biennial	Asteraceae
buttercup, hairy*	<i>Ranunculus sardous</i>	4 to 7	annual	Ranunculaceae
buttercup, tall*, **	<i>Ranunculus acris</i>	4 to 7	perennial	Ranunculaceae
camelthorn	<i>Alhagi pseudalhagi</i>	5 to 7	perennial	Fabaceae
cat's ear, common	<i>Hypochaeris radicata</i>	5 to 7	Perennial	Asteraceae
chamomile, scentless	<i>Matricaria inodora</i>	4 to 7	annual	Asteraceae
chicory*	<i>Cichorium intybus</i>	4 to 6	perennial	Asteraceae
chickweed	<i>Stellaria media</i>	7	annual	Caryophyllaceae
cinquefoil, sulfur (1)*, **	<i>Potentilla recta</i>	4 to 7	perennial	Rosaceae
cocklebur	<i>Xanthium strumarium</i>	3 to 5	annual	Asteraceae
clover	<i>Trifolium spp.</i>	5 to 7	perennial	Fabaceae
crazyweed	<i>Oxytropis</i>	5 to 7	perennial	Fabaceae
croton, tropic	<i>Croton glandulosus</i>	3 to 5	annual	Euphorbiaceae
crownvetch	<i>Securigera varia</i>	5 to 7	perennial	Fabaceae
cutweed, purple	<i>Gamochoeta purpurea</i>	4 to 7	annual	Asteraceae
daisy, oxeye (1)*, **	<i>Leucanthemum vulgare</i>	4 to 7	perennial	Asteraceae
dock, curly*	<i>Rumex crispus</i>	4 to 7	perennial	Polygonaceae
evening primrose, cutleaf	<i>Oenothera laciniata</i>	4 to 7	annual	Onagraceae
fiddleneck, common	<i>Amsinckia intermedia</i>	7	annual	Boraginaceae
fireweed	<i>Epilobium angustifolium</i>	5 to 7	perennial	Onagraceae
fleabane, flax-leaf	<i>Conyza bonariensis</i>	4 to 7	annual	Asteraceae
fleabane, hairy	<i>Conyza bonariensis</i>	5-7	annual/biennial	Asteraceae
hawkweed, orange (2)*, **	<i>Hieracium aurantiacum</i>	4 to 7	perennial	Asteraceae
hawkweed, yellow (2)*, **	<i>Hieracium caespitosum</i>	4 to 7	perennial	Asteraceae
henbane, black	<i>Hyoscyamus niger</i>	5 to 7	Annual/biennial	Solanaceae
henbit*	<i>Lamium amplexicaule</i>	5 to 7	annual/biennial	Lamiaceae
hogweed, giant	<i>Heracleum mantegazzianum</i>	7	perennial	Apiaceae
horsenettle, Carolina**	<i>Solanum carolinense</i>	4 to 7	perennial	Solanaceae
horseweed (marestail)	<i>Conyza canadensis</i>	4 to 7	annual	Asteraceae
ironweed, tall	<i>Vernonia gigantea</i>	5 to 7	perennial	Asteraceae
ironweed, western	<i>Vernonia baldwinii</i>	7	perennial	Asteraceae
knawweed, diffuse (3)*, **	<i>Centaurea diffusa</i>	5 to 7	biennial/perennial	Asteraceae
knawweed, Russian (4)*, **	<i>Acroptilon repens</i>	5 to 7	perennial	Asteraceae
knawweed, spotted (3)*, **	<i>Centaurea stoebe</i>	5 to 7	biennial/perennial	Asteraceae
knawweeds	<i>Centaurea spp.</i>	5 to 7	biennial/perennial	Asteraceae
knotweeds, Japanese, bohemian (11)*, **	<i>Reynoutria japonica</i>	7-14*	perennial	Polygonaceae
kudzu*, **	<i>Pueraria montana</i>	7	perennial	Fabaceae
lady's thumb*	<i>Polygonum persicaria</i>	3 to 5	annual	Polygonaceae
lambsquarters	<i>Chenopodium album</i>	5 to 7	annual	Chenopodiaceae
lespedeza, annual	<i>Lespedeza striata</i>	5 to 7	annual	Fabaceae
licorice, wild	<i>Glycyrrhiza lepidota</i>	7	perennial	Fabaceae
locoweed	<i>Astragalus spp.</i>	5 to 7	Perennial	Fabaceae
locust, black	<i>Robinia pseudoacacia</i>	7	woody perennial	Fabaceae
locust, honey	<i>Gleditsia triacanthos</i>	7	woody perennial	Fabaceae
loosestrife, purple (12)*, **	<i>Lythrum salicaria</i>	7-14*	perennial	Lythraceae
mayweed, scentless*	<i>Tripleurospermum perforata</i>	4 to 7	annual	Asteraceae

**Table 3: Weeds Controlled (Cont.)****Note:** Numbers in parentheses (-) refer to specific use directions for a particular weeds species.

Common Name	Scientific Name	Rate Range (fl oz/acre)	Life Cycle	Plant Family
mayweed, stinking*, **	<i>Anthemis cotula</i>	7	annual	Asteraceae
medic, black*	<i>Medicago lupulina</i>	4 to 7	perennial	Fabaceae
mimosa	<i>Albizia julibrissin</i>	7	woody perennial	Fabaceae
mullein (5)	<i>Verbascum spp.</i>	7	biennial	Scrophulariaceae
nightshade, silverleaf	<i>Solanum elaeagnifolium</i>	4-7	perennial	Solanaceae
oxtongue, bristly	<i>Picris echioides</i>	5 to 7	biennial	Asteraceae
pea, Swainson	<i>Sphaerophysa salsula</i>	5-7	perennial	Fabaceae
povertyweed	<i>Iva axillaris</i>	5-7	perennial	Asteraceae
ragweed, common**	<i>Ambrosia artemisiifolia</i>	3 to 5	annual	Asteraceae
ragweed, western	<i>Ambrosia psilostachya</i>	4 to 7	perennial	Asteraceae
ragwort, tansy*, **	<i>Senecio jacobaea</i>	5 to 7	perennial	Asteraceae
redbud	<i>Cercis Canadensis</i>	7	woody perennial	Fabaceae
rush skeletonweed	<i>Chondrilla juncea</i>	5 to 7	perennial	Asteraceae
sicklepod	<i>Cassia obtusifolia</i>	7	perennial	Fabaceae
smartweed, Pennsylvania	<i>Polygonum pennsylvanicum</i>	3 to 5	annual	Polygonaceae
sneezeweed, bitter	<i>Helenium amarum</i>	4 to 7	annual	Asteraceae
soda apple, tropical (6)*, **	<i>Solanum viarum</i>	5 to 7	perennial	Solanaceae
sowthistle, annual	<i>Sonchus oleraceae</i>	7	annual	Asteraceae
sowthistle, perennial*, **	<i>Sonchus arvensis</i>	3 to 5	perennial	Asteraceae
spanishneedles	<i>Bidens bipinnata</i>	4 to 7	annual	Asteraceae
St. Johnswort, common	<i>Hypericum perforatum</i>	5 to 7	perennial	Clusiaceae
stiltgrass, Japanese	<i>Microstegium vimineum</i>	5-7	annual	Poaceae
star-thistle, Malta (7) *,**	<i>Centaurea melitensis</i>	3 to 5	annual	Asteraceae
starthistle, purple (7) *,**	<i>Centaurea calcitrapa</i>	3 to 5	biennial	Asteraceae
star thistle, yellow (7)*, **	<i>Centaurea solstitialis</i>	3 to 5	annual	Asteraceae
sunflower, common	<i>Helianthus annuus</i>	4 to 7	annual	Asteraceae
teasel	<i>Dipsacus spp.</i>	4 to 7	biennial	Dipsacaceae
thistle, artichoke	<i>Cynara cardunculus</i>	5 to 7	perennial	Asteraceae
thistle, blessed milk	<i>Silybum marianum</i>	4-7	biennial	Asteraceae
thistle, bull (8)*, **	<i>Cirsium vulgare</i>	3 to 5	biennial	Asteraceae
thistle, Canada (9)*, **	<i>Cirsium arvense</i>	5 to 7	perennial	Asteraceae
thistle, woolly distaff	<i>Carthamus lanatus</i>	4 to 7	annual	Asteraceae
thistle, Italian	<i>Carduus pycnocephalus</i>	7	annual	Asteraceae
thistle, musk (8)*, **	<i>Carduus nutans</i>	3 to 5	biennial	Asteraceae
thistle, plumeless (8)*, **	<i>Carduus acanthoides</i>	3 to 5	biennial	Asteraceae
thistle, Scotch*, **	<i>Onopordum acanthium</i>	5 to 7	biennial	Asteraceae
thistle, Russian (preemergence)	<i>Salsola tragus</i>	7	annual	Chenopodiaceae
Tree of heaven	<i>Ailanthus altissima</i>	7	perennial	Simaroubaceae
vetch	<i>Vicia spp.</i>	3 to 7	perennial	Fabaceae
willoweed, panicle	<i>Epilobium brachycarpum</i>	5-7	annual	Onagraceae
wisteria	<i>Wisteria brachybotris</i>	7	woody perennial	Fabaceae
wormwood, absinth(10)*, **	<i>Artemisia absinthium</i>	6 to 7	perennial	Asteraceae
yarrow, common	<i>Achillea millefolium</i>	7	perennial	Asteraceae

\*Invasive plants are introduced species that are indicated to be invasive in the USDA-NRCS, PLANTS Database (<http://plants.usda.gov/index.html>).\*\*Plants designated as noxious weeds in at least one state (PLANTS Database, USDA-NRCS, <http://plants.usda.gov/index.html>).

- (1) **Sulfur cinquefoil or oxeye daisy:** Apply Milestone at 4 to 6 fl oz per acre to plants in the prebud stage of development.
- (2) **Orange or yellow hawkweeds:** Apply Milestone at 4 to 7 fl oz per acre to plants in the bolting stage of development.
- (3) **Diffuse and spotted knapweeds:** Apply Milestone at 5 to 7 fl oz per acre when plants are actively growing with the optimum time of application occurring from rosette to the bolting stages of development or in the fall. Plants will be controlled by mid-summer and fall applications even though plants may not show any changes in form or stature the year of application.
- (4) **Russian knapweed:** Apply Milestone at 5 to 7 fl oz per acre to plants in the spring and summer to plants from early bud to flowering stage and to dormant plants in the fall.
- (5) **Mullein:** Apply to the rosette stage
- (6) **Tropical soda apple:** Apply Milestone at 5 to 7 fl oz per acre at any growth stage, but application by flowering will reduce seed production potential.
- (7) **Malta, purple, and Yellow starthistle:** Apply Milestone at 3 to 5 fl oz per acre to plants at the rosette through bolting growth stages.
- (8) **Bull, musk, and plumeless thistles:** Apply Milestone at 3 to 5 fl oz per acre in the spring and early summer to rosette or bolting plants or in the fall to seedlings and rosettes. Apply at 4 to 5 fl oz when plants are at the late bolt through early flowering growth stages. 2,4-D at 1 lb ae/acre should be tank-mixed with Milestone starting at the late bud stages
- (9) **Canada thistle:** Apply Milestone at 5 to 7 fl oz per acre in the spring after all plants have fully emerged (some may be budding) until the oldest plants are in full flower stage. Use the higher rate when applying to the flower stage. Applications are also effective in the fall before a killing frost. Use higher rates for older/dense stands or for longer residual control.

- (10) **Absinth wormwood:** Apply 6 to 7 fl oz per acre before wormwood is 12 inches tall. When applying by air on CRP, coverage is important and a minimum of 3 GPA is specified. Remove old duff and litter by fire or mowing for best results
- (11) **Invasive knotweeds:** Japanese, Bohemian, giant knotweeds: Apply Milestone at 7 fl oz per acre broadcast using high volume per acre (100 gallons per acre) or apply as a spot treatment using 14 fl oz per acre. Optimum results for suppression of plant growth are obtained when applications are made to plants that are about 3 to 4 feet in height in early summer. Multiple applications/retreatments will be necessary for control of resprout; the total amount of Milestone applied broadcast, as a re-treatment, and/or spot treatment cannot exceed 7 fl oz per acre per year.
- (12) **Purple loosestrife:** For optimum control apply Milestone at 7 fl oz per acre plus 1 pt to 1 qt of 2,4-D amine or 1 to 2 qts of Garlon 3A. Spot treatments may also be made by applying Milestone at 14 fl oz (see Spot treatment section of the label) with or without the addition of 2,4-D or Garlon 3A.

## Woody Plant Control

Milestone may be applied alone or in tank-mix combinations with labeled rates of other herbicides provided: (1) the tank mix product is labeled for the timing and method of application for the use site to be treated and (2) mixing is not prohibited by the label of the registered tank mixed products. Use as directed in the Directions of Use section of the tank-mix partner. Follow Mixing Instructions under the General Mixing and Application Instructions section.

Add Milestone to tank mixes for improved brush control on species such as aspen, conifers (pine), elm, maple, cherry, poplar, oak, Scotch broom, boxelder, hackberry, Russian olive, salt cedar, and blackberry.

### FOLIAR APPLICATIONS:

For broad spectrum brush control using a foliar application, Milestone may be added to tank mixes with Accord Concentrate or Accord XRT II, Arsenal Powerline, Garlon 4 Ultra, Forestry Garlon XRT, or Garlon 3A, Rodeo, Tordon K, or other products labeled for use in industrial vegetation management programs.

### LOW VOLUME BASAL BARK APPLICATIONS:

To control susceptible woody plants with stems less than 6 inches in basal diameter, apply herbicide mix (see below for rates) with a backpack or knapsack sprayer using low pressure and a solid cone or flat fan nozzle. Spray the basal parts of brush and tree trunks to a height of 12 to 15 inches from the ground in a manner that thoroughly wets the lower stems but not to the point of runoff. The use of a Spraying Systems Y2 nozzle or similar nozzle is recommended, which will narrow the spray pattern to target individual stems. Herbicide concentration should vary with tree diameter, bark thickness, volume used per acre, and susceptibility of species treated. Apply anytime, including the winter months, except when snow or water prevent spraying to the ground line or when stem surfaces are saturated with water.

Milestone may be used as a low volume basal treatment alone, for sensitive woody species in the Fabaceae family (legumes), or in combination with Garlon 4 Ultra or Forestry Garlon XRT, for broader control of other sensitive woody species. Applications should not exceed the maximum use rate per acre.

Mix Milestone at 1 to 5% v/v alone, or with Garlon 4 Ultra or Forestry Garlon XRT in a commercially available basal diluent (or other oils or basal diluents as recommended by the manufacturer); the basal oil should be compatible with a water soluble herbicide such as Milestone. Make a stable tank mixture for basal bark application by first combining each product with a compatibility agent prior to final mixing in the desired ratio. Mix Milestone and Garlon 4 Ultra or Forestry Garlon XRT (if using a tank mix) thoroughly with basal oil; if the mixture stands for more than 30 minutes, reagitation may be required. Do not store the final mixture.

## Cut surface

Apply Milestone in the cut surface applications listed below for control of susceptible tree species such as legumes like Albezia, mimosa, locust, etc. Mixtures of Milestone and Garlon 3A or Garlon 4 may be effective on species other than legumes such as elm, maple, oak and conifers..

Cut surface applications may be used successfully at any season except during periods of heavy sap flow of certain species - for example, maples.

### Cut-Stump Treatment

Apply Milestone as a 10% dilution v/v in water, by spraying or painting the cut surfaces of freshly cut stumps and stubs as soon as possible after cutting with undiluted Milestone. The cambium area next to the bark is the most vital area to wet.

### With Tree Injector Method

Apply by injecting 1 milliliter of 10% v/v Milestone in water through the bark at intervals of 3 to 4 inches between centers of the injector wound. The injections should completely surround the tree at any convenient

height. Note: No Worker Protection Standard worker entry restrictions or worker notification requirements apply when this product is injected directly into plants.

### With Hack and Squirt Method

Make cuts around the tree trunk at a convenient height with a hatchet or similar equipment so that the cuts overlap slightly and make a continuous circle around the trunk. Spray 1 milliliter of 10% v/v Milestone in water into the pocket created between the bark and the inner stem/trunk by each cut.

### With Frill or Girdle Method

Make a single girdle through the bark completely around the tree at a convenient height. The frill should allow for the herbicide to remain next to the inner stem and absorb into the plant. Wet the cut surface with 10% v/v Milestone in water.

## Precautions for Avoiding Spray Drift

Avoid application under conditions that may allow spray drift because very small quantities of spray, which may not be visible, may injure susceptible crops. This product should be applied only when the potential for drift to adjacent sensitive areas (e.g., residential areas, bodies of water, non-target crops and other plants) is minimal (e.g., when wind is blowing away from the sensitive areas. A drift control aid may be added to the spray solution to further reduce the potential for drift. If a drift control aid is used, follow the use directions and precautions on the manufacturer's label. Do not use a thickening agent with Microfoil, Thru-Valve booms, or other spray delivery systems that cannot accommodate thickened spray solutions.

**Ground Equipment:** With ground equipment spray drift can be lessened by keeping the spray boom as low as possible; by applying 10 gallons or more of spray per acre; by keeping the operating spray pressures at the manufacturer's specified minimum pressures for the specific nozzle type used (low pressure nozzles are available from spray equipment manufacturers); and by spraying when the wind velocity is low (follow state regulations). Avoid calm conditions which may be conducive to thermal inversions. Direct sprays no higher than the tops of target vegetation and keep spray pressures low enough to provide coarse spray droplets to minimize drift.

**Aerial Application:** Avoid spray drift at the application site. The interaction of many equipment-and-weather-related factors determine the potential for spray drift. Users are responsible for considering all these factors when making decisions.

The following drift management requirements must be followed to avoid off-target drift movement from aerial applications:

1. The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan or 85% of rotor diameter.
2. Nozzles should be pointed backward parallel with the air stream or not pointed downwards more than 45 degrees.

State regulations must be followed.

The applicator should be familiar with and take into account the information covered in the following **Aerial Drift Reduction Advisory**. This information is advisory in nature and does not supersede mandatory label requirements.

## Aerial Drift Reduction Advisory

**Information on Droplet Size:** The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

### Controlling Droplet Size:

- **Volume** - Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets.
- **Pressure** - Do not exceed the nozzle manufacturer's specified pressures. For many nozzle types lower pressure produces larger droplets. When higher flow rates are needed, use higher flow rate nozzles instead of increasing pressure.
- **Number of Nozzles** - Use the minimum number of nozzles that will provide uniform coverage.
- **Nozzle Orientation** - Orient nozzles so that the spray is released parallel to the airstream to produce larger droplets than other orientations. Significant deflection from horizontal will reduce droplet size and increase drift potential.
- **Nozzle Type** - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

**Boom Length:** The distance of the outer most operating nozzles on the boom must not exceed 75% of wingspan or 85% of rotor diameter.

**Application Height:** Applications should not be made at a height greater

than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure of droplets to evaporation and wind.

**Swath Adjustment:** When applications are made with a crosswind, the swath will be displaced downwind. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

**Wind:** Drift potential is lowest between wind speeds of 2 to 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided below 2 mph due to variable wind direction and high inversion potential. **Note:** Local terrain such as valleys and ravines can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

**Temperature and Humidity:** When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

**Temperature Inversions:** Applications should not occur during a local, low level temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of the 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.

---

### Terms and Conditions of Use

If terms of the following Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies are not acceptable, return unopened package at once to the seller for a full refund of purchase price paid. To the extent permitted by law, otherwise, use by the buyer or any other user constitutes acceptance of the terms under Warranty Disclaimer, Inherent Risks of Use and Limitation of Remedies.

---

### Warranty Disclaimer

Dow AgroSciences warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below. To the extent permitted by law, Dow AgroSciences MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR

PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

---

### Inherent Risks of Use

It is impossible to eliminate all risks associated with use of this product. Crop injury, lack of performance, or other unintended consequences may result because of such factors as use of the product contrary to label instructions (including conditions noted on the label, such as unfavorable temperatures, soil conditions, etc.), abnormal conditions (such as excessive rainfall, drought, tornadoes, hurricanes), presence of other materials, the manner of application, or other factors, all of which are beyond the control of Dow AgroSciences or the seller. To the extent permitted by law, all such risks shall be assumed by buyer.

---

### Limitation of Remedies

To the extent permitted by law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Dow AgroSciences' election, one of the following:

1. Refund of purchase price paid by buyer or user for product bought, or
2. Replacement of amount of product used.

To the extent permitted by law, Dow AgroSciences shall not be liable for losses or damages resulting from handling or use of this product unless Dow AgroSciences is promptly notified of such loss or damage in writing. To the extent permitted by law, in no case shall Dow AgroSciences be liable for consequential or incidental damages or losses.

The terms of the Warranty Disclaimer, Inherent Risks of Use and this Limitation of Remedies cannot be varied by any written or verbal statements or agreements. No employee or sales agent of Dow AgroSciences or the seller is authorized to vary or exceed the terms of the Warranty Disclaimer or this Limitation of Remedies in any manner.

® Trademark of Dow AgroSciences LLC

™Harmony, Express and Ally are trademarks of E. I. DuPont de Nemours and Company

**Produced for  
Dow AgroSciences LLC  
9330 Zionsville Road  
Indianapolis, IN 46268**

Label Code: D02-879-005  
Replaces Label: D02-879-004  
LOES Number: 010-02112

EPA accepted 10/12/12

### Revisions:

1. Add restrictions for Northeast states.

**Product Name:** Milestone\* Herbicide

**Issue Date:** 2011.07.07

Dow AgroSciences Canada Inc. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

## 1. Product and Company Identification

**Product Name**

Milestone\* Herbicide

**COMPANY IDENTIFICATION**

Dow AgroSciences Canada Inc.  
A Subsidiary of The Dow Chemical Company  
Suite 2100, 450 1<sup>st</sup> Street SW,  
Calgary, AB T2P 5H1  
Canada

**For MSDS updates and Product Information:** 800-667-3852

**Prepared By:** Prepared for use in Canada by EH&S, Hazard Communications.  
**Revision** 2011.07.07

Customer Information Number: 800-667-3852  
[solutions@dow.com](mailto:solutions@dow.com)

**EMERGENCY TELEPHONE NUMBER**

**24-Hour Emergency Contact:** 613-996-6666  
**Local Emergency Contact:** 613-996-6666

## 2. Hazards Identification

**Emergency Overview**

**Color:** Brown

**Physical State:** Liquid

**Odor:** Mild

**Hazards of product:**

Eliminate ignition sources.

**Potential Health Effects**

**Eye Contact:** Essentially nonirritating to eyes. Corneal injury is unlikely.

**Skin Contact:** Essentially nonirritating to skin.

**Skin Absorption:** Prolonged skin contact is unlikely to result in absorption of harmful amounts.

**Inhalation:** No adverse effects are anticipated from single exposure to mist. Based on the available data, respiratory irritation was not observed.

**Ingestion:** Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

**3. Composition/information on ingredients**

Component	CAS #	Amount W/W
Aminopyralid Triisopropanolamine Salt	566191-89-7	40.6 %
Triisopropanolamine	122-20-3	1.5 %
Balance	Not available	57.9 %

Amounts are presented as percentages by weight.

**4. First-aid measures****Description of first aid measures**

**General advice:** If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air; if effects occur, consult a physician.

**Skin Contact:** Wash skin with plenty of water.

**Eye Contact:** Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.

**Ingestion:** No emergency medical treatment necessary.

**Most important symptoms and effects, both acute and delayed**

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

**Indication of immediate medical attention and special treatment needed**

No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Have the Safety Data Sheet, and if available, the product container or label with you when calling a poison control center or doctor, or going for treatment.

**5. Fire Fighting Measures****Suitable extinguishing media**

To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function.

**Special hazards arising from the substance or mixture**

**Hazardous Combustion Products:** During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide. Combustion products may include trace amounts of: Cyanides.

**Unusual Fire and Explosion Hazards:** This material will not burn until the water has evaporated. Residue can burn. Container may rupture from gas generation in a fire situation. May produce flash fire. If exposed to fire from another source and water is evaporated, exposure to high temperatures may cause toxic fumes.

**Advice for firefighters**

**Fire Fighting Procedures:** Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. To extinguish combustible residues of this product use water fog, carbon dioxide, dry chemical or foam. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage. Review the "Accidental Release Measures" and the "Ecological Information" sections of this (M)SDS.

**Special Protective Equipment for Firefighters:** Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

See Section 9 for related Physical Properties

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

**Environmental precautions:** Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

**Methods and materials for containment and cleaning up:** Contain spilled material if possible. Small spills: Absorb with materials such as: Clay. Dirt. Sand. Sweep up. Collect in suitable and properly labeled containers. Large spills: Contact Dow AgroSciences for clean-up assistance. See Section 13, Disposal Considerations, for additional information.

## 7. Handling and Storage

**Handling**

**General Handling:** Keep out of reach of children. Do not swallow. Avoid breathing vapor or mist. Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Wash thoroughly after handling.

**Storage**

Store in a dry place. Store in original container. Keep container tightly closed when not in use. Do not store near food, foodstuffs, drugs or potable water supplies.

## 8. Exposure Controls / Personal Protection

**Exposure Limits**

Component	List	Type	Value
Triisopropanolamine	Dow IHG	TWA	10 mg/m <sup>3</sup>

*Consult local authorities for recommended exposure limits.*

RECOMMENDATIONS IN THIS SECTION ARE FOR MANUFACTURING, COMMERCIAL BLENDING AND PACKAGING WORKERS. APPLICATORS AND HANDLERS SHOULD SEE THE PRODUCT LABEL FOR PROPER PERSONAL PROTECTIVE EQUIPMENT AND CLOTHING.

**Personal Protection**

**Eye/Face Protection:** Use safety glasses (with side shields).

**Skin Protection:** No precautions other than clean body-covering clothing should be needed.

**Hand protection:** Chemical protective gloves should not be needed when handling this material. Consistent with general hygienic practice for any material, skin contact should be minimized.

**Respiratory Protection:** Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

**Ingestion:** Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

### Engineering Controls

**Ventilation:** Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

## 9. Physical and Chemical Properties

### Appearance

<b>Physical State</b>	Liquid
<b>Color</b>	Brown
<b>Odor</b>	Mild
<b>Odor Threshold</b>	No test data available
<b>pH</b>	7.3 <i>pH Electrode</i>
<b>Melting Point</b>	Not applicable
<b>Freezing Point</b>	< -10 °C
<b>Boiling Point (760 mmHg)</b>	No test data available
<b>Flash Point - Closed Cup</b>	> 100 °C <i>Pensky-Martens Closed Cup ASTM D 93</i>
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No test data available
<b>Flammable Limits In Air</b>	<b>Lower:</b> No test data available <b>Upper:</b> No test data available
<b>Vapor Pressure</b>	No test data available
<b>Vapor Density (air = 1)</b>	No test data available
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	1.14
<b>Solubility in water (by weight)</b>	Soluble
<b>Autoignition Temperature</b>	No test data available
<b>Decomposition Temperature</b>	No test data available
<b>Dynamic Viscosity</b>	12.2 cPs @ 20 °C <i>EPA OPPTS 830.7100 (Viscosity)</i>
<b>Kinematic Viscosity</b>	No test data available
<b>Liquid Density</b>	1.140 g/ml @ 20 °C <i>Digital density meter</i>

## 10. Stability and Reactivity

### Reactivity

No dangerous reaction known under conditions of normal use.

### Chemical stability

Thermally stable at recommended temperatures and pressures.

### Possibility of hazardous reactions

Polymerization will not occur.

**Conditions to Avoid:** Active ingredient decomposes at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid.

**Incompatible Materials:** Avoid contact with: Strong acids. Strong oxidizers.

**Hazardous decomposition products**

Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Carbon monoxide. Carbon dioxide. Nitrogen oxides. Gases are released during decomposition.

## 11. Toxicological Information

### Acute Toxicity

#### Ingestion

As product: LD50, Rat, male and female > 5,000 mg/kg

#### Dermal

As product: LD50, Rat, male and female > 5,000 mg/kg

#### Inhalation

As product: LC50, 4 h, Aerosol, Rat, male and female > 5.79 mg/l

### Eye damage/eye irritation

Essentially nonirritating to eyes. Corneal injury is unlikely.

### Skin corrosion/irritation

Essentially nonirritating to skin.

### Sensitization

#### Skin

Did not cause allergic skin reactions when tested in guinea pigs.

#### Respiratory

No relevant data found.

### Repeated Dose Toxicity

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

### Chronic Toxicity and Carcinogenicity

For similar active ingredient(s). Aminopyralid. Did not cause cancer in laboratory animals.

### Developmental Toxicity

Did not cause birth defects or any other fetal effects in laboratory animals.

### Reproductive Toxicity

For similar active ingredient(s). Aminopyralid. In animal studies, did not interfere with reproduction.

### Genetic Toxicology

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

## 12. Ecological Information

### Toxicity

Material is practically non-toxic to aquatic invertebrates on an acute basis (LC50/EC50 > 100 mg/L). Material is practically non-toxic to birds on an acute basis (LD50 > 2000 mg/kg). Material is slightly toxic to birds on a dietary basis (LC50 between 1001 and 5000 ppm).

#### Fish Acute & Prolonged Toxicity

LC50, rainbow trout (*Oncorhynchus mykiss*), static, 96 h: 360 mg/l

#### Aquatic Invertebrate Acute Toxicity

EC50, water flea *Daphnia magna*, static, 48 h, immobilization: > 460 mg/l

#### Aquatic Plant Toxicity

ErC50, green alga *Pseudokirchneriella subcapitata* (formerly known as *Selenastrum capricornutum*), Growth rate inhibition, 72 h: > 1,000 mg/l

#### Toxicity to Above Ground Organisms

dietary LC50, bobwhite (*Colinus virginianus*): > 4670 mg/kg diet.

oral LD50, Honey bee (*Apis mellifera*): > 100 micrograms/bee

contact LD50, Honey bee (*Apis mellifera*): > 100 micrograms/bee

**Toxicity to Soil Dwelling Organisms**

LC50, Earthworm Eisenia foetida, adult, 14 d: &gt; 10,000 mg/kg

**Persistence and Degradability**Data for Component: **Aminopyralid Triisopropanolamine Salt**

For similar material(s): Aminopyralid. Material is not readily biodegradable according to OECD/EEC guidelines.

Data for Component: **Triisopropanolamine**

Biodegradation under aerobic static laboratory conditions is high (BOD20 or BOD28/ThOD &gt; 40%). Biodegradation rate may increase in soil and/or water with acclimation. Material is not readily biodegradable according to OECD/EEC guidelines.

**OECD Biodegradation Tests:**

Biodegradation	Exposure Time	Method	10 Day Window
0 %	28 d	OECD 301F Test	fail

**Indirect Photodegradation with OH Radicals**

Rate Constant	Atmospheric Half-life	Method
1.2E-10 cm <sup>3</sup> /s	3 h	Estimated

**Biological oxygen demand (BOD):**

BOD 5	BOD 10	BOD 20	BOD 28
47 %	70 %		

Theoretical Oxygen Demand: 2.35 mg/mg

**Bioaccumulative potential**Data for Component: **Aminopyralid Triisopropanolamine Salt****Bioaccumulation:** For similar active ingredient(s). Aminopyralid. Bioconcentration potential is low (BCF < 100 or Log Pow < 3).Data for Component: **Triisopropanolamine****Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).**Partition coefficient, n-octanol/water (log Pow):** -0.015 Measured**Bioconcentration Factor (BCF):** < 0.57; fish; Measured**Mobility in soil**Data for Component: **Aminopyralid Triisopropanolamine Salt****Mobility in soil:** For similar active ingredient(s)., Aminopyralid., Potential for mobility in soil is very high (Koc between 0 and 50).Data for Component: **Triisopropanolamine****Mobility in soil:** Potential for mobility in soil is very high (Koc between 0 and 50).**Partition coefficient, soil organic carbon/water (Koc):** 10 Estimated.**Henry's Law Constant (H):** 1E-06 Pa m<sup>3</sup>/mol; 25 °C Estimated.**13. Disposal Considerations**

If wastes and/or containers cannot be disposed of according to the product label directions, disposal of this material must be in accordance with your local or area regulatory authorities. This information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. If the material as supplied becomes a waste, follow all applicable regional, national and local laws.

## 14. Transport Information

### **TDG Small container**

NOT REGULATED

### **TDG Large container**

NOT REGULATED

### **IMDG**

NOT REGULATED

### **ICAO/IATA**

NOT REGULATED

## 15. Regulatory Information

### **CEPA - Domestic Substances List (DSL)**

All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

### **Hazardous Products Act Information: CPR Compliance**

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

### **Hazardous Products Act Information: WHMIS Classification**

This product is exempt under WHMIS.

### **Pest Control Products Act Registration number: 28517**

### **National Fire Code of Canada**

Not applicable

## 16. Other Information

### **Hazard Rating System**

<b>NFPA</b>	<b>Health</b>	<b>Fire</b>	<b>Reactivity</b>
	1	0	0

### **Recommended Uses and Restrictions**

Product use: End use herbicide product

### **Revision**

Identification Number: 82649 / 1023 / Issue Date 2011.07.07 / Version: 5.0

DAS Code: GF-871

Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### **Legend**

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.

DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
VOL/VOL	Volume/Volume

*Dow AgroSciences Canada Inc. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.*



**A BLEND OF MODIFIED VEGETABLE OIL CONCENTRATE  
AND A SILICONE SURFACTANT**



**PRINCIPAL FUNCTIONING AGENTS – %BY WT.**

Ethylated seed oil; 3-(3-hydroxypropyl)-heptamethyltrisiloxane,  
ethoxylated acetate; polyoxyethylene dioleate;  
Polyol alkyl ethoxylate ..... 100%

Surfactant content . . . . 40%

CA Reg. No. 2935-50167

WA Reg. No. AW 2935-00004

**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

**PRECAUTIONARY STATEMENTS**

**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

Avoid contact with eyes. Wash thoroughly with soap and water after handling. Do not take internally. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

**FIRST AID**

Have the product container or label with you when calling a poison control center or doctor or going for treatment. **If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. **If on skin:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice. **If swallowed:** Call a poison control center or doctor immediately for treatment advice. Do not induce vomiting unless told to by a poison control center or doctor. Do not give anything to an unconscious person. **If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

**SUGGESTIONS FOR USE**

Prior to use, read all directions on this label and on the label of the respective pesticide being used. The pesticide manufacturer's label for specific usage and restrictions has precedence over directions for use referred to on this label. To ensure thorough mixing, it is suggested that you recirculate mini tanks and bulk tanks or shake containers before using.

**Wetting/Spreading/Penetration:** For general wetting, spreading and penetration use 4 fl. oz./acre. For spray volumes greater than 30 gallons per acre, use SYL-TAC at a minimum of 0.1% volume/volume.

**For pesticides that permit use of an adjuvant at a higher rate, follow instructions on that pesticide label. HOWEVER, DO NOT ADD THIS PRODUCT AT A RATE WHICH EXCEEDS 5% OF THE FINISHED SPRAY VOLUME.**

**Backpack or hand held sprayers:** Use 1 to 3 teaspoons per gallon of spray solution.

**Note:** Selective herbicides: SYL-TAC may increase the response of selective herbicides. The user or applicator should evaluate this response prior to widespread usage. Nonselective herbicides: SYL-TAC enhances the efficacy of nonselective herbicides on most broadleaf, brushweed species and some annual grasses. Care should be taken to avoid contact of spray solution to crops.

Do not apply on Golf Tees and Greens.

**IN CASE OF EMERGENCY, CALL CHEMTREC (800) 424-9300**

**STORAGE AND DISPOSAL**

Do not contaminate water, food or feed by storage, disposal or cleaning of equipment.

**STORAGE:** Store in original container only and keep sealed. Store in closed storage areas. Use caution when moving, opening, closing or pouring.

**PESTICIDE DISPOSAL:** Improper disposal of excess spray mixture or rinsate is a violation of federal law. Wastes resulting from use of this product should be disposed of through on site spray application or at an approved waste disposal facility.

**CONTAINER DISPOSAL:** Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or other procedures approved by state and local authorities.

**GENERAL INFORMATION**

**Not for Aquatic use.**

SYL-TAC is a proprietary blend of a highly effective organosilicone surfactant and modified vegetable oil concentrate. SYL-TAC is designed for use with pesticides requiring an organosilicone surfactant or a modified vegetable oil concentrate. Spray solutions mixed with SYL-TAC can provide excellent spreading, wetting and penetration on the leaf surface depending on the concentration used. The blend of organosilicone<sup>1</sup> surfactant and modified vegetable oil concentrate<sup>2</sup> in SYL-TAC has demonstrated exceptional herbicide enhancement on both broadleaf and grass weed species. Exercise care when applying SYL-TAC with post emergence herbicides on sensitive crops during periods of drought stress, high temperatures and high humidity.

A spray adjuvant added to some pesticide or pesticide tank mixes may cause some phytotoxicity to susceptible crops or plants. Caution should be used when applying SYL-TAC and it may be advisable to make application to a small area before full-scale treatments are made.

**MIXING DIRECTIONS**

Fill tank one-half full of water. Add the required amount of pesticide while agitating. Add remainder of the water. Add the recommended amount of SYL-TAC last and continue agitation until completion of spraying.

**Conditions of Sale and Limitation of Warranty and Liability:**

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using the product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of the product should be followed carefully. It is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness, or other unintended consequences may result because of many different factors including, without limitation, manner of use or application, weather, combination with other products, or crop conditions. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold Manufacturer and Seller harmless from any claims relating to such factors.

**Seller warrants that this product conforms to the chemical description on the label. EXCEPT FOR THIS WARRANTY, THE PRODUCT IS FURNISHED "AS-IS," AND NEITHER SELLER NOR MANUFACTURER MAKES ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, WITH RESPECT TO THE SELECTION, PURCHASE OR USE OF THIS PRODUCT; SELLER AND MANUFACTURER SPECIFICALLY DISCLAIM ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Buyer and User accept all risks arising from any use of this product, including without limitation uses contrary to label instructions, under abnormal conditions, or under conditions not reasonably foreseeable to (or beyond the control of) Seller or Manufacturer.**

**To the extent permitted by law, neither Manufacturer nor Seller shall be liable for any incidental, consequential or special damages resulting from the use or handling of this product. THE EXCLUSIVE REMEDY OF THE BUYER OR USER, AND THE EXCLUSIVE LIABILITY OF MANUFACTURER AND SELLER, FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THIS PRODUCT, OR, AT THE ELECTION OF MANUFACTURER OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

These Conditions of Sale and Limitation of Warranty and Liability shall be interpreted in accordance with the laws of the State of California, excluding its conflicts of laws or rules, and may not be amended by any oral or written agreement.

<sup>1</sup>Organosilicone surfactant included is Sylgard 309<sup>®</sup>, an organic silicone product.

<sup>2</sup>Modified vegetable oil concentrate included is Hasten<sup>®</sup>.

Sylgard 309<sup>®</sup> is a registered trademark of Dow Corning Corporation, USA.

WILBUR-ELLIS Logo<sup>®</sup>, SYL-TAC<sup>®</sup> and Hasten<sup>®</sup> are registered trademarks of Wilbur-Ellis Company.

Translam<sup>™</sup> is a trademark of Wilbur-Ellis Company.

F-307-1

NET WEIGHT:

**Manufactured in the U.S.A. by:  
WILBUR-ELLIS COMPANY  
P.O. BOX 16458 – FRESNO, CA 93755**



PO BOX 16458 • FRESNO CA 93755

# MATERIAL SAFETY DATA SHEET

PRODUCT/TRADE NAME:

## SYL-TAC

### I. NAME

PRODUCT/TRADE NAME: SYL-TAC  
EPA REGISTRATION #: NONE  
CHEMICAL NAME/COMMON NAME:  
2-(3-Hydroxypropyl)-Heptamethyl-Trisiloxane, Ethoxylated Acetate/Polysiloxane

### II. HAZARDOUS INGREDIENTS

	CAS#	OSHA PEL	ACGIH TLV
Polysiloxane	125997-17-3	NE	NE

### III. PHYSICAL DATA

SPECIFIC GRAVITY (H2O = 1): .933  
MELTING POINT: NA  
VAPOR DENSITY (AIR = 1): NE  
% VOLATILES BY VOL.: NE  
ODOR: None  
APPEARANCE: Pale Yellow Liquid  
FLASH POINT/METHOD: 205 Deg. F  
VAPOR PRESSURE (mmHg): NE  
SOLUBILITY IN H2O: Soluble

### IV. FIRE & EXPLOSION HAZARD

EXTINGUISHING MEDIA:  Water Fog  Foam  Alcohol Foam  
 CO2  Dry Chemical  Other  
FIRE FIGHTING PRECAUTIONS & HAZARDS:  
Fight fire upwind. Wear positive pressure demand self-contained breathing apparatus and full protective equipment. Do not breathe smoke. Avoid fallout and runoff. Dike to prevent entering drains, sewers, or water courses. Evacuate people downwind from fire.

### V. CARCINOGEN STATUS

OSHA  NTP  IARC  No Listing Type

### VI. REACTIVITY

Stable  HAZARDOUS POLYMERIZATION  
 Unstable  May Occur  Will Not Occur  
AVOID: NONE  
HAZARDOUS DECOMPOSITION PRODUCTS: COx, SiOx

### VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF SPILL: Absorb with inert material. Sweep or vacuum and place into approved disposal container.  
DECONTAMINATION: Treat contaminated area with detergent and water. Absorb with inert material and place in disposal containers. Repeat as necessary until area is clean.  
ENVIRONMENTAL HAZARDS: Dike to prevent entering drains, sewers or water courses.  
DISPOSAL: Dispose of in accordance with Federal, State and local regulations.

### VIII. HEALTH PRECAUTION DATA

INGESTION: Do not ingest. May cause nausea. Wash thoroughly before eating, drinking or smoking.  
INHALATION: No PEL/TLV for this product. Do not breathe vapors.  
SKIN ABSORPTION: May cause slight skin irritation. Wear proper personal protective equipment to reduce exposure.  
EYE EXPOSURE: Keep out of eyes. If exposed, flush eyes for a minimum of 15 minutes with water.  
EFFECTS OF OVEREXPOSURE: May cause nausea or skin irritation. No known chronic effects. Preexisting medical conditions involving the above symptoms may be aggravated by exposure.  
FIRST AID: In all cases, get prompt medical attention. If swallowed, give several glasses of water and induce vomiting. Do not induce vomiting if person is unconscious. For skin exposure, remove contaminated clothing and wash with soap and water. For eye exposure, irrigate for a minimum of 15 minutes with water. If inhaled, remove victim to fresh air, and administer CPR if necessary.

### IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: Use NIOSH/MSHA - approved respirator for organic vapors for the exposures encountered. Positive pressure self-contained breathing apparatus should be used for confined space entry and high exposure operations.  
PERSONAL PROTECTIVE EQUIPMENT: Neoprene or rubber gloves and chemical goggles to reduce splash exposure.  
VENTILATION: General ventilation recommended.

### X. SPECIAL PRECAUTIONS

Keep out of the reach of children. Read and follow all label instructions.

### XI. REGULATORY DATA

SARA HAZARD CLASS:  Acute  Chronic  Flammable  
 Pressure  Reactive  None

SARA 313:  Yes  No Chemical:

SARA 302:  Yes  No Chemical:

TPO:

CERCLA:  Yes  No Chemical:

RQ:

RCRA:  Yes  No

NFPA HAZARD RATING:

Health: [1]

Fire: [2]

Reactivity: [0]

Special: [ ]

HMS CODES:

Health: [1]

Fire: [2]

Reactivity: [0]

NFPA HAZARD RATING SCALE:

0 = Minimal 3 = Serious

1 = Slight 4 = Severe

2 = Moderate

HMS HAZARD RATING SCALE:

0 = Minimal 3 = Serious

1 = Slight 4 = Severe

2 = Moderate

DATE PREPARED: December 9, 1996

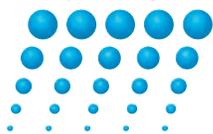
REVISED DATE: May 22, 2006

Notice: This information was developed from information on the constituent materials. No warranty is expressed or implied regarding the completeness or continuing accuracy of the information contained herein, and Wilbur-Ellis disclaims all liability for reliance thereon. The user should satisfy himself that he has all current data relevant to his particular use.

\*Technical Material NE - Not Established NA - Not Applicable

**24 Hour Emergency Phone Number**  
**CHEMTREC: (800) 424-9300**





# Hi-Light® & Hi-Light WSP®

## Industrial Strength Spray Pattern Indicator

### GENERAL DESCRIPTION

- See where you spray.
- Improves applicator safety.
- Dissipates under sunlight or moisture.
- Indicates skips and overlaps.

Hi-Light® is a temporary colorant used for effectively marking spray applications. Hi-Light improves applicator safety. It provides the applicator with an economical marker for broadcast, backpack, or general spot treatment. It can be used with spotgun, hand equipment, small broadcast equipment, boom-jet, and other spray application equipment. Hi-Light washes off equipment, clothing and skin with soap and water.

By adding Hi-Light to spraying systems, spray application personnel are able to uniformly apply pesticides and liquid fertilizers. Hi-Light is compatible with most chemical compounds and is used in applications ranging from broadcasting of soil sterilants to spot treating with brush control products. Hi-Light is available in liquid form and in convenient Water Soluble Packets, or WSPs. Hi-Light WSP is a dry flowable formulation of Hi-Light colorant packed in easy-to-use WSPs. It dissolves quickly and completely in the spray tank, leaving no residue to clog screens or nozzles. Hi-Light WSP eliminates applicator contact or container disposal problems.

### RECOMMENDED RATES

Hi-Light (Liquid Formulation)		Backpack or Small Sprayer	
Area to be treated	Rate/100 gal. (380 L) of solution	Tank Size*	Suggested Amount*
Gravel, bare ground	6-12 oz. (175-335 ml)	1 gal.	1/2 oz. (15 ml)
Roadside rights-of-way, industrial vegetation	10-16 oz. (355-475 ml)	30 gal.	6-10 oz. (355-475 ml)
Utility rights-of-way, forestry, railroad use, brush	12-32 oz. (475-945 ml)	100 gal.	16-32 oz. (475-945 ml)

Hi-Light WSP		
Rate	Area to be treated	WSPs/100 gal. (380 L)
Low rate (bare ground)	Bare ground, substations, lots	1 packets
Medium rate (limited foliage)	Roadside & highway ROW, fence lines, forestry	1-3 packets
High rate (dense foliage)	Utility ROW & corridors, heavy brush or forestry	2-4 packets

### DIRECTIONS FOR USE

Fill the spray tank half full of water/solution. For paddle agitation systems, paddles should at least be partially covered with water. Activate agitation system. Add required number of WSPs to obtain desired color concentration. (See chart for recommended rates.) Continue filling tank while the packets dissolve and Hi-Light WSP disperses. Prior to spraying, make sure Hi-Light WSP has properly dispersed in spray tank.

40 Hi-Light WSPs = 4 gallons Hi-Light liquid formulation

NOTE: the time required to dissolve and disperse Hi-Light WSP varies depending upon water temperature and tank agitation. Allow at least five minutes for the packets to dissolve after being added to the spray solution.

### PACKAGING

Available in gallons (4x1 and 2x2.5), quarts (12x1), 30 gallon drums, tablets and WSPs (40x1).

Hi-Light® and WSP® are registered trademarks of Becker Underwood.



# Material Safety Data Sheet

## Section 1. Product and Company Identification

**Product Name:** Hi-Light® Blue Liquid  
**Product Code:** BUI/HL  
**Effective Date:** March 24, 2009

**Manufacturer Information:** Becker Underwood, Inc.  
 801 Dayton Avenue  
 Ames, Iowa 50010  
 Information Phone: (515) 232-5907  
 Emergency Phone: Chemtrec (800) 424-9300 or 703 527 3887 (international)

### Hazardous Material Information System:

Health	1
Flammability	0
Physical Hazard	0
Personal Protection	X

## Section 2. Hazard Identification

**Emergency Overview:** May cause respiratory tract, eye, and skin irritation.

### Potential Acute Health Effects:

- Eyes:* Short term harmful effects are not expected. However, irritation may develop causing itching and redness.
- Skin:* Short term harmful effects are not expected. However, mild skin irritation may develop causing itching and redness.
- Inhalation:* Short term harmful effects are not expected. However, exposure to vapors or mist may cause coughing or wheezing when inhaled.
- Ingestion:* Not an intended route of exposure. Short term harmful effects are not expected. However, may upset the gastrointestinal tract and cause diarrhea.

## Section 3. Composition/Information on Ingredients

The composition of this material is a trade secret. Contains no other components or impurities which will influence the classification with regard to human and environmental risk assessment.

## Section 4. First Aid Measures

- Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Prolonged or repeated contact may result in mechanical irritation.
- Skin Contact:** Wash with soap and water.
- Inhalation:** Move to fresh air. Seek medical attention if irritation persists.
- Ingestion:** Seek medical attention.

## Section 5. Fire Fighting Measures

- Flammability of Product:** Not a fire or explosion hazard when stored under normal conditions.
- Fire Fighting Media:** Foam, alcohol foam, CO2, dry chemical, water fog
- Protective Clothing:** This product is an aqueous mixture which will not burn. If evaporated to dryness, the solid residue may pose a moderate fire hazard. No special procedures required besides standard fire fighting procedures.

## Section 6. Accidental Release Measures

**Clean-Up Procedures:** Collect spilled material with an inert absorbent such as sand or vermiculite. Place in properly labeled and closed container. Dispose of collected material according to federal, state/provincial, and local regulations.

**Spills and Leaks:** Contain the spill or leak to prevent discharges to surface streams or storm sewers. This material is a concentrated dye/pigment. Small quantities in contaminated water solutions will color large volumes.

## Section 7. Handling and Storage

**Handling:** Avoid breathing fumes. General mechanical ventilation can be expected to effectively remove and prevent build up of any vapor or mist generated from handling this product in a closed environment. Do not freeze. Protect eyes to prevent contact. Avoid prolong or repeated exposure to skin.

**Storage:** Keep container dry. Keep containers sealed until ready for use.

## Section 8. Exposure Control/Personal Protection

Hazardous Components		Occupational Exposure Limits		
Component	CAS Number	OSHA PEL	ACGIH TLV	Weight Percent
***No reportable quantities of hazardous ingredients are present***				
***No reportable quantities of toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372 are present***				

**Engineering controls:** General mechanical ventilation can be expected to effectively remove and prevent build up of any vapor or mist generated from handling this product in a closed environment

**Personal Protection:**

- Eyes:* Wear safety glasses with side shields. Wear additional eye protection such as chemical goggles or face shield if splashing or spraying hazard exists. Have an eye wash station available.
- Body:* To prevent skin contact use coveralls, apron, boots, or lab coat.
- Hands:* Avoid skin contact by using chemically resistant gloves.
- Respiratory:* No respiratory protection required under normal conditions of use. Use local exhaust to control excessive vapors/mists. If excessive vapors or mists are persist use appropriate NIOSH/MSHA approved organic vapor/mist respirator.

**Other:** Open wounds or skin surface disruptions should be covered with a chemical resistant patch to minimize absorption risks. Clean clothing should be worn daily to avoid possible long-term build up of the product leading to chronic overexposure.

## Section 9. Physical and Chemical Properties

<b>Odor</b>	No odor	<b>Vapor Density</b>	Heavier than air
<b>Color</b>	Blue	<b>Evaporation Rate</b>	Slower than ether
<b>Physical state</b>	Liquid	<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	~ 1.1 g/mL
<b>pH</b>	NA	<b>Solubility</b>	Water soluble
<b>Melting/Freezing Point</b>	NA		

## Section 10. Stability and Reactivity

<b>Chemical Stability:</b>	This material is chemically stable under normal and storage and handling conditions.
<b>Hazardous Decomposition:</b>	When involved in a fire, burning may evolve noxious fumes which may include carbon monoxide, carbon dioxide, nitrous oxides, acetic acid, or other toxic compounds depending on the chemical composition and combustion conditions. However, all of the water must be driven off first for this to occur.
<b>Hazardous Polymerization:</b>	Is not known to occur.
<b>Incompatibility (Materials to Avoid):</b>	Long term storage in direct contact with reactive metals such as aluminum, zinc, copper, nickel, magnesium, etc. Other materials to avoid include strong oxidizing agents.

## Section 11. Toxicological Information

<b>Chronic Toxicity:</b>	None known
<b>Carcinogenic Effects:</b>	None known
<b>Mutagenic Effects:</b>	None known
<b>Teratogenic Effects:</b>	None known
<b>Developmental Toxicity:</b>	None known
<b>Acute Effects on Humans:</b>	May cause skin, eye, and respiratory irritation.
<b>Sensitization:</b>	Repeated or prolonged exposure to the substance at concentration above the exposure limits may cause respiratory tract and lung sensitization.
<b>Carcinogenic Effects:</b>	This material is not known to cause cancer in animals or humans.
<b>Existing Medical Conditions Aggravated By Exposure:</b>	May provoke asthmatic response in persons with asthma who are sensitive to airway irritants

## Section 12. Ecological Information

<b>Ecotoxicity:</b>	No data available, however the material is not expected to have any deleterious toxic effect.
<b>Environmental Fate:</b>	No data available regarding the environmental fate or biodegradation.

## Section 13. Disposal Considerations

<b>EPA Waste Number:</b>	Non-hazardous waste
<b>Treatment:</b>	Dispose of according to all federal, state, local, and provincial environmental regulations.

## Section 14. Transport Information

<b>D.O.T. Classification:</b>	Not regulated
<b>IMO/IMDG Classification:</b>	Not regulated
<b>IATA Classification:</b>	Not regulated

## Section 15. Regulatory Information

### US Federal Regulations:

**Product Information:** This product is not considered hazardous.

### SARA 311/312:

*Acute:* No  
*Chronic:* No  
*Fire:* No  
*Pressure:* No  
*Reactive:* No

**SARA 313:** No reportable quantities of toxic chemical(s) subject to the reporting requirements of Section 313 of SARA Title III and of 40 CFR 372 are present

### Regulatory Listings

United States (TSCA): Listed

## Section 16. Other Information

The information is furnished without warranty, representation, inducement or license of any kind, except that it is accurate to the best Becker Underwood's knowledge. Because use conditions and applicable laws may differ from one location to another and may change with time, recipient is responsible for determining whether the information is appropriate for recipient's use. Since Becker Underwood has no control over how this information may be ultimately used, all liability is expressly disclaimed and Becker Underwood assumes no liability.

High-Light® is a Registered Trademark of Becker Underwood.

**Invasive Plant Risk Assessment**  
**CalPeco 625 and 650 Electrical Line Upgrade Project**  
**Lake Tahoe Basin Management Unit**  
**and Tahoe National Forest**  
**USDA Forest Service**

PREPARED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 Steve Henderson, Ascent Environmental

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 Courtney Rowe, Forest Botanist, LTBMU

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 Kristie Boatner, Natural Resource Officer, TRD, TNF

**TABLE OF CONTENTS**

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
1.1	Analysis Framework: Pertinent Laws, policies, and direction .....	1
<b>2</b>	<b>PROJECT DESCRIPTION .....</b>	<b>2</b>
2.1	Proposed Activities.....	2
2.2	Clean-up and Post-Construction Restoration .....	14
2.3	Operations and Maintenance.....	14
2.4	Location and Extent .....	15
<b>3</b>	<b>NON-PROJECT DEPENDENT FACTORS .....</b>	<b>15</b>
3.1	Inventory .....	15
3.2	Known Invasive Plants in Analysis Area .....	16
3.3	Habitat Vulnerability .....	22
3.4	Non-Project Dependent Vectors.....	23
<b>4</b>	<b>PROJECT-DEPENDENT FACTORS .....</b>	<b>24</b>
4.1	Habitat Alteration Expected as a Result of the Project .....	24
4.2	Increased Vectors as a Result of Project Implementation .....	25
4.3	Management Measures .....	27
<b>5</b>	<b>ANTICIPATED WEED RESPONSE TO THE PROPOSED PROJECT .....</b>	<b>30</b>
<b>6</b>	<b>REFERENCES .....</b>	<b>32</b>

# 1 INTRODUCTION

In 2003, the United States Forest Service identified invasive species as one of four critical threats to the nation's ecosystems (Bosworth 2003). Invasive plants pose a significant threat to ecological function due to their ability to displace native species, alter nutrient and fire cycles, decrease the availability of forage for wildlife, and degrade soil structure (Bossard et al. 2000). Infestations can also reduce the recreational or aesthetic value of native habitats.

Forest management activities can contribute to the introduction and spread of invasive plants by creating suitable environmental conditions for establishment and by acting as vectors for spread. The following risk assessment has been prepared to evaluate the risk associated with invasive plant introduction and spread as a result of the proposed project.

## 1.1 ANALYSIS FRAMEWORK: PERTINENT LAWS, POLICIES, AND DIRECTION

A comprehensive summary of principal statutes governing the management of invasive plants on the National Forest System is available in FSM 2900. A brief summary of the pertinent laws, policies, and direction is provided below.

### 1.1.1 Federal Laws and Executive Orders

**Executive Order 13112 (1999)**—directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to control such species; and to minimize the economic, ecological, and human health impacts from invasive species on public lands.

### 1.1.2 Forest Service Policies and Direction

**Forest Service Manual 2080 (USDA Forest Service 1995)**—Was replaced by FSM 2900 in 2011. FSM 2080 revised USFS national policy on noxious weed management to emphasize integrated weed management, which includes prevention and control measures, cooperation, and information collection and reporting.

**Forest Service Manual 2900 (USDA Forest Service 2011)**—directs the Forest Service to manage invasive species with an emphasis on integrated pest management and collaboration with stakeholders, to prioritize prevention and early detection and rapid response actions, and ensure that all Forest Service management activities are designed to minimize or eliminate the possibility of establishment or spread of invasive species on the NFS or to adjacent areas.

**Forest Service Manual 2070 (USDA Forest Service 2008)**—provides guidelines for the use of native material on National Forest System lands. It restricts the use of persistent, non-native, non-invasive plant materials and prohibits the use noxious weeds for revegetation, rehabilitation and restoration projects. It also requires that all revegetation projects be reviewed by a trained or certified plant material specialist for consistency with national, regional, and forest policies for the use of native plant materials.

**USFS National Strategy and Implementation Plan for Invasive Species Management (USDA Forest Service 2004a)**—identifies for all Forest Service programs the most significant strategic actions for addressing invasive species. It emphasizes prevention, early detection and rapid response, prioritization in control and management, and restoration or rehabilitation of degraded areas.

**Region 5 Noxious Weed Management Strategy (USDA Forest Service 2000)**—guides regional Forest Service goals and objectives for invasive plant management, emphasizing actions necessary to: promote the overall management of noxious weeds; to prevent the spread of weeds; control existing stands of weed infestations; promote the integration of weed issues into all forest service activities.

### **1.1.3 Forest Plan Direction**

**LTBMU Land and Resource Plan & Tahoe National Forest Land And Resource Management Plan (USDA Forest Service 1988, 1990)**—Does not specifically address invasive plants (except the removal of noxious plants in grazing allotments), though it does provide for the protection and enhancement of threatened and sensitive plant habitat. It is amended by the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) to address invasive plant management.

**Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004b)**—Establishes goals, standards, and guidelines for invasive plant (noxious weed) management for the Sierra Nevada forests. It emphasizes prevention and integrated weed management. It establishes the following invasive plant management prioritization: 1) prevent the introduction of new invaders; 2) conduct early treatment of new infestations; 3) contain and control established infestations. It also requires forests to conduct an invasive plant risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities and develop mitigation measures for high and moderate risk activities with reference to the weed prevention practices in the Regional Noxious Weed Management Strategy.

## **2 PROJECT DESCRIPTION**

### **2.1 PROPOSED ACTIVITIES**

The proposed action consists primarily of an upgrade of the 625 and 650 electrical lines and associated substations from 60 kilovolt (kV) operations to 120 kV to allow the entire North Lake Tahoe Transmission System to operate at 120 kV. The electrical lines and associated infrastructure are owned by the California Pacific Electric Company (CalPeco), the project proponent. The primary project components that would occur at least partially on NFS lands are: 1) removal of the existing 625 Line that extends between Tahoe City and Kings Beach and construction of a new, rerouted 625 Line, and 2) rebuild of the existing 650 Line that extends from Kings Beach to the Town of Truckee. In addition to the electric line improvements, a number of access ways would be improved (e.g., grading, widening, removal of encroaching vegetation) or created and existing NFS roads would be used for construction and operational access. The proposed system improvements would increase the ability to maintain the current maximum system loads while experiencing an outage on any one of the four legs of the system, and decrease reliance on the Kings Beach Diesel Generation Station for back-up power generation. In addition, rebuilding and realigning the power lines would reduce the likelihood of outages associated with high winds, felled trees, snow loading, and forest fires and improve access to the lines for inspection, maintenance, and repair activities.

Four action alternatives are being evaluated at an equal level of detail (see Exhibit 1, Appendix B). The PEA Alternative (Alternative 1) is the alternative described in the Proponent's Environmental Assessment (PEA) submitted by Sierra Pacific Power Company as part of the original permit application provided to the California Public Utilities Commission (CPUC) in 2010. The Modified Alternative (Alternative 2) is similar to the PEA Alternative, but includes rerouting of some segments of the alignment based on various factors, such as resource constraints, public and agency input received during scoping, additional information gathered during detailed field reviews, and further progress on project engineering and design. Under Alternative 2, the 650 Line in Segments 650-1 and 650-2 would be double circuited with the 625 Line in Segments 625-9 and 625-10. The double circuit in Segments 625-9 and 625-10 would closely follow the existing 625 Line, deviating slightly to create a straighter line. The Road Focused Alternative (Alternative 3) re-routes the 625 Line to more closely follow the Fiberboard Freeway and other area roadways and places more of the 650 Line along State Route (SR) 267, including through Martis Valley. Alternative 3 would also place the 625 Line into a double circuit in Segments 650-1 and 650-2. The Road Focused Alternative with Double Circuit Option (Alternative 3A) is the same as Alternative 3, except that Alternative 3A would employ a double circuit line along SR 267 from the Kings Beach Substation, whereas Alternative 3 follows the existing alignment out of Kings Beach through LTBMU land and a residential neighborhood. Under Alternative 4 (Proposed Alternative), the alignment would be the same as under Alternative 3, including placement of Segments 625-9 and 625-10 into a double circuit with 650-1 and 650-2, except through Martis Valley where the 650 Line would be the same as under the PEA Alternative (Alternative 1).

The following paragraphs describe components of the action alternatives that would occur on NFS lands. For the purposes of analysis, the lines are divided into segments; there are 10 segments in the 625 Line and seven segments in the 650 Line (refer to Exhibit 1, Appendix B). All of the 625 Line segments are located on NFS lands. On the 650 Line, only Segments 650-1, 650-2, 650-4 (Alternatives 1 and 4 only), and 650-6 are on NFS lands.

## **2.1.1 Removal and Reconstruction of the Existing 625 Line**

As part of the upgrade to 120 kV for the North Lake Tahoe Transmission System, CalPeco is proposing to reconductor and reroute the 625 Line with the objective that the new conductor can accommodate 120 kV and to align the line more closely with the existing roadways in the area. The removal of the existing 625 Line would involve approximately 15 miles of conductor and 341 wooden poles.

The existing 625 Line and the proposed action alternatives all generally run in a northeast-southwest direction between the communities of Kings Beach and Tahoe City and are located primarily on NFS lands managed by the LTBMU. Each of the action alternatives would generally parallel the Fiberboard Freeway, but the Alternatives 3, 3A, and 4 would follow the Fiberboard Freeway more precisely, whereas Alternative 1 would deviate more from the roadway alignment to provide a straighter line with fewer angle points. Alternative 2 would follow the same alignment as Alternative 1, except in Segments 625-1A, 4A, 6A, and 8A, where the alignment would be relocated to avoid or minimize effects to specific resources.

## **ALTERNATIVE 1 (PEA ALTERNATIVE)**

### **Segment 625-1**

From the Tahoe City Substation, this route would follow the alignment of the existing 625 Line, heading southwest to parallel the south side of the Truckee River before turning northwest and spanning the river and SR 89. In this area, implementation of applicant proposed measure (APM) SCE-8 would set the new power line further back from the Truckee River than originally identified, locating the line behind an existing line of trees on the south bank of the river, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge. (APMs are project elements identified by the project applicant for the purpose of reducing or eliminating environmental effects. They are incorporated into the project description. Implementation will be monitored in the same manner as mitigation measures identified in the EIS/EIS/EIR.) The resulting setback is described in detail in the description of Segment 625-1 for the Proposed Alternative, below.

### **Segment 625-2**

The new 625 Line would turn to the north and continue through NFS lands managed by the USFS LTBMU for over 1 mile. The alignment would then turn west for approximately 0.5 mile and run adjacent to the southern border of Burton Creek State Park (with a portion of the 40-foot wide operations/maintenance/ access easement crossing over the park boundary).

### **Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8**

The new alignment would generally follow the route of the Fiberboard Freeway across lands managed by the USFS LTBMU and Tahoe National Forest for approximately 10 miles.

### **Segment 625-9**

The line would turn east for approximately 2.25 miles and span SR 267 to connect to Lake Vista Road.

### **Segment 625-10**

The line would then turn south for approximately 1 mile, spanning an unpaved portion of Lake Vista Road. It would then turn southeast and span over 1,000 feet to connect to the Kings Beach Substation.

## **ALTERNATIVE 2 (MODIFIED ALTERNATIVE)**

### **Segment 625-1A**

This segment would originate at the Tahoe City Substation and head southwest along the southern bank of the Truckee River. Unlike the existing alignment, this segment would be setback from the river roughly 100 feet, to the southern side of existing vegetation, and onto the 64-Acre Recreation Site. The setback would permit a straighter alignment and would minimize visibility from SR 89 and the Truckee River.

### **Segments 625-2 and 625-3**

These segments follow the same alignment as Alternative 1 (PEA Alternative), above.

### **Segment 625-4**

This segment alignment would be moved upslope of the Fiberboard Freeway as compared to Alternative 1 (PEA Alternative) to reduce visibility of the line from panoramic views seen by recreational users along the road.

### **Segment 625-5**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), described above.

### **Segment 625-6A**

This segment would be oriented farther east than the Alternative 1 (PEA Alternative) alignment. The segment would follow Mt. Watson Road along the outer edge of an existing Goshawk PAC to avoid this sensitive biological resources area.

### **Segment 625-7**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), described above.

### **Segment 625-8A**

This segment would deviate from the Alternative 1 (PEA Alternative) alignment, following the existing 625 Line route more closely in order to utilize some portion of the existing line where it could be at a distance from the Fiberboard Freeway (a recreational use road where no utility lines are currently located) and to place the line outside the boundary of the Lake Tahoe Basin.

### **Segment 625-9 D-C OH-4**

This segment would follow the same alignment as Alternative 1 (PEA Alternative) for Segment 625-9. However, under this alternative, this segment would be built as a double circuit with the 650 Line, eliminating Segment 650-2 from this alternative. (Note: The use of “D-C” in this and other segment titles indicates a “double circuit” option and the “OH” stands for an “overhead” line.)

### **Segment 625-10 D-C OH-3**

This segment follows the same alignment as Alternative 1 (PEA Alternative) for Segment 625-10. However, under this alternative, this segment would be built as a double circuit with the 650 Line, eliminating Segment 650-1 from this alternative.

## **ALTERNATIVE 3 (ROAD FOCUSED ALTERNATIVE)**

### **Segment 625-1**

This segment follows the same alignment as under Alternative 1 (PEA Alternative), above. Also, like for Alternative 1 (PEA Alternative), implementation of APM SCE-8 in this segment would set the new power line further back from the Truckee River than originally identified, locating the line behind an existing line of trees on the south bank of the river, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge. The resulting setback is described in detail in the description of Segment 625-1 for the Proposed Alternative, below.

### **Segment 625-2**

This segment follows the same alignment as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

### **Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8**

These segments would deviate from the alignments for Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative) to follow the Fiberboard Freeway along the entire route.

### **Segment 625-9 Replaced by Segment 650-2 D-C OH-2**

Segment 625-9 is not included in this alternative because this segment would be built as a double circuit with the 650 Line along the new alignment of the 650 Line.

### **Segment 625-10 Replaced by Segment 650-1 D-C OH-1/1A**

Segment 625-10 is not included in this alternative because this segment would be built as a double circuit with the 650 Line along the new alignment of the 650 Line.

## **ALTERNATIVE 4 (PROPOSED ALTERNATIVE)**

### **Segment 625-1**

This segment follows the same alignment as Alternative 1 (PEA Alternative) and Alternative 3 (Road Focused Alternative), above. However, as discussed above for these other alternatives, implementation of APM SCE-8 in this segment would set the new power line further back from the Truckee River corridor than originally considered (roughly 100 feet ). The setback would place the line further into a recreation area identified as the 64-Acre Recreation Site and is intended to shield views of the power line from SR 89 and the Truckee River. APM SCE-8 has been incorporated into the project and is considered part of Alternative 4 (Proposed Alternative). APM SCE-8 reads:

In cases where replacement poles for the 625 Line are adjacent to the Truckee River and will be visible in unobstructed foreground public views along the river or adjacent trails, poles will be carefully sited to minimize their visibility. The westernmost pole on the south bank of the Truckee River where the power line crosses the river will be placed far enough from the river so as to be substantially unseen from the pedestrian bridge. The remaining poles along the south bank of the river will be located southward, outside the river corridor and behind the trees that line the riverbank such that visibility of the power line is minimized as viewed from SR 89, the Truckee River, and the pedestrian bridge. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.

Implementation of APM SCE-8 would locate the new power line behind the existing line of trees on the south bank of the Truckee River, outside the river corridor such that visibility of the power line would be minimized as viewed from SR 89, the Truckee River, Truckee River Bike Trail, and the pedestrian bridge.

### **Segment 625-2**

This segment follows the same alignment as Alternative 1 (PEA Alternative), Alternative 2 (Modified Alternative), and Alternative 3 (Road Focused Alternative).

### **Segments 625-3, 625-4, 625-5, 625-6, 625-7, and 625-8**

These segments would follow the Fiberboard Freeway along the entire route, as described above for Alternative 3 (Road Focused Alternative).

### **Segment 625-9 Replaced by Segment 650-2 D-C OH-2**

Segment 625-9 is not included in this alternative because this segment would be built as a double circuit with the 650 Line.

### **Segment 625-10 Replaced by Segment 650-1 D-C OH-1/1A**

Segment 625-10 is not included in this alternative because this segment would be built as a double circuit with the 650 Line.

## **2.1.2 Rebuild of the Existing 650 Line**

Approximately 10 miles of the existing 650 Line would be rebuilt. Various segments would either be rebuilt in the existing right-of-way (ROW) and alignment, or constructed along a new alignment, depending on the alternative being considered. Where the existing alignment is followed, new poles would generally be placed 10 feet from the existing poles (which would be removed as part of the project, except in cases where there is underbuild [existing electrical distribution or communication lines] that cannot be moved to the new poles), but in some areas, new poles could be further from existing poles to best support the system design (i.e., to remove existing angle points in the line).

Segments 650-1 and 650-2 are partially located on NFS lands managed by LTBMU, primarily along SR 267 northwest of Kings Beach. With Alternative 2, Segments 650-1 and 650-2 would be eliminated and the 650 Line would be constructed as a double-circuit configuration with the 625 Line in Segments 625-9 and 625-10; these segments are also located primarily within NFS lands managed by LTBMU. Under the Alternatives 1 and 4, Segment 650-4 would cross TNF land for approximately 0.25 mile in Martis Valley adjacent to the Northstar Golf Course, but this segment would be realigned outside of NFS lands under Alternatives 2 and 3. The portion of Segment 650-6 that traverses TNF land along Glenshire Road in the town of Truckee would be the same under each alternative.

## **ALTERNATIVE 1 (PEA ALTERNATIVE)**

### **Segment 650-1**

From the Kings Beach Substation, Segment 650-1 of Alternative 1 (PEA Alternative) would run north, generally to the east of the residences off of Commonwealth Drive. The alignment would span over 0.5 mile to north of the Commonwealth Drive/Cantebury Lane intersection before turning west for just over 0.5 mile to SR 267. The line would then parallel the east side of SR 267.

The portion of Segment 650-1 between the existing Kings Beach Substation and Brockway Substation would be removed. From the Kings Beach Substation, the segment trends in a generally southeast direction for approximately 0.2 mile, crosses Speckled Street, crosses Deer Street, and terminates at the Brockway Substation. This segment is configured with a distribution line underbuild, which would remain in place upon completion of the project.

### **Segment 650-2**

The 650 Line would continue northwest for approximately 2 miles to cross the 625 Line near Brockway Summit. In this area, implementation of APM SCE-7 would result in the power line alignment being set back up to 200-feet farther from SR 267 than originally identified. The resulting setback is described in detail in the description of Segment D-C OH-2 for the Proposed Alternative.

## **Segment 650-4**

The line would turn south for approximately 0.25 mile and cross SR 267. Segment 650-4 would then trend west across the Martis Creek Lake, crossing an approximately 40-acre NFS parcel managed by the TNF, and continuing west through the Martis Creek Lake for approximately 0.5 mile to intersect with the previously upgraded portion of the 650 Line.

## **ALTERNATIVE 2 (MODIFIED ALTERNATIVE)**

### **Segment 650-1 Replaced by Segment 625-10 D-C OH-3**

Segment 650-1 would not be included in this alternative because this segment would be built as a double circuit with the 625 Line along the new alignment of the 625 Line.

### **Segment 650-2 Replaced by Segment 625-9 D-C OH-4**

Segment 650-2 would not be included in this alternative because this segment would be constructed as a double circuit with the 625 Line along the new alignment of the 625 Line.

### **Segment 650-6**

This segment would follow the same alignment as Alternative 1 (PEA Alternative), discussed above.

## **ALTERNATIVE 3 (ROAD FOCUSED ALTERNATIVE)**

### **Segment 650-1 D-C OH-1**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-1. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-10 from this alternative.

### **Segment 650-1 D-C OH-1A (Alternative 3A)**

Under Alternative 3A (Road Focused Alternative with Double Circuit Option), Segment 650-1 would deviate from the alignment of Alternative 1 (PEA Alternative) to instead follow along SR 267. The double-circuit option would realign the power line along SR 267 to Speckled Street and then along Speckled Street. With this subalternative, the existing, unrelated distribution and communication lines that run along SR 267 in Kings Beach, between Commonwealth Drive and Speckled Street and between Speckled Street and Deer Street, would be transferred to the double circuit poles to the extent feasible. It is expected that most, if not all, of these poles could be removed. Some poles may be associated with service drops or communication taps, in which case specific poles may need to remain in place. Similarly, with this option existing underbuild on the stretch of the 650 Line leading away from SR 267 and to the Kings Beach Substation would remain and the poles would be topped to a height of about 40 feet above ground surface.

### **Segment 650-2 D-C OH-2**

This segment would follow the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-2. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-9 from this alternative. In this area, implementation of APM SCE-7 would result in the power line alignment being set back up to 200 feet farther from SR 267 than originally identified. The resulting setback is described in detail in the description of Segment 650-2 D-C OH-2 for the Proposed Alternative.

## **Segment 650-6**

This segment would follow the same alignment and would have the same characteristics as under Alternative 1 (PEA Alternative) and Alternative 2 (Modified Alternative), above.

## **ALTERNATIVE 4 (PROPOSED ALTERNATIVE)**

### **Segment 650-1 D-C OH-1**

This segment follows the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-1. However, under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-10 from this alternative.

The portion of Segment 650-1 between the existing Kings Beach Substation and Brockway Substation would be removed. From the Kings Beach Substation, the segment trends in a generally southeast direction for approximately 0.2 mile, crosses Speckled Street, crosses Deer Street, and terminates at the Brockway Substation. This segment is configured with a distribution line underbuild that would remain in place upon completion of the project.

### **Segment 650-2 D-C OH-2**

This segment, as initially considered, follows the same alignment as under Alternative 1 (PEA Alternative) for Segment 650-2. Under this alternative, this segment would be built as a double circuit with the 625 Line, eliminating Segment 625-9 from this alternative. To minimize the scenic effects of new double-circuit poles along SR 267 in this area, APM SCE-7 has been incorporated into the project and is considered part of Alternative 4 (Proposed Alternative). APM SCE-7 reads:

In cases where replacement poles for the 650 Line are adjacent to SR 267 and will be visible in unobstructed foreground public views from the roadway, poles will be carefully sited to eliminate or substantially reduce their visibility from the highway within the Tahoe Basin as compared to the existing 650 Line without causing new visual impacts from tree removal or construction of access ways that will be required to erect and maintain the line. Any revised alignment or pole placement will be reviewed and approved by applicable land owners, agencies, and utilities.

With APM SCE-7, replacement poles for the 650 Line would be sited further from SR 267 to eliminate or substantially reduce their visibility from the highway within the Lake Tahoe Basin, as compared to the existing 650 Line, without causing new visual impacts from tree removal or construction of access ways that would be required to erect and maintain the line.

### **Segment 650-4**

The line would turn south for approximately 0.25 mile and cross SR 267. The Proposed Alternative would then trend west across the Martis Creek Lake area, crossing an approximately 40-acre NFS parcel managed by the USFS Tahoe National Forest, and continue west through Martis Creek Lake for approximately 0.5 mile to intersect with the previously upgraded portion of the 650 Line (Segment 650-5).

## **2.1.3 Substations**

There are no substations on NFS lands; however, construction at the Tahoe City Substation would require a temporary work area outside of the existing fence line on an adjacent NFS land parcel managed by the Lake Tahoe Basin Management Unit (LTBMU). In order to upgrade the substation

while maintaining distribution capabilities, portable (temporary) transformers would be required during construction and would be connected to the 625 Line or 629 Line (a separate line in the looped system extending from Tahoe City to Squaw Valley that has already been upgraded to 120 kV capacity under a separate project) using temporary poles. These transformers would be located on the NFS parcel (i.e., the 64-Acre Recreation Site) immediately to the south of the Tahoe City Substation. The portable transformers would be mounted on two trailers, measuring 8 feet wide by 40 feet long. The temporary poles would be similar to the existing 60 kV poles. Upon completion of the Tahoe City Substation upgrade, these temporary poles and transformers would be removed and the 625 and 629 Lines would be connected to the permanent, new transformers.

#### **2.1.4 Permanent Right-of-Way Requirements**

CalPeco currently holds easements from the USFS, the U.S. Army Corps of Engineers (USACE), Placer County, and various other public and private landowners that own properties crossed by the existing 625 and 650 Lines. The widths of the existing easements on these lands vary, but on average are approximately 30 feet wide. These easements would be improved for the 625 and 650 Electrical Line Upgrade Project. CalPeco would negotiate with the existing landowners to obtain a permanent easement of 40 feet for the new 625 Line and rebuilt 650 Line for operation and maintenance purposes.

For segments of Alternatives 2, 3, 3A, and 4 where a double-circuit option is being considered (i.e., both the 625 Line and 650 Line placed on the same poles) (Exhibit 1, Appendix B) a permanent easement of 65 feet would be pursued. The wider easement is desired for double-circuit options because equipment damage from tree fall, wildfire, or other events could cause failure in two lines simultaneously and significantly affect service in the whole North Lake Tahoe Transmission System. Allowing vegetation management in a wider easement would better protect the double-circuit lines from damage and help maintain system reliability and continuity of service.

#### **2.1.5 Temporary Right-of-Way Requirements**

To accommodate construction, 65-foot-wide temporary easements would be established for the new 625 Line and 650 Line rebuild. All disturbances created outside of the permanent 40-foot-wide easement described above would be temporary and the land would be restored to its original conditions following construction, unless otherwise requested by the landowner or land management agency. For double-circuit options, all construction activity would occur within the desired 65-foot permanent easement.

#### **POLE WORK AREAS**

To accommodate construction equipment and activities, work areas surrounding each pole location would be cleared of vegetation and graded as necessary to provide a safe work area. Each angle pole (where there is a turn in the line) would require an approximately 0.5-acre work area measuring approximately 65 feet by 335 feet; each tangent pole (where the line continues in a straight path) would require an approximately 0.25-acre work area measuring approximately 65 feet by 170 feet. Pole work areas would typically be accessed by truck using existing access roads or new spur roads and the power line ROW. In areas where the terrain is too rugged for truck access, crews would use all-terrain vehicles or hike in by foot to access the pole sites.

An additional temporary work area may be required in instances where anchors would be installed outside of the temporary ROW. In these instances, a work area up to 15 feet wide and 50 feet long, extending from the ROW to the anchor location, would be established to provide access for the construction equipment and crew.

## **STRINGING SITES**

Multiple stringing sites would be required during the removal and installation of the conductors. In general, stringing sites would be approximately 300 feet in diameter and would be spaced at a distance between approximately 500 feet and approximately 8,000 feet apart. Stringing sites require a relatively flat surface; therefore, they would need to be cleared and may need to be graded to allow for safe equipment operation. Site preparation would require heavy equipment for removing obstacles (e.g., large rocks, trees, brush). Vegetation would be removed, as necessary, to provide safe and efficient work areas. Mowing or grubbing would be the preferred method for clearing vegetation.

## **STAGING AREAS**

Three staging areas proposed for use during construction are located on LTBMU land (Kings Beach, Former Batch Plant, and Fiberboard Freeway). There are no staging areas proposed on TNF land.

The Kings Beach Staging Area is located just north of the Kings Beach Substation and is accessed using an existing dirt access road located at the end of Canterbury Drive. Activity at this location would be restricted to the previously disturbed area. The vegetation within the planned staging area mainly consists of bunch grasses and scattered Jeffrey pines under 10 feet in height, and has a light infestation of cheatgrass and a moderate woolly mullein infestation. The Kings Beach Staging Area would be used for material storage and equipment staging. In order to prepare this staging area, minor improvements to the existing access road—including the removal of approximately 10 trees—would be required and a temporary fence would be installed around its perimeter.

The Former Batch Plant Staging Area is located approximately 300 feet north of the new 625 Line (near Segment 625-4) and is accessed from Mount Watson Road. This approximately 120-foot by 80-foot (0.2 acre) area is disturbed and has little natural vegetation. The surrounding area's primary vegetation type is red fir (*Abies magnifica*) forest. The Former Batch Plant Staging Area would be used to store and stage material and equipment, and may also be used for logging activities related to the project. Vegetation and brush present would be cleared and approximately 30 trees would be removed to prepare this staging area for use.

The Fiberboard Freeway Staging Area is located approximately 200 feet east of the new 625 Line (near Segment 625-3) and is accessed from Mount Watson Road. This approximately 200-foot by 100-foot (0.5 acre) area is disturbed, but has some vegetative cover. The vegetation on site is dominated by mountain whitethorn (*Ceanothus cordulatus*) with scattered pines. The Fiberboard Freeway Staging Area would be used to store and stage material and equipment, and for logging operations related to the project. Vegetation and brush would be cleared and approximately five trees would be removed to prepare this staging area for use.

### **2.1.6 Access and Spur Roads**

The electrical line ROWs would primarily be accessed through the use of existing, paved municipal roadways and paved and dirt USFS system roads. Existing paved and dirt access roads vary in width

from approximately 8 to 10 feet. Additional access ways would need to be developed to facilitate access from existing roads to the power line ROWs for construction and later inspections, maintenance, and repairs. For the purpose of this assessment, all roads used to access the site are termed “access ways.”<sup>1</sup> Access ways include existing paved roads, existing dirt roads, and new dirt roads and “two-track” pathways that would be developed for the project. Where access ways would be on slopes greater than 20 percent, a wider access way would require grading, as discussed below.

Some existing dirt roads would require some modification to support their use during project construction. In most instances, the improvement or modification would consist of removing rocks and logs that may have fallen onto the road and trimming brush, branches, and other vegetation encroaching on the roadway to provide sufficient width and clearance to allow construction vehicles (e.g., cable trucks, tensioning trucks) to pass. In some instances, water bars (an interceptor dyke that is used to prevent erosion on sloping roads) and other features that might obstruct use by construction vehicles would be removed and then replaced after the construction process is complete. After completion of construction, no further work on these existing dirt roads is proposed. Roads damaged during construction (e.g., if deep ruts or potholes were created), would be repaired to pre-project conditions prior to project completion.

A majority of the mileage of new access ways would be within the power line ROWs providing “centerline access routes.” The centerline access routes would be approximately 10-foot wide, and although “centerline” is in the category title, in reality the route would move back and forth within the power line ROW, going on either side of power poles, avoiding boulders and other barriers, and responding to topography. In addition, turnouts (30-foot wide) would be needed approximately every 1,000 feet for vehicle passing. The power line ROWs would initially be cleared of trees and shrubs as part of project construction. Mowing or grubbing would be the preferred method for removal of low growing vegetation, Larger trees would be cut. In areas of very rough terrain, vegetation removal would be limited to brush clearing to allow for safe access by all-terrain vehicles. After completion of construction, the centerline access routes would be maintained in low growing vegetation for erosion control while allowing over-land vehicle travel by line trucks and inspection trucks (i.e., pickup trucks).

New access ways outside the power line ROW would be similar to centerline access routes in all respects except for location. They would first be developed during project construction to support construction vehicle access to the ROW. Many of the new access ways would consist of short spur roads connecting existing roadways to nearby portions of the power line ROW. In instances where existing topography and vegetation allow vehicle access to the ROW without development of a spur

---

<sup>1</sup> The criterion for defining a road varies by the agency with jurisdiction. Each land manager or owner may have different requirements for design, construction, maintenance, and use. TRPA Code defines “road” as a smooth or paved surface designed for travel by motor vehicles. In general, the impacts are assessed based on the coverage of the road surface. The project does not include the construction of any new paved roads. Roads on NFS lands described for this project are either temporary or permanent. Temporary Roads are built to facilitate the construction of the project. They are completely restored at the conclusion of construction and no longer used or open to vehicles. Permanent Roads would be included as part of the National Forest road system. They are classified in five levels from Maintenance Level 1 (basic custodial care, closed to vehicles) to Maintenance Level 5 (high comfort; passenger car). This project includes the use of roads that are already included in the NF (e.g., Fiberboard Freeway) and construction of new roads. New roads may be both completely new construction or may utilize portions of old legacy roadways. For this project, new roads, which include any road not previously part of the National Forest road system, are assumed for analysis to be Maintenance Level 2, to facilitate the long term operational and maintenance needs of the project. Given the different uses and definitions of the term “road,” the term “access way” is used in this document to encompass the various types of facilities that may provide vehicle access. The term “access way” is not specifically defined by any of the lead agencies, but is used herein to describe a route within the project area (that may or may not require widening or clearing), which is required for construction and /or operation of the project. For the purpose of this document, access ways include several categories of routes, including existing dirt roads, NFS roads, existing roads and trails that are not part of a formal designated travel system, new dirt roads constructed as part of the project, and existing and new “two-track” pathways intended for power line operations and maintenance access. Calculations of required access way mileage for each alternative are estimates based on preliminary engineering.

road/new access way, no travel way would be developed and inspection and maintenance vehicles would drive over the existing ground surface. Trees and shrubs would be removed during construction to create an approximately 10-foot wide access way. After completion of construction, the new access way would be maintained in low growing vegetation to allow over-land vehicle travel for inspection and maintenance (Road Maintenance Level 2 per the Forest Service Handbook 7709.58, 10, 12.3). Proposed new and improved access ways and roads located on NFS lands are summarized by Forest in Tables 1 and 2.

<b>Table 1 New and Improved Access Ways and Roads within the LTBMU</b>										
Access	Alternative 1 PEA Alternative (miles)		Alternative 2 Modified Alternative (miles)		Alternative 3 Road Focused Alternative (miles)		Alternative 3A Road Focused Alternative with Double Circuit Option (miles)		Alternative 4 Proposed Alternative (miles)	
	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW
New Access Way	14.8	6.4	12.2	5.6	4.4	1.3	3.9	1.2	4.4	1.3
Improved Road	0.5	0.5	0.5	0.5	-	-	-	-	-	-
<b>Total</b>	<b>15.3</b>	<b>6.9</b>	<b>12.7</b>	<b>6.1</b>	<b>4.4</b>	<b>1.3</b>	<b>3.9</b>	<b>1.2</b>	<b>4.4</b>	<b>1.3</b>

Source: Ascent Environmental

<b>Table 2 New and Improved Access Ways and Roads within the TNF</b>										
Access	Alternative 1 PEA Alternative (miles)		Alternative 2 Modified Alternative (miles)		Alternative 3 Road Focused Alternative (miles)		Alternative 3A Road Focused Alternative with Double Circuit Option (miles)		Alternative 4 Proposed Alternative (miles)	
	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW	Total	Outside of Alignment ROW
New Access Way	0.8	0.7	1.1	0.4	0.2	-	0.2	-	0.2	-
Improved Road	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>0.8</b>	<b>0.7</b>	<b>1.1</b>	<b>0.4</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0.2</b>	<b>0</b>

Source: Ascent Environmental

In locations where the slope is estimated to be greater than 20 percent and it is assumed that some grading would be necessary to create a suitable access way (either within or outside the power line ROW) that can be traveled by maintenance and inspection vehicles. In particularly steep areas, the new access way would likely require switch back roadways to provide moderate grades and generally level cross-slopes, and would result in a noticeable change in the topography. New access ways requiring grading/earth moving due to terrain would be approximately 10 feet wide for straight sections and up to 25 feet wide at curves to safely allow the movement of construction equipment and vehicles to each site. Cut and fill slopes would disturb a wider area.

Typically, each access way requiring grading/earth moving would first be cleared of vegetation and graded by a bulldozer. A motor grader would then level the access way in accordance with the

engineered specification. Erosion control best management practices (BMPs) (e.g., water bars) would also be installed to address erosion control and water quality protection concerns. Gravel would not typically be placed on these roadways. However, it may be applied where a dirt access way intersects a paved public road to minimize the potential for dirt and mud being tracked onto public roadway. Gravel may also be applied as an erosion control BMP, if appropriate. The new access way would then be revegetated with low growing vegetation and maintained as described above for other access ways, except where BMPs would not allow for revegetation.

The new access ways would not be intended for public access. Where new access ways connect to, or cross, existing roads or trails, barriers to access, such as boulders or gates would be placed at the entrance to the access way. During maintenance and inspection activities any evidence of public use would be noted, and public access barriers would be adjusted, if needed.

## **2.2 CLEAN-UP AND POST-CONSTRUCTION RESTORATION**

Surplus material, equipment, and construction debris would be removed at the completion of construction activities. All man-made construction debris would be removed and recycled or disposed of at permitted landfill sites, as appropriate. Cleared vegetation would either be chipped and stored on the ROW for later use during reclamation or disposed of off-site, depending on agency agreements.

All areas that are temporarily disturbed around each pole, as well as areas used for conductor stringing, staging, and temporary vehicle access would be restored to preconstruction conditions, to the extent practicable, following construction. This would include returning areas to their original contours and reseeding in accordance with USFS guidelines. Unless otherwise requested by the USFS, existing access roads on NFS land that have been widened would be returned to their preconstruction widths and USFS approved seed mixes would be applied to disturbed areas. CalPeco would attempt to close or restrict vehicle access to areas that would not remain open to the public or that have been seeded until the reclamation success criteria have been achieved. Rocks removed during access way grading and foundation excavation would be redistributed over the ROW to resemble adjacent site conditions.

## **2.3 OPERATIONS AND MAINTENANCE**

Current operations and maintenance activities would continue with implementation of the action alternatives. These activities include annual patrol of electrical lines and patrols of the lines in the event of unexplained outages or significant natural incidents (such as fire, flood, or electrical storms), to inspect and repair damage on an as-needed basis. Separately from these patrols, CalPeco's vegetation management staff conducts an annual hazard tree inspection, in conjunction with a California Registered Forester. Inspections are conducted using helicopters, all-terrain vehicles, and/or line trucks.

The inspections involve a visual review of the line along a path that is roughly parallel to the centerline and along existing access roads. Vegetation management activities include tree and vegetation trimming or removal to maintain the 40-foot-wide easement, and 65-foot-wide easement in the case of the double-circuit options, in accordance with CPUC General Order 95, Rule 35 and California Public Resources Code Section 4293. Hazard trees (dead, dying, diseased, decaying, or bug-infested trees that could damage system facilities if they were to fall) are also to be removed as part of these vegetation management activities.

## **2.4 LOCATION AND EXTENT**

The proposed CalPeco 625 and 650 Electrical Line Upgrade Project is located in northeastern Placer County and southeastern Nevada County, California (Exhibit 1, Appendix B). The project components are predominantly located on lands managed by the Forest Service; these lands are located in the TNF and in the LTBMU. The project also spans the Town of Truckee and the communities of Kings Beach and Tahoe City, as well as the Martis Creek Lake Recreation Area managed by the U.S. Army Corps of Engineers (USACE). Land use in the project area is predominantly forested, with segments of residential, industrial, and tourism-related uses where the project components enter more developed communities. A project overview map showing the location of each project component and alternative is provided in Exhibit 1, Appendix B. This map also shows the extent of NFS lands traversed by the project, and identifies how each line has been divided into numbered segments.

### **2.4.1 Legal Land Description**

Segments of the project on NFS lands are located in Township 15N Range 16E Sections 1 and 12, Township 15N Range 17E Section 7, Township 16N Range 16E Sections 13, 23, 24, 26, and 35; Township 16N Range 17E Sections 1-3, 8-10, 12, and 16-18; Township 16N Range 18E Section 18; Township 17N Range 16E Section 11; and Township 17N Range 17E Section 30 of the Mt. Diablo Meridian (21).

## **3 NON-PROJECT DEPENDENT FACTORS**

### **3.1 INVENTORY**

#### **3.1.1 Surveys and existing data**

Reconnaissance-level surveys for invasive plants were completed for the CalPeco 625 and 650 Electrical Line Upgrade Project on June 19 and 20, 2012 and July 11, 12, and 13, 2012 by Ascent biologists Tammie Beyerl, Heather Valentine, and Steve Henderson and on July 11 through July 14, 2012 by POWER Engineering biologists Ken McDonald and Tom Herzog. The IPRA project area primarily covered a 200-foot-wide corridor centered on the proposed alignments (i.e., the area within 100 feet of the centerline of the power line alignment), new access roads, and improved access roads; however, for project access roads that would not need improvement, the project area encompassed the area within 50 feet of the road centerline. The project area defined for this report is the same as the project area defined in the EIS/EIS/EIR prepared for the project. Invasive plant species encountered in the project area were mapped on 1 inch = 400 feet scale aerial base maps or digitally recorded with a global positioning system (GPS) and are depicted in Appendix B and C. Weed polygons mapped in the field were subsequently digitized into a geographic information system (GIS) data layer. As this was a reconnaissance-level survey, weeds were mapped in polygons representing general areas of infestation and, therefore, weed polygon boundaries are not precise. Each weed infestation mapped was assigned a percent relative cover class as follows:

- ▲ < 10% relative cover (small scattered occurrences)
- ▲ 10 to 50% relative cover (moderate infestation)
- ▲ > 50% relative cover (heavy infestation)

Surveys identified the location of plants included on the LTBMU Invasive Plants of Management Concern list and the TNF Eastside Non-native Invasive Plants of Concern list (Appendix A). Additionally, staff from the TNF and LTBMU provided Ascent with GIS shapefiles showing locations of known invasive plants on NFS lands in the project vicinity. An analysis area consisting of a 1 mile buffer from the centerline of IPRA project area components located on National Forest System (NFS) land was used to identify known infestations that could be affected by project activities. Infestations within the analysis have the potential to be spread onto NFS lands. Conversely, infestations on NFS lands could be spread to the analysis area.

### 3.1.2 Assessment summary

The 200 foot wide corridor used for the field surveys assessed both the area disturbed by the proposed project (typically a 65 foot wide temporary disturbance area) as well as the general forest for over 65 feet on either side. This survey, combined with the data for known populations of invasive plants within the analysis area is adequate to complete this IPRA.

## 3.2 KNOWN INVASIVE PLANTS IN ANALYSIS AREA

Seven previously documented invasive plant species were found on NFS lands managed by the LTBMU within the IPRA project area or analysis area. These species are bull thistle (*Cirsium vulgare*), Klamath weed (*Hypericum perforatum*), Dyer’s woad (*Isatis tinctoria*), broadleaved pepperweed (*Lepidium latifolium*), oxeye daisy (*Leucanthemum vulgare*), butter and eggs (*Linaria vulgaris*), and Eurasian water milfoil (*Myriophyllum spicatum*). An additional four invasive plant species were identified in the IPRA project area either on or in very close proximity to NFS lands during reconnaissance surveys; these species are: cheatgrass (*Bromus tectorum*), poison hemlock (*Conium maculatum*), Dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*), and woolly mullein (*Verbascum thapsus*). Two other invasive plant species, Scotch broom (*Cytisus scoparius*) and Scotch thistle (*Onopordum acanthium* ssp. *acanthium*), were identified in the IPRA project area during surveys; however, these infestations were not located on NFS lands or immediately adjacent to these lands. The locations of known populations of invasive plant species on or in close proximity to NFS lands, including those previously recorded by the USFS and those identified during project reconnaissance surveys, are shown Appendix C. These maps also indicate the percent relative cover class of each infestation. Appendix B provides an overview of all documented invasive plant infestations in the project area and surrounding areas.

Summary of known infestations in analysis area

Species	Common Name	CDFA Rating <sup>1</sup>	Cal-IPC Rating <sup>2</sup>	Number of sites within:		
				Project Area (FS)	Project Area (Non-FS)	Botany Analysis Area
<i>Bromus tectorum</i>	cheatgrass	B	Moderate	4	22	
<i>Carduus nutans</i>	Nodding plumeless thistle	A	Moderate			1
<i>Cirsium vulgare</i>	Bull thistle	-	Moderate	8	–	6
<i>Conium maculatum</i>	Poison hemlock	-	Moderate	–	1	–
<i>Cytisus scoparius</i>	Scotch broom	C	–	–	1	1

**Table 3 Invasive Plant Species within the Project Area (Botany Analysis Area)**

Species	Common Name	CDFA Rating <sup>1</sup>	Cal-IPC Rating <sup>2</sup>	Number of sites within:		
				Project Area (FS)	Project Area (Non-FS)	Botany Analysis Area
<i>Hypericum perforatum</i>	Klamath weed	C	Moderate	–	2	3
<i>Isatis tinctoria</i>	dyer's woad	B	Moderate	–	1	–
<i>Lepidium latifolium</i>	broadleaved pepperweed	B	High	2	–	–
<i>Leucanthemum vulgare</i>	oxeye daisy	-	Moderate	2	–	2
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	A	Moderate	–	1	1
<i>Linaria vulgaris</i>	butter and eggs		–	3	1	5
<i>Myriophyllum spicatum</i>	Eurasian water milfoil	C	High	1	–	–
<i>Onopordum acanthium</i> ssp. <i>acanthium</i>	Scotch thistle	A	High	–	1	1
<i>Verbascum thapsus</i>	wooly mullein		–	1	3	–
<b>TOTAL</b>				<b>21</b>	<b>35</b>	<b>19</b>

## Notes:

<sup>1</sup> CDFR ratings - A-listed weeds: eradication or containment is required at the state or county level; B-listed weeds: eradication or containment is at the discretion of the County Agricultural Commissioner; C-listed weeds: eradication or containment required only when found in a nursery or at the discretion of the County Agricultural Commissioner. (California Department of Food and Agriculture 2009)

<sup>2</sup> Cal-IPC ratings- High: attributes conducive to moderate to high rates of dispersal and establishment; usually widely distributed among and within ecosystems. Moderate: impacts substantial and apparent, but not severe; attributes conducive to moderate to high rates of dispersal; distribution may range from limited to widespread. Limited: ecological impacts are minor or information is insufficient to justify a higher rating, although they may cause significant problems in specific regions or habitats; attributes result in low to moderate rates of invasion; distribution generally limited, but may be locally persistent and problematic. (California Invasive Plant Council 2010)

Source: Ascent 2012, TNF 2012, LTBMU 2012

### 3.2.1 Cheatgrass (*Bromus tectorum*)

#### SPECIES DESCRIPTION AND SUMMARY OF MANAGEMENT OPTIONS

Cheatgrass is a weedy annual grass that is widespread across the Great Basin and has begun to invade the Lake Tahoe Basin. It is common on lower mountain slopes but can occur as high as 9,000 feet. Cheatgrass can be found in disturbed roadside habitats such as cut banks and road medians and is spread by attaching to fur, clothing, or equipment; by wind; or by livestock and wildlife. Cheatgrass may displace native vegetation (especially during the seedling stage), and can affect the frequency, extent, and timing of wildfires (USFS 2010).

Cheatgrass has a Cal-IPC threat rating of “High” but is rated as a low priority (control) for the LTBMU. Within the LTBMU, the primary focus for this species is to prevent further spread where possible through management practices including a combination of chemical control, cultural control, seeding perennial grasses, and proper land management (USFS 2010). On the TNF, this species is too common to map or treat.

### 3.2.2 Assessment summary

There are four infestations of Cheatgrass within the NFS portion of the project area. All of these infestations are light (>10% total cover of cheatgrass). Refer to Exhibits C.1 through C.3 in Appendix C for infestation locations. There are 22 infestations of cheatgrass within the project area outside of NFS lands.

Infestations in disturbance areas will be treated prior to ground disturbance. The goal of this treatment is to prevent the spread of cheatgrass. For infestations outside of NFS lands, the treatment strategy will be developed in coordination with the appropriate landowner. Weed cleaning stations will be established to remove weed seeds and materials from construction equipment upon exiting infested areas.

### 3.2.3 Nodding plumeless thistle (*Carduus nutans*)

Nodding plumeless thistle (also commonly known as musk thistle) is a biennial or winter annual found in disturbed open areas and roadsides. It can grow to over six feet tall, has a long taproot, and is a prolific seed producer (USFS 2010).

Nodding plumeless thistle has a Cal-IPC threat rating of “Moderate” but is rated as a high priority for both the LTBMU and the TNF with a goal of eradication.

#### ASSESSMENT SUMMARY

There is one infestation of nodding plumeless thistle located outside of the project area but within the analysis area. This is a known infestation that is actively managed by the LTBMU. No treatment is planned as a part of this project.

### 3.2.4 Bull thistle (*Cirsium vulgare*)

Bull thistle is a coarse biennial, reproducing only by seed, and dying following seed set. Manual eradication is possible for small populations. It is very common throughout the LTBMU and can colonize relatively undisturbed grasslands and meadows as well as more disturbed areas (USFS 2010).

The Cal-IPC threat rating for bull thistle is “moderate.” On LTBMU, bull thistle is a moderate priority weed, with a goal of control; treatment methods may include manual or mechanical treatment. On TNF, this weed is too common to map and treat.

#### ASSESSMENT SUMMARY

There are eight infestations of bull thistle within the NFS portions of the project area. Six other infestations have been documented within the analysis area. Refer to Exhibits C.2 through C.5 in Appendix C for infestation locations. The majority of the infestations are located along segment 625-1, along the Truckee River.

Infestations in disturbance areas will be treated prior to ground disturbance in accordance with current USFS treatment guidelines. The goal of this treatment is to prevent the spread of bull thistle

and to eradicate small infestations where possible. For infestations outside of NFS lands, the treatment strategy will be developed in coordination with the appropriate landowner. A weed cleaning station will be established to remove weed seeds and materials from construction equipment upon exiting the segment 625-1 area.

### **3.2.5 Scotch Broom (*Cytisus scoparius*)**

Scotch broom is a perennial shrub which prefers dry sandy soils, and sunny sites. This weed crowds out native species, has a seedbank that can remain dormant for 80 years, and increases the risk of wildland fires (Cal-IPC 2014).

The Cal-IPC threat rating for Scotch broom is “high” and it is a moderate priority weed on the LTBMU with a goal of eradication (USFS 2010). On the TNF, Scotch broom is a low priority species but is actively treated where practical. All methods of control can be used with this species.

#### **ASSESSMENT SUMMARY**

There is one infestation of Scotch broom segment 650-1 (see Exhibit C.3 in Appendix C) and another infestation on NFS lands within the analysis area near segment 625-1 (see Exhibit C.5 in Appendix C). If possible, the infestation along segment 650-1 will be treated for control in coordination with the landowner. If treatment is not possible, the site will be flagged and avoided.

### **3.2.6 Klamathweed (*Hypericum perforatum*)**

Klamathweed was introduced from Europe in the 1700s and had infested nearly two million acres of rangelands in California. Biological control was later used to eliminate most populations below 4900 feet elevation. Klamathweed is a perennial, with thick taproots and many branched, lateral roots up to five feet deep. This plant reproduces from both seeds and rhizomes.

Klamathweed has a Cal-IPC threat rating of “moderate.” Within the LTBMU the priority is generally low with a goal of control. On the TNF, Klamathweed is a low priority (“C”) but is actively hand treated when practical. All methods of control can be used with this species.

#### **ASSESSMENT SUMMARY**

There are two infestations of Klamathweed in non-NFS portions of the project area (refer to Exhibits C.1 and C.2 in Appendix C). Both are small, roadside infestations and will be treated for control with the approval of the appropriate landowner.

### **3.2.7 Dyer’s woad (*Isatis tinctoria*)**

The aggressive dyer’s woad is a member of the mustard family and is native to southeastern Russia. Dyer’s woad is a winter biennial or short lived annual herb. Plants are highly competitive and often grow in dense colonies (Cal-IPC 2014). It invades both disturbed and undisturbed areas, but is most common in dry, rocky areas (USFS 2010).

Dyer's woad has a Cal-IPC threat rating of "Moderate." In the LTBMU this is a high priority weed with a goal of eradication. On the TNF, dyer's woad is a moderate priority ("B") and should be treated if practical. All methods of control are appropriate for this species.

### **ASSESSMENT SUMMARY**

There is one infestation of Dyer's woad along SR 267 and segment 650-2 (Exhibit C.2, Appendix C). This infestation will be treated with an approved herbicide or manually prior to the start of construction in coordination with the appropriate landowner. The goal of this treatment is to prevent the spread of Dyer's woad.

### **3.2.8 Broadleaved pepperweed (*Lepidium latifolium*)**

Broadleaved pepperweed is an aggressive perennial which forms dense colonies. It spreads by seeds as well as by rhizomes and adventitious shoots. This species can grow at altitudes of 4000 to 8,000 feet and invades moist to wet ecosystems (USFS 2010).

Broadleaved pepperweed has a Cal-IPC threat rating of "High" and is also a high priority with a goal of eradication within the LTBMU. On the TNF, this species is a moderate priority and should be actively treated if practical. Mechanical removal is ineffective with this species because new plants continue to sprout from deep roots and fragments (USFS 2010).

### **ASSESSMENT SUMMARY**

There are two infestations of broadleaved pepperweed within the NFS portion of the project area (Exhibits C.2 and C.5 in Appendix C). These infestations are outside of the disturbance area, are along existing paved roads and are known and actively managed by the LTBMU. Prior to construction, these infestations will be treated for control in accordance with the current USFS guidance.

### **3.2.9 Oxeye daisy (*Leucanthemum vulgare*)**

Oxeye daisy was introduced to the U.S. as an ornamental and is still widely planted. This perennial herb produces up to 26,000 seeds per plant and can germinate within 10 days (USFS 2010). Meadow infestations impact forage for wildlife since the plant irritates the nose and mouth of grazing animals.

Oxeye daisy has a Cal-IPC threat rating of "moderate." Within the LTBMU the priority is generally low with a goal of eradication. On the TNF, oxeye daisy is uncommon and is not rated but is treated when practical. All methods of control can be used with this species.

### **ASSESSMENT SUMMARY**

There are two infestations of oxeye daisy within the NFS portion of the project area. The smaller infestation is located adjacent to an access road and outside of the disturbance area (see Exhibit C.4 in Appendix C). The larger of the two infestations is a known infestation along the Truckee River which is actively managed by the LTBMU. Both infestations would be treated prior to construction in accordance with current USFS guidance. A weed cleaning station will be established to remove weed seeds and materials from construction equipment upon exiting the segment 625-1 area.

### **3.2.10 Dalmatian toadflax (*Linaria genistifolia* ssp. *dalmatica*)**

Dalmatian toadflax is an escaped ornamental which reproduces aggressively both by seeds and vegetatively (USFS 2010). This species prefers disturbed areas can form large colonies which displace desirable vegetation (Cal-IPC 2014). The deep root system and waxy leaves can make this species difficult to control.

The Cal-IPC threat rating for Dalmatian toadflax is “Moderate.” Within the LTBMU and TNF this species is a High priority with a goal of eradication. All methods of control are appropriate for this species.

#### **ASSESSMENT SUMMARY**

There is one light infestation of Dalmatian toadflax within the non-NFS portion of the project area (see Exhibit C.4, Appendix C). This infestation will be hand pulled or treated with an approved herbicide prior to the start of construction in coordination with the appropriate landowner. An additional infestation is located in the analysis area near Tahoe City. This infestation is outside of the project area and no treatment is planned.

### **3.2.11 Butter and eggs (*Linaria vulgaris*)**

Butter and eggs (also known as yellow toadflax) is an herbaceous perennial plant. The plant reproduces by seed and rhizomes. While most new infestations are started by seeds, spread of established infestations is mostly vegetative (USFS 2010). The ability to quickly re-grow from soil protected roots enables this species to expand rapidly in post-fire plant communities.

The Cal-IPC threat rating for butter and eggs is “Moderate.” Within the LTBMU this species is a High priority with a goal of eradication. Butter and eggs is uncommon on the TNF but is treated if practical. Clipping and Hand pulling of this species has proven to be ineffective as the plant quickly re-sprouts and sets seed at short heights (USFS 2010).

#### **ASSESSMENT SUMMARY**

There are three infestations of butter and eggs within the NFS portion of the project area near segment 625-1 in Tahoe City. One of these infestations extends onto adjacent non-NFS lands (see Exhibit C.5, Appendix C). These are known infestations and are actively managed by the LTBMU. The portions of the infestations that are within the project area would be treated for control prior to construction in accordance with current USFS guidance. A weed cleaning station will be established to remove weed seeds and materials from construction equipment upon exiting the segment 625-1 area.

### **3.2.12 Eurasian water milfoil (*Myriophyllum spicatum*)**

Eurasian water milfoil is a common submersed aquatic perennial. It grows stems and branches that can be up to 20 feet long, with an average size of six to eight feet. It can be found in freshwater lakes, ponds, and canals with slow moving water. It grows and spreads rapidly, creating dense mats on the water surface which out-compete native aquatic plants (Cal-IPC 2014).

Eurasian water milfoil has a Cal-IPC threat rating is “high.” This species is targeted by the Aquatic Invasive Weed program within the LTBMU. On the TNF Eurasian water milfoil is uncommon but is treated when practical. Mechanical removal and mowing can spread infestations, however physical removal of the root system is effective and herbicides are available.

## **ASSESSMENT SUMMARY**

An infestation of Eurasian water milfoil occurs in the portion of the Truckee River crossed by the project area. Project activities in this area would span the river. No treatment is planned.

### **3.2.13 Scotch thistle (*Onopordum acanthium*)**

Scotch thistle is an annual, biennial, or short lived perennial which reproduces only by seed. It has the ability to invade most habitats and can germinate year round. Scotch thistles produce 20,000 to 40,000 seeds per plant and plants can reach eight feet in height (USFS 2010). Infestations can reduce forage and impeded movement of wildlife

The Cal-IPC threat rating for this species is “high.” In both the LTBMU and the TNF Scotch thistle is a high priority species with a goal of eradication. All methods of control can for used with this species.

## **ASSESSMENT SUMMARY**

One infestation of Scotch thistle is located along segment 625-2 on non-NFS lands. Assess the extent of the existing weediness of the project area. This infestation will be hand pulled or treated with an approved herbicide prior to the start of construction in coordination with the appropriate landowner. The goal of this treatment is to prevent the spread of Scotch thistle.

## **3.3 HABITAT VULNERABILITY**

### **3.3.1 625 Line**

The 625 Line alternatives are located primarily within the following native forest communities: red fir forest, red fir-white fir forest, Jeffrey pine forest, Jeffrey pine-white fir forest, and Sierran mixed conifer forest. The 625 Line alternatives also cross through montane riparian, montane chaparral, and meadow habitats. In general, native plant communities in the 625 Line study area are healthy and intact with very little existing disturbance and moderate to dense vegetative cover. Therefore, habitat vulnerability along the 625 Line is low, except in areas immediately adjacent to existing development in Kings Beach and Tahoe City, and along the shoulders of the Fiberboard Freeway. In these areas, habitat vulnerability is moderate due to the existing disturbance and resulting vegetation gaps. Weed infestations along the 625 Line are primarily located within Tahoe City where bull thistle, broadleaved pepperweed, oxeye daisy, butter and eggs, and water milfoil have all been documented.

The staging areas proposed for the 625 Line are moderately to highly disturbed, and habitat vulnerability is therefore moderate to high because past or ongoing disturbance has removed native vegetation and left bare soil and sunny openings in the tree canopy that provide suitable conditions for invasive plants. Staging areas proposed for the 625 Line comprise approximately 2.6 acres on

NFS lands managed by LTBMU. The Kings Beach Staging Area, which would be used for both the 625 Line and the 650 Line, is currently infested with cheatgrass and woolly mullein.

### **3.3.2 650 Line**

The 650 Line would be constructed primarily outside of NFS lands; however, Segments 650-1, 650-2, 650-4, and 650-6 are located, at least partially, on NFS lands. Segments 650-1 and 650-2 are predominantly characterized by native forest communities; however, these communities are moderately disturbed, as they are located within the community of Kings Beach and along SR 267, these areas are generally subject to relatively high levels of human visitation and interference, as well as fuels management activities and road and utility line maintenance. Therefore, habitat vulnerability in these areas is moderate. Infestations of cheatgrass, Dyer's woad, Klamath weed, broad-leaved pepperweed, and bull thistle have all been documented along Segment 650-2 on NFS lands adjacent to SR 267 (Exhibit C.2, Appendix C).

Where Segment 650-4 traverses TNF land, the habitat is characterized by dry meadow, sagebrush scrub, and Jeffrey pine communities. Vegetation appears to be relatively undisturbed but vegetative cover is naturally low to moderate for these community types. No invasive plants were observed in this area, although cheatgrass is present nearby. Habitat vulnerability here is considered moderate because vegetative cover is low to moderate, there is an existing, heavily used footpath traversing the site, and the site is adjacent to a golf course and a residential neighborhood. Due to the trail and adjacent land uses, the area is subjected to low levels of disturbance on an ongoing basis.

The portion of Segment 650-6 that traverses TNF land is along a heavily disturbed roadway (Glenshire Drive). The predominant surrounding plant community is Jeffrey pine forest, but native cover is relatively low adjacent to the road and it is apparent that native vegetation was cleared in the past and the area was seeded with a wildflower mix. Cheatgrass is present in this area at a density of 10 to 50 percent relative cover and a patch of poison hemlock is present on the south side of Glenshire Road just outside of TNF land (Exhibit C.1, Appendix C). Habitat vulnerability is high due to the low vegetative cover, high level of disturbance, and existing invasive plant infestations.

### **3.3.3 Assessment Summary**

The majority of the 625 line has low existing disturbance and low habitat vulnerability, however the 650 line has greater disturbance and moderate habitat vulnerability. In addition there are some pockets of highly vulnerable habitat along both lines. For these reasons, the overall habitat vulnerability of the project is moderate.

## **3.4 NON-PROJECT DEPENDENT VECTORS**

The primary existing weed vectors within and around the project area, both for the 625 Line and the 650 Line, are the major roads the electric line alternatives follow, such as SR 267 and Glenshire Road; recreational use of the roads and trails in the project area, including the Fiberboard Freeway, Mount Watson Road, Martis Peak Road, and the Tahoe Rim Trail; and residential development. Recreationists and their dogs use the system of authorized and unauthorized trails and adjacent habitats for hiking, biking, cycling, and other activities. Attachment of weed seeds or propagules to vehicles, humans, pets, and wildlife is a primary means of weed dispersal through the project area. Residents adjacent to NFS lands sometimes plant invasive species, such as oxeye daisy and Scotch

broom, in their yards and also accidentally transfer weeds or seeds to their property in seed mixes, mulch, topsoil, and other landscaping materials, or attached to their clothes, pets, or vehicles. Weeds that become established on residential lots are easily spread to adjacent lands via wind, water, animals, or humans.

### **3.4.1 Assessment Summary**

The non-project dependent vectors are considered moderate to high due to recreational use of the analysis area, including the Tahoe Rim Trail, Martis Valley trails, etc, as well as the existence of current utility corridors.

## **4 PROJECT-DEPENDENT FACTORS**

### **4.1 HABITAT ALTERATION EXPECTED AS A RESULT OF THE PROJECT**

Implementing the project would result in a 65-foot-wide disturbance corridor during construction and a 40-foot wide permanent electric line easement, or a 65-foot-wide permanent easement for double circuit options. Because the project would require extensive vegetation removal for new roads, road improvements, and construction of the new electric lines; overall habitat alteration as a result of the project is expected to be high. Topsoil would be salvaged and respread following construction, preconstruction contours would be approximated, and construction sites would be revegetated to help minimize habitat alteration.

Implementing Alternative 1 would result in removal or disturbance of approximately 143 acres of native vegetation cover from NFS lands. Alternative 2 would result in removal or disturbance of approximately 140 acres, while Alternatives 3, 3A, and 4 would result in removal or disturbance of approximately 91, 90, and 93 acres respectively. Implementation of Alternative 4 (Proposed Alternative) would result in removal or disturbance of 50 fewer acres of native vegetation from NFS lands than Alternative 1 (PEA Alternative) and 47 fewer acres than Alternative 2 (Modified Alternative), but would remove approximately 2 acres more than Alternative 3 (Road Focused Alternative), and 3 more acres than Alternative 3A (Road Focused Alternative with Double Circuit Option).

The risk of spreading invasive plants is greater under Alternative 1 (PEA Alternative) than under any of the other action alternatives because the other action alternatives would result in less ground disturbance and fewer acres of native vegetation removal. Alternative 2 would follow a straighter alignment in some segments, thereby reducing impact acreage compared to Alternative 1. Alternative 2 would also implement a double circuit option in Segments 625-9 and 625-10 rather than constructing the 625 and 650 Lines in two separate alignments. However, the double circuit option proposed under Alternative 2 would be constructed primarily on NFS lands (whereas Alternatives 3, 3A, and 4 would employ double circuit options that would be constructed primarily in developed areas along SR 267 and within residential areas).

The amount of native vegetation removed would be very similar under Alternative 3 (91 acres), Alternative 3A (90 acres), and Alternative 4 (93 acres), but substantially lower than under Alternative 1 or Alternative 2. Native vegetation removal would be slightly greater under Alternative 4 than under Alternatives 3 or 3A because Alternative 4 would cross through a TNF parcel in Martis Valley that would be avoided under Alternatives 3 and 3A by constructing Segment 650-4B along SR 267. In all

other respects, the disturbance footprint and weed risk impact would be the same under Alternative 4 as under Alternative 3.

Although implementing Alternative 3, 3A, and 4 would still involve substantial ground disturbance, with less ground disturbance and less loss of native vegetation cover, the potential for invasive plant species to become established is reduced. Therefore, potential impacts from invasive species are less under Alternative 3A than the other action alternatives because implementing Alternative 3A would result in the least amount of ground disturbance and native vegetation removal.

#### **4.1.1 625 Line**

Habitat alteration would be highest for Alternatives 1 and 2 because forest vegetation would be removed to construct new roads and improve existing roads in addition to creating a new 40-foot-wide permanent power line ROW within a 65-foot-wide construction corridor. Extensive vegetation clearing, tree removal, grading, and excavation would occur within the construction corridor for pole installation. Under Alternatives 1 and 2, new accessways would be created through relatively undisturbed forest in segments 625-9 and 635-10.

Habitat alteration would be high under Alternatives 3, 3A, and 4 as well, but would be less than under Alternatives 1 and 2. Because they would rely more heavily on existing roads, less acreage of vegetation removal for new and improved access roads would be required.

#### **4.1.2 650 Line**

Habitat alteration would be moderate because the new line would be constructed within the footprint of existing lines or along existing roadways and would rely primarily on existing roads for access. Rebuilding the 650 Line would still involve vegetation removal at new pole sites within a 65-foot construction corridor, but because the line would be installed primarily within the existing maintained ROW, the amount of vegetation removal and grading needed would be reduced as the existing ROW is already kept clear of trees and tall shrubs.

#### **4.1.3 Assessment Summary**

Because the project would require extensive vegetation removal for new roads, road improvements, and construction of the new electric lines; overall habitat alteration as a result of the project is expected to be high. Topsoil would be salvaged and respread following construction, preconstruction contours would be approximated, and construction sites would be revegetated to help minimize habitat alteration. The amount of habitat alteration would be the highest under Alternative 1, followed closely by Alternative 2. While Alternatives 3, 3a, and 4 would also result in substantial habitat alteration, it would be much less than the disturbance anticipated under Alternatives 1 and 2.

### **4.2 INCREASED VECTORS AS A RESULT OF PROJECT IMPLEMENTATION**

Traffic on project access roads would be dramatically increased during construction and there is a high risk of invasive plants being introduced or spread to currently un-infested areas via construction equipment and personnel. Temporary increases in vectors during construction are common to both

lines and every alternative. Potential vector increases beyond the construction phase are discussed for each electric line below. Refer to tables 1 and 2 for the length of new and improved access ways and roads by alternative.

Although weed infestations would be treated prior to ground disturbance and cleaning stations would be established to removed weed seed and materials from equipment, disturbance of infestations could spread weed seeds to nearby areas. The acreage of weed infestations that would be directly intersected by ground disturbance is 7.85 acres for Alternatives 1, 3, 3a, and 4. For Alternative 2 (Modified Alternative) this amount would be reduced to 2.99 acres because the disturbance footprint would avoid the cheatgrass infestations along SR 267.

### **4.2.1 625 Line**

Implementing Alternatives 1 or 2 would result in creation of new access ways and widening of some existing roads, which would provide new and expanded dispersal corridors. Sections 625-9 and 625-10 would be constructed in habitats that are relatively undisturbed and have few existing vectors for weed spread other than natural vectors (e.g., wildlife, wind, water flow). The new electric line would provide a new dispersal corridor in these areas and increase the risk of invasive plants being introduced; however, the risk would be reduced over time as revegetation becomes established. Due to the very high recreation use on LTBMU, there is a moderate to high probability that these access ways may not fully revegetate due to continued use. Increased recreational use of new access ways is expected to be substantial in some areas—particularly near existing trails or new potential long-distance trails—but low on new access ways that are primarily relatively short spur roads that do not lead to particular points of interest. Roads widened for construction access would be restored to their pre-project width and condition following construction and access ways would be permitted to revegetate over time. All construction and revegetation materials used for the project would be weed free. The invasive plant introduction and spread risk should decrease after construction is complete, but will remain moderate due to the use of accessways for inspections, maintenance, and repair work.

The Road Focused Alternative and Proposed Alternative would be constructed along existing roadways and would maximize the use of existing roads for access. These alternatives have a lower risk of providing vectors for invasive plant spread and introduction.

### **4.2.2 650 Line**

The 650 Line would be rebuilt primarily within the existing electric line easement, which lies mostly along existing roadways and within or adjacent to existing development. Construction and maintenance of the 650 Line would rely primarily on existing roads for access and no new roads are expected to be developed. Improvements to existing roads would be limited to an approximately 1-mile stretch of dirt access adjacent to SR 267 southeast of Brockway Summit. The invasive plant introduction and spread risk should decrease after construction is complete, but will remain moderate due to the use of accessways for inspections, maintenance, and repair work.

### **4.2.3 Assessment summary**

The highest risk of spread would remain for cheatgrass in segments 650-1, 650-2 and 650-6, Dyer's woad in segment 650-2, and butter and eggs in segment 625-1. The highest risk of introduction

would be in segments 625-9 and 625-10 where Alternatives 1 and 2 would create new access ways through relatively undisturbed forest land.

## 4.3 MANAGEMENT MEASURES

### 4.3.1 Standard management measures for invasive plants

The following measures are consistent with Forest Service policy and manual direction and the LTBMU Land Resource Management Plan as amended by the SNFPA. In combination with the project-specific APMs described in Section 4.3.2 of this document, these measures would be implemented to minimize the risk of new weed introductions, and to minimize the spread of weeds within and between management units.

- ▲ CalPeco will utilize locally collected native seed sources for revegetation when possible. Plant and seed material will be collected from or near the project area, from within the same watershed, and at a similar elevation when possible and with approval of the Forest Service botanist. Persistent non-natives, such as such as timothy (*Phleum pretense*), orchardgrass (*Dactylis glomerata*), ryegrass (*Lolium* spp.), or crested wheatgrass (*Agropyron cristatum*) will not be used in revegetation.
- ▲ After the project is completed, the noxious weed coordinator will be notified so that the project area can be monitored for three years (as funding allows) for additional nonnative invasive species establishment or spread of existing nonnative invasive species populations in the areas affected by the project.

### 4.3.2 Project-Specific Management Measures

The following APMs, which are a part of the project under analysis, would be implemented to minimize the risk of introducing or spreading invasive plants.

- ▲ **APM BIO-1:** Prior to construction, all CalPeco, contractor, and subcontractor project personnel will receive training from a qualified resource specialist regarding the appropriate work practices necessary to effectively implement the APMs and to comply with the applicable environmental laws and regulations, including appropriate wildlife avoidance measures, impact minimization procedures, the importance of sensitive resources, and the purpose and methods for protecting such resources. Among other topics, the training will also include a discussion of BMPs to reduce the potential for erosion and sedimentation during construction. Additionally, CalPeco and designated environmental monitors for project construction will coordinate with the applicable public land owners/managers on communication, documentation and reporting, and data submittal protocols.
- ▲ **APM BIO-2:** CalPeco will conduct a complete floristic survey, including surveys for all special-status botanical species and invasive plants, during a time that coincides with the greatest number of blooming periods for target species. This survey will be conducted no more than one year prior to the start of construction. Occurrences of special-status botanical species and weed-infested areas will be flagged or fenced no more than 30 days prior to the start of construction. Flagging and fencing will be refreshed and maintained throughout construction. Implementation of this measure will occur in coordination with USFS.

- ▲ **APM BIO-3:** CalPeco will complete an invasive plant risk assessment for all ground-disturbing activities.
- ▲ **APM BIO-4:** Before construction activities begin, CalPeco will treat invasive plant infestations where feasible. Treatments will be selected based on each species ecology and phenology. All treatment methods—including the use of herbicides—will be conducted in accordance with the law, regulations, and policies governing the land owner (e.g., TRPA in the Lake Tahoe Basin; LTBMU Forest Supervisor and Tahoe National Forest Supervisor on NFS lands). Land owners will be notified prior to the use of herbicides. In areas where treatment is not feasible, CalPeco will clearly flag or fence infested areas in order to clearly delineate work exclusion. Appropriate treatments will also be incorporated into tree removal and construction activities, such as a requirement that all cut live conifer stumps greater than 6 inches in diameter be treated with Sporax or an EPA-registered borate compound to prevent the spread of Annosus root disease.
- ▲ **APM BIO-5:** Vehicles and equipment will arrive at the project area clean and weed-free and will be inspected by the on-site environmental monitor for mud or other signs that weed seeds or propagules could be present prior to use in the project area. If the vehicles and equipment are not clean, the monitor will deny entry to the ROW and other work areas.
- ▲ **APM BIO-6:** Vehicles and equipment will be cleaned using high-pressure water or air at designated weed-cleaning stations after exiting an infested area. Cleaning stations will be designated by a botanist or invasive plant specialist and located away from aquatic resources.
- ▲ **APM BIO-7:** Only certified weed-free construction materials, such as sand, straw, gravel, seed, and fill, will be used throughout the project.
- ▲ **APM BIO-8:** If invasive plant-infested areas are unavoidable, invasive plants will be cut, if feasible, and disposed of in a landfill in sealed bags or disposed of or destroyed in another manner acceptable to the USFS, TRPA, USACE, or other agency as appropriate. If cutting is not feasible, layers of mulch, degradable geotextiles, or similar materials will be placed over the infestation area to minimize the spread of propagules by equipment and vehicles during construction. These materials will be secured so they are not blown or washed away.
- ▲ **APM BIO-21:** Qualified environmental monitors will be present with each crew during all vegetation-removal activities to help ensure that impacts to biological resources are minimized to the extent possible. For all other construction activities, monitors will be allowed to cover up to 5 miles of the project area at once to allow multiple crews to work in close proximity to each other at the same time. Environmental monitors will have the authority to stop work or direct work in order to help ensure the protection of resources and compliance with all permits.
- ▲ **APM BIO-23:** Topsoil, where present, will be salvaged in areas that will be graded or excavated. Topsoil will be segregated, stockpiled separately from subsoil, and covered. These soil stockpiles, as well as any others created by the proposed project, shall have the proper erosion control measures applied until they are removed. The topsoil will then be replaced to the approximate location of its removal after project construction has been completed to facilitate revegetation of disturbed areas. Top soil will not be salvaged from areas infested with invasive plants.
- ▲ **APM BIO-24:** If invasive plant infestations are later identified throughout the course of construction in staging areas, parking areas, or access routes, they will be treated according to APM BIO-4 & BIO-8.

- ▲ **APM BIO-26:** Work areas will be clearly marked with fencing, staking, flagging, or another appropriate material. All project personnel and equipment will be confined to delineated work areas. In the event that work must occur outside of the work area, approval from lead and other agencies with jurisdiction over the property will be obtained prior to the commencement of activities.
- ▲ **APM BIO-28:** CalPeco will minimize vegetation and tree removal to only the areas necessary for construction, with particular attention given to minimizing effects on riparian areas and preserving trees greater than 30 inches diameter at breast height (dbh).
- ▲ **APM BIO-30:** Prior to commencing construction in any area containing aquatic resources or potential wetlands, a qualified biologist will conduct a delineation of waters of the United States according to methods established in the USACE wetlands delineation manual (Environmental Laboratories 1987) and Western Mountains, Valleys, and Coast Region Supplement (Environmental Laboratories 2010). The delineation will map and quantify the acreage of all aquatic habitats on the project site and will be submitted to USACE for verification. CalPeco will determine, based on the verified wetland delineation and the project design plan, the acreage of impacts on waters of the United States and waters of the state that will result from project implementation. Impacts will be avoided to the extent practicable through the siting of poles and other facilities outside of delineated waters of the United States and waters of the state. Work in wetlands or wet meadow habitats with saturated soil conditions will be scheduled when soils are dry to the extent possible. If soils become saturated, timber mats will be installed along all vehicle and equipment access routes to minimize rutting. Prior to disturbance of waters of the United States or waters of the state, an environmental monitor will record via photographs and field notes the pre-disturbance condition of the water. Disturbed waters will be restored to preconstruction conditions and seeded with a native species, consistent with the vegetation community present prior to disturbance, to stabilize the soils and minimize the introduction of invasive plants, as specified by the USACE and RWQCB. In accordance with the USACE “no net loss” policy, all permanent wetland impacts will be mitigated at a minimum of a 1:1 ratio. This mitigation will come in the form of either contributions to a USACE-approved wetland mitigation bank or through the development of a Compensatory Mitigation and Monitoring Plan aimed at creating or restoring wetlands in the surrounding area (although creation is not authorized by TRPA in their jurisdiction).

**APM BIO-36:** Prior to construction, CalPeco will develop a Restoration Plan that will address final clean-up, stabilization, and revegetation procedures for areas disturbed by the project. The plan will be consistent with, and implement related commitments and requirements included in the EIS/EIS/EIR project description, other APMs, mitigation measures, and agency permit requirements. The Restoration Plan will address loosening of any compacted soil, restoration of surface residue, and reseeded. If existing unpaved roads require modification to temporarily allow passage of construction equipment during the construction period, these roads will be returned to their original footprint after construction is complete. On NFS lands, restoration activities will be designed and implemented to meet invasive plant management guidelines and Visual Quality Objectives (VQO) for the area. Areas temporarily disturbed by cut and fill activities will be re-graded to blend with the natural topography. On public land, CalPeco will coordinate with the land management agency to determine an appropriate seed mix or tree planting plan as well as other elements of the plan applicable to lands managed by the agency. On private land, CalPeco will coordinate with the landowner and/or provide the landowner with a suggested seed mix based on consultation with the agency of jurisdiction. The plan will include approved seed mixes, application rates, application methods, methods to record pre-disturbance conditions, success criteria for vegetation growth, monitoring and reporting protocols, and remedial measures if success criteria are not met. If broadcast seeding is determined to be the most

feasible application method, seeding rates will be doubled relative to the standard seeding rate and the seeding method rationale will be explained. The plan will also include long-term erosion and sediment control measures, slope stabilization measures, criteria to determine the success of these measures, remedial actions if success criteria are not met, and monitoring and reporting procedures. As part of normal equipment inspections during project operation, an evaluation of access ways will be conducted to confirm that use has not resulted in compaction that will result in “coverage” per TRPA standards.

### **4.3.3 Assessment summary**

Implementing the measures listed above, as part of the proposed project, would substantially reduce the risk of introducing or spreading invasive plants in the project area. Although some weed species are already present in areas near existing roads and development, the measures incorporated into the project would remove or avoid existing infestations, revegetate disturbed areas, and ensure equipment and personnel do not transport weed seed and propagules into the work area. These efforts would greatly reduce the risk of spread or introduction, but cannot eliminate it entirely.

## **5 ANTICIPATED WEED RESPONSE TO THE PROPOSED PROJECT**

Alternative 1 (PEA) would have a high risk of spreading invasive plants due to the presence of known weed infestations, the high amount of habitat alteration that would result from this alternative, and the creation of new access way which would act as vectors for the spread of weeds.

Alternative 2 (Modified) is similar to Alternative 1 in the amount of habitat alteration and the increase in vectors that would be created, and therefore would have a high risk of spreading invasive plants.

Alternatives 3 (Road Focused) would have greatly reduced habitat alteration and increased vectors when compared to Alternatives 1 and 2, and would have a moderate risk of spreading invasive plants.

Alternative 3A (Road Focused, Double Circuit) is similar to Alternative 3, although slightly less, in the amount of habitat alteration and the increase in vectors that would be created, and therefore would have a moderate risk of spreading invasive plants.

Alternative 4 (Proposed) is similar to Alternative 3, although slightly more, in the amount of habitat alteration and the increase in vectors that would be created, and therefore would have a moderate risk of spreading invasive plants.

Table 4, below, provides a comparison of the risk of introducing or spreading invasive plants by alternative.

**Table 4 Summary of Overall Risk by Alternative**

Indicator Measures	Rankings of Alternatives for Each Indicator <sup>1</sup>				
	Alternative 1	Alternative 2	Alternative 3	Alternative 3a	Alternative 4
Acres of native vegetation removal	143	140	91	90	93
Miles of new or improved access ways on NFS lands	16.1	13.8	4.4	4.1	4.6
Acres of infestation directly intersected by disturbance	7.85	2.99	7.85	7.85	7.85
<b>Overall Risk Ranking<sup>1</sup></b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>3</b>

Source: Ascent Environmental

<sup>1</sup>A score of 1 indicates the alternative has the lowest overall risk of invasive plant introduction and spread; a score of 5 indicates that the alternative has the highest overall risk.

The risk of spreading invasive plants is slightly lower under Alternative 2 than under Alternative 1, but greater than under any of the other action alternatives because the other action alternatives would rely more heavily on existing roadways for access and would be constructed along existing roadways. Alternatives 3, 3A, and 4 would also employ a double circuit line through the King's Beach area rather than constructing two separate lines, as would occur under Alternative 1, and the double circuit line would be constructed outside of NFS lands as opposed to within NFS lands, as would occur under Alternative 2.

Overall, the project has a moderate to high risk of introduction or spread of invasive plants, as summarized in Table 5.

**Table 5 Summary of Risk Factors for Overall Project**

	Factor	Risk	Assessment summary
Non-Project Dependent Factors	Inventory	N/A	Adequate
	Known invasive plants	Moderate	There are 9 known infestations of high management priority species present in the NFS land portion of the project area.
	Habitat vulnerability	Moderate	Generally low to moderate levels of existing disturbance habitat vulnerability. Some pockets of highly vulnerable habitat along both lines.
	Non-project dependent vectors	Moderate	Moderate to high due to recreational use and existing utility corridors.
Project- Dependent Factors	Habitat alteration expected as a result of project	High	Moderate to high due to native vegetation removal.
	Increased vectors as a result of project implementation	High	Construction of temporary and permanent accessways, maintenance of utilities and accessways, and construction related short-term traffic increase
	Management measures	Greatly reduced risk	Standard management measures implemented in all alternatives. Treatments are similar across all alternatives.
Anticipated Weed Response		Moderate-high	High risk of introduction and spread under Alternatives 1 and 2. Moderate risk under Alternatives 3, 3a, and 4.

## 6 REFERENCES

Exec. Order No. 13112. Page 3 CFR 6183.

Bossard, C. C., J. M. Randall, and M. C. Hoshovsky. 2000. *Invasive Plants of California's Wildlands*. University of California Press, Berkeley, CA.

Bosworth, D. 2003. *Invasive Species*. Letter to all employees; July 16, 2003, USDA Forest Service.

California Department of Food and Agriculture. 2009. *Pest Ratings of Noxious Weed Species and Noxious Weed Seed. List*, State of California, Department of Food and Agriculture, Division of Plant Health and Pest Prevention Services.

California Department of Food and Agriculture. 2010. *Division of Plant Health & Pest Prevention Services, Integrated Pest Control Branch. Encycloweedia: California Weed Laws*. Sacramento, CA. Available at: [http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia\\_hp.htm](http://www.cdfa.ca.gov/phpps/ipc/encycloweedia/encycloweedia_hp.htm). Accessed: November 6, 2009.

California Invasive Plant Council. 2010. *California Invasive Plant Inventory*.

California Invasive Plant Council. 2014. *Invasive Plant Management, Plant Profiles*. Available: [http://www.cal-ipc.org/ip/management/plant\\_profiles/](http://www.cal-ipc.org/ip/management/plant_profiles/)

Cal-IPC. See California Invasive Plant Council.

CDFA. See California Department of Food and Agriculture.

Hickman, J. C. (Ed.). 1993. *The Jepson Manual of Higher Plants of California*. University of California Press, Berkeley, CA.

Lake Tahoe Basin Weeds Coordinating Group. 2007 (December). *Priority Invasive Weeds of the Lake Tahoe Basin*. Available at: <http://www.tahoeinvasiveweeds.org/>. Accessed: November 6, 2009.

State of Nevada. Department of Agriculture, Plant Industry Division. 2005. (March 24) *Noxious Weed List* Available at: [http://agri.nv.gov/nwac/PLANT\\_NoxWeedList.htm](http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm). Accessed: November 6, 2009.

U.S. Forest Service. 1988. *Lake Tahoe Basin Management Unit Land and Resource Management Plan*.

———. 1995 (November 29) *Forest Service Manual (FSM), 2080 Noxious Weed Management*.

———. 2000. *Region 5 Noxious Weed Strategy*. Page 14. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.

———. 2001. *Sierra Nevada Forest Plan Amendment – Final EIS and Record of Decision*.

- . 2004. *Noxious Weed Prevention and Control*. LTBMU, Urban Lot Management Program. Available at: <<http://www.fs.fed.us/r5/lbmu/about/urban-lots/nxsweeds.shtml>>. Accessed: November 6, 2009.
- . 2004a. National Strategy and Implementation Plan for Invasive Species Management. USDA Forest Service, Washington Office, Washington D.C.
- . 2004b. Sierra Nevada Forest Plan Amendment Record of Decision. USDA Forest Service, Pacific Southwest Region, Vallejo, CA.
- . 2008. Forest Service Manual, Chapter 2070, Vegetation Ecology. USDA Forest Service, National Headquarters (WO), Washington DC.
- . 2010. Terrestrial Invasive Plant Species Treatment Project, Environmental Assessment. USDA Forest Service, Lake Tahoe Basin Management Unit, South Lake Tahoe.
- . 2011. Forest Service Manual, Chapter 2900, Invasive Species Management. USDA Forest Service, National Headquarters (WO), Washington DC.

USFS. See U.S. Forest Service.

# **Appendix A**

---

**Invasive Species of Management  
Concern on the Lake Tahoe Basin  
Management Unit**

**Tahoe National Forest Eastside  
Non-native Invasive Plants of Concern**

**Table A-1 Invasive Plants of Management Concern on the Lake Tahoe Basin Management Unit**

Scientific Name	Common Name	LTBMU Priority	NDA	CDFA	Cal-IPC	LTB WCG	Known in project
<i>Acroptilon repens</i>	Russian knapweed	Medium	B	B	Moderate	Group 1	
<i>Ailanthus altissima</i>	tree of heaven	N/A		C	Moderate	Group 1	
<i>Bromus tectorum</i>	cheat grass	Low			High		
<i>Cardaria draba</i>	heart-podded hoary cress; whitetop	Medium	C	B	Moderate	Group 1	
<i>Cardaria pubescens</i>	globe-podded hoary cress; hairy whitetop	Medium		B	Limited	Group 1	
<i>Carduus nutans</i>	musk thistle	High	B	A	Moderate	Group 1	
<i>Centaurea calcitrapa</i>	purple starthistle; red starthistle	N/A	A	B	Moderate	Group 1	
<i>Centaurea diffusa</i>	diffuse knapweed	Medium	B	A	Moderate	Group 1	
<i>Centaurea maculosa</i>	spotted knapweed	Medium	A	A	High	Group 2	
<i>Centaurea solstitialis</i>	yellow starthistle	Medium	A	C	High	Group 1	
<i>Centaurea virgata</i> ssp. <i>squarrosa</i>	squarrose knapweed	Medium	A	A	Moderate		
<i>Chondrilla juncea</i>	rush skeletonweed	High	A	A	Moderate	Group 1	
<i>Cirsium arvense</i>	Canada thistle	Medium	C	B	Moderate	Group 1	
<i>Cirsium vulgare</i>	bull thistle	High		C	Moderate	Group 2	
<i>Conium maculatum</i>	poison hemlock	Medium	C		Moderate		
<i>Cytisus scoparius</i>	Scotch broom	Medium		C	High	Group 2	
<i>Dipsacus fullonum</i>	teasel; Fuller's teasel	N/A			Moderate	Group 1	
<i>Dittrichia graveolens</i>	stinkwort	N/A			Moderate	Group 1	
<i>Elytrigia repense</i>	quackgrass	N/A		B			
<i>Hydrilla verticillata</i>	hydrilla; waterthyme	N/A	A	A	High; Alert		
<i>Hypericum perforatum</i>	St. Johnswort; Klamathweed	Medium	A	C	Moderate	Group 2	
<i>Isatis tinctoria</i>	Dyer's woad	Medium	A	B	Moderate	Group 1	
<i>Lepidium latifolium</i>	tall whitetop; perennial pepperweed	Medium	C	B	High	Group 2	
<i>Leucanthemum vulgare</i>	oxeye daisy	Medium			Moderate	Group 2	
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	High	A	A	Moderate	Group 2	
<i>Linaria vulgaris</i>	yellow toadflax; butter & eggs	Medium	A		Moderate	Group 2	
<i>Lythrum salicaria</i>	purple loosestrife	Medium	A	B	High	Group 1	
<i>Myriophyllum spicatum</i>	Eurasian watermilfoil	N/A	A		High		
<i>Onoropordum acanthium</i> ssp. <i>acanthium</i>	Scotch thistle	High	B	A	High	Group 1	
<i>Potamogeton crispus</i>	curlyleaf pondweed	N/A			Moderate		
<i>Potentilla recta</i>	sulfur cinquefoil	Low	A	A		Group 1	

**Table A-1 Invasive Plants of Management Concern on the Lake Tahoe Basin Management Unit**

Scientific Name	Common Name	LtBMU Priority	NDA	CDFA	Cal-IPC	LtB WCG	Known in project
<i>Rubus armeniacus</i>	Himalaya blackberry	Low			High		
<i>Elymus caput-medusae</i>	medusahead	High	B	C	High	Group 1	
<i>Tamarix chinensis</i> , <i>T. ramosissima</i> , & <i>T. parvifolia</i>	tamarisk; saltcedar	High	C	B	High	Group 1	
<i>Verbascum thapsus</i>	woolly mullein; common mullein	N/A			Limited		

**LtBMU:** High—Species that have a large ecological impact or invasive potential; species that are easily controlled. Medium—Species that have a moderate ecological impact or invasive potential; species that may be difficult to control. Low—Species that have a low ecological impact or invasive potential; species that require substantial effort to control. N/A—species not evaluated.

**NDA:** Nevada Department of Agriculture Noxious Weed List ([http://agri.nv.gov/nwac/PLANT\\_NoXWeedList.htm](http://agri.nv.gov/nwac/PLANT_NoXWeedList.htm)) Category A—Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B—Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C—Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

**CDFA:** California Department of Food and Agriculture Noxious Weed List (<http://www.cdfa.ca.gov/phpps/ipc/>). A--Eradication or containment is required at the state or county level. B--Eradication or containment is at the discretion of the County Agricultural Commissioner. C--Require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q--Require temporary "A" action pending determination of a permanent rating.

**Cal-IPC:** California Invasive Plant Council Online Invasive Plant Inventory (2006) (<http://www.cal-ipc.org/ip/inventory/weedlist.php>). High—Species having severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate—Species having substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited—Species that are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Alert—Species with significant potential for invading new ecosystems.

**LtBWCG:** Lake Tahoe Basin Weed Coordinating Group Weed Priority List (2010). Group 1--Watch for, report, and eradicate immediately. Group 2--Manage infestations with the goal of eradication.

**Table A-2 Tahoe National Forest Eastside Non-native Plants of Concern**

Scientific Name	Common Name	Report, Map, Treat	Concern Level on eastside of TNF
<i>Acroptilon repens</i>	Russian knapweed	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Bromus tectorum</i>	Cheatgrass/downy chess	Do not report, map or treat. Prevent spread through mitigations such as revegetation of disturbed areas.	Too common to map and treat.
<i>Carduus nutans</i>	Musk thistle/nodding thistle	Report, map, treat and actively control	A-rated and actively hand treated yearly.
<i>Carthamus lanatus</i>	Woolly distaff thistle	Report, map, treat an actively control	Not known to be present in 2013
<i>Centaurea diffusa</i>	Diffuse knapweed	Report, map, treat and actively control	A-rated and actively treated.
<i>Centaurea solstitialis</i>	Yellow star thistle	Report, map, treat and actively control	C-rated but actively hand treated yearly. Few known occurrences
<i>Centaurea stoebe</i>	Spotted knapweed	Report, map, treat and actively control	A-rated and actively treated.
<i>Chondrilla juncea</i>	Skeleton weed	Report, map, treat and actively control	A-rated and actively treated.
<i>Cirsium arvense</i>	Canada thistle	Report, map, treat and actively control	B-rated and actively treated if practical.
<i>Cirsium vulgare</i>	Bull thistle	Do not report, map or treat. Prevent spread through mitigations such as revegetation of disturbed areas.	Too common to map and treat.
<i>Conium maculatum</i>	Poison hemlock	Report, map and prevent spread through mitigations.	Usually occurs in wet areas where herbicides may be inappropriate or special herbicides may be used (but not on the Tahoe NF).
<i>Cytisus scoparius</i>	Scotch broom	Report, map, treat and actively control	C-rated but actively hand treated yearly. Few known occurrences
<i>Euphorbia oblongata</i>	Oblong spurge	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Genista monspessulana</i>	French broom	Report, map, treat and actively control	Primarily westside of Sierra.
<i>Halogeton glomeratus</i>	Halogeton	Report, map, treat and actively control	Has not been seen but, known to be common in Nevada.
<i>Hydrilla verticillata</i>	Hydrilla	Report, map, treat and actively control	A-rated and actively treated.
<i>Hypericum perforatum</i>	Klamath weed	Report, map, treat and actively control	C-rated but actively hand treated when practical.
<i>Isatis tinctoria</i>	Dyer's woad	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Lepidium appelianum</i>	Globe podded hoary cress	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Lepidium draba</i>	Heart podded hoary cress	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Lepidium latifolium</i>	Perennial peppergrass /tall whitetop	Report, map, treat and actively control	B-rated and actively treated if practical
<i>Leucanthemum vulgare</i>	Oxeye daisy	Report, map, treat and actively control	Not rated, but uncommon, so we treat if practical. Avoid planting in landscapes.
<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>	Dalmatian toadflax	Report, map, treat and actively control	A-rated and actively treated.
<i>Linaria vulgaris</i>	Yellow toadflax	Report, map, treat and actively control	Not rated, but uncommon, so we treat if practical.
<i>Lythrum salicaria</i>	Purple loosestrife	Report, map, treat and actively control	B-rated and actively treated if practical

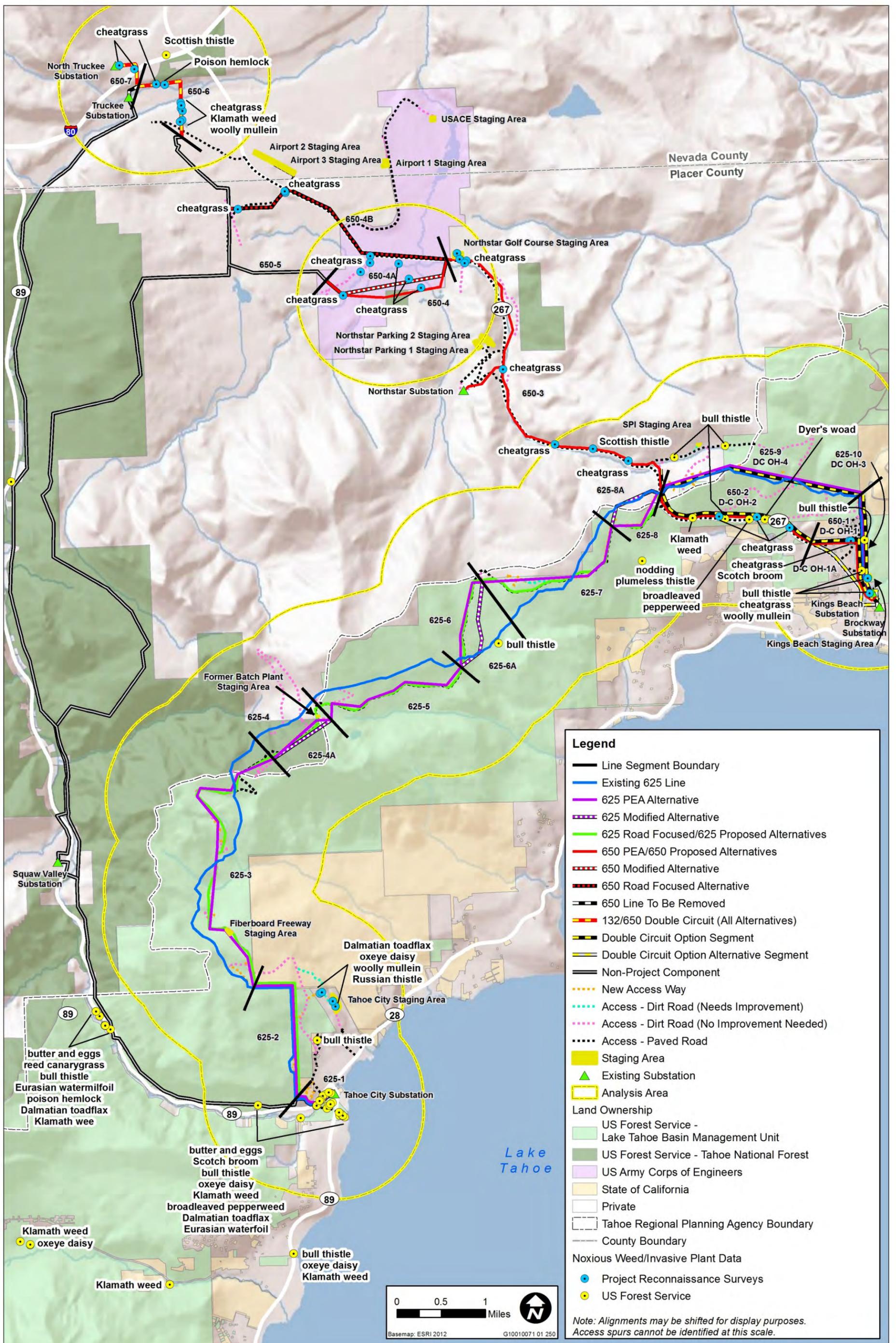
**Table A-2 Tahoe National Forest Eastside Non-native Plants of Concern**

Scientific Name	Common Name	Report, Map, Treat	Concern Level on eastside of TNF
<i>Melilotus albus</i> and <i>Melilotus officinalis</i>	White sweetclover Yellow sweetclover	Do not report, map or treat. Prevent spread through mitigations such as using clean gravel or revegetation of disturbed areas.	Not rated and too common to treat.
<i>Myriophyllum spicatum</i>	Eurasian water milfoil	Report, map, treat and actively control	Not rated, but uncommon, so we treat if practical.
<i>Onopordum acanthium</i> ssp. <i>acanthium</i>	Scotch thistle	Report, map, treat and actively control	A-rated and actively treated.
<i>Rubus armeniacus</i>	Himalayan blackberry	Report, map, treat and actively control	Not rated, but recently found at new construction sites in Truckee, so we treat if practical.
<i>Salsola tragus</i> <i>Salsola paulsenii</i>	Russian thistle, tumbleweed, barbwire Russian thistle	Do not report, map or treat. Prevent spread through mitigations such as using clean gravel or revegetation of disturbed areas.	Not rated and too common to treat. These species have been coming in on gravel. So far, they do not seem very robust in this climate, but that may change.
<i>Spartium junceum</i>	Spanish broom	Report, map, treat and actively control	C- rated, but uncommon, so we would treat if practical.
<i>Taeniatherum caput-medusae</i>	Medusahead	Report, map, treat and actively control	C- rated, but uncommon, so we would treat if practical.
<i>Ulex europaeus</i>	Gorse	Report, map, treat and actively control	B-rated and actively treated if practical

# **Appendix B**

---

## **Project Overview Map**



# **Appendix C**

---

## **Invasive Plant Infestation Locations**

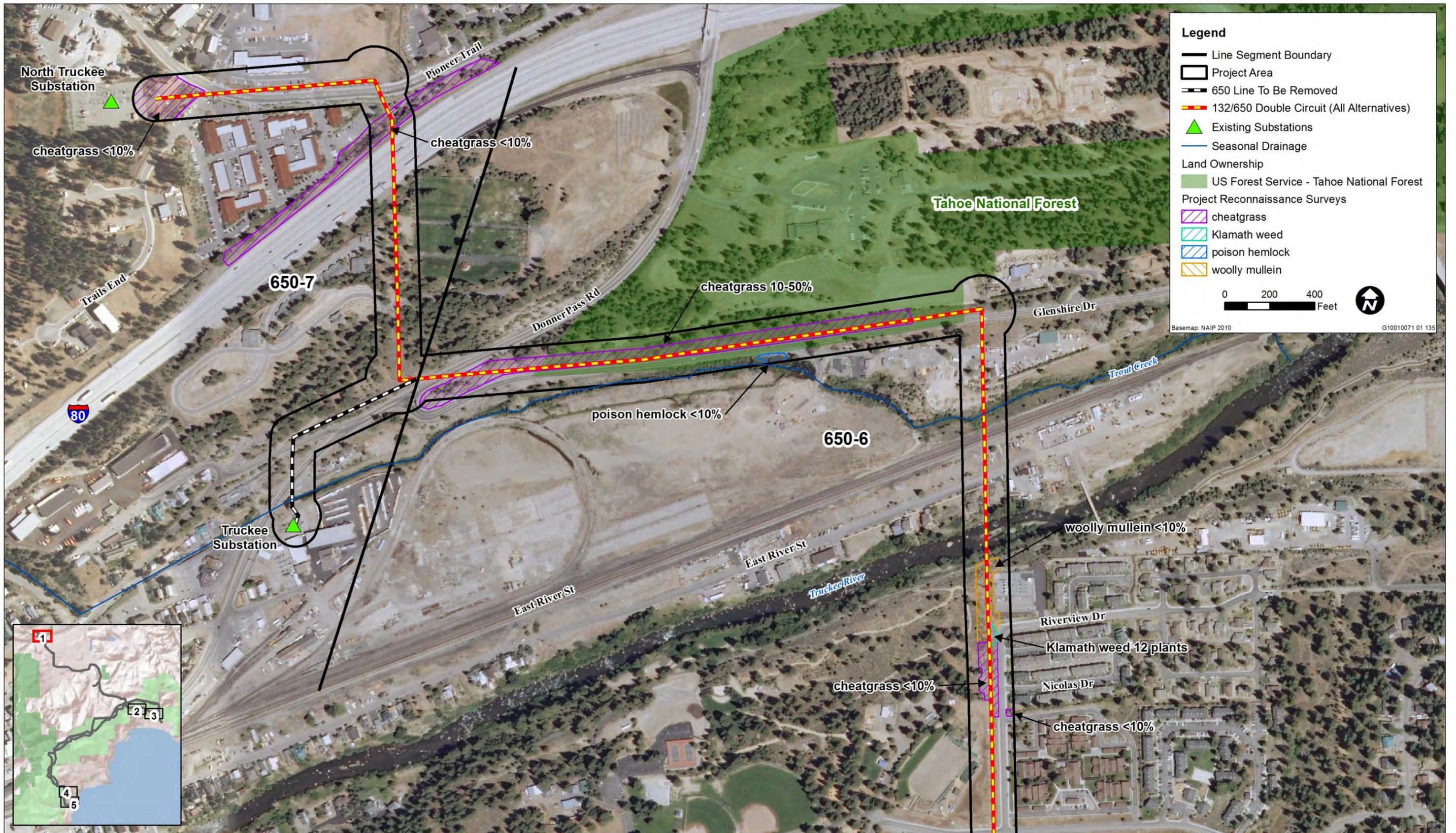


Exhibit C.1

Invasive Plant Infestations - Map 1



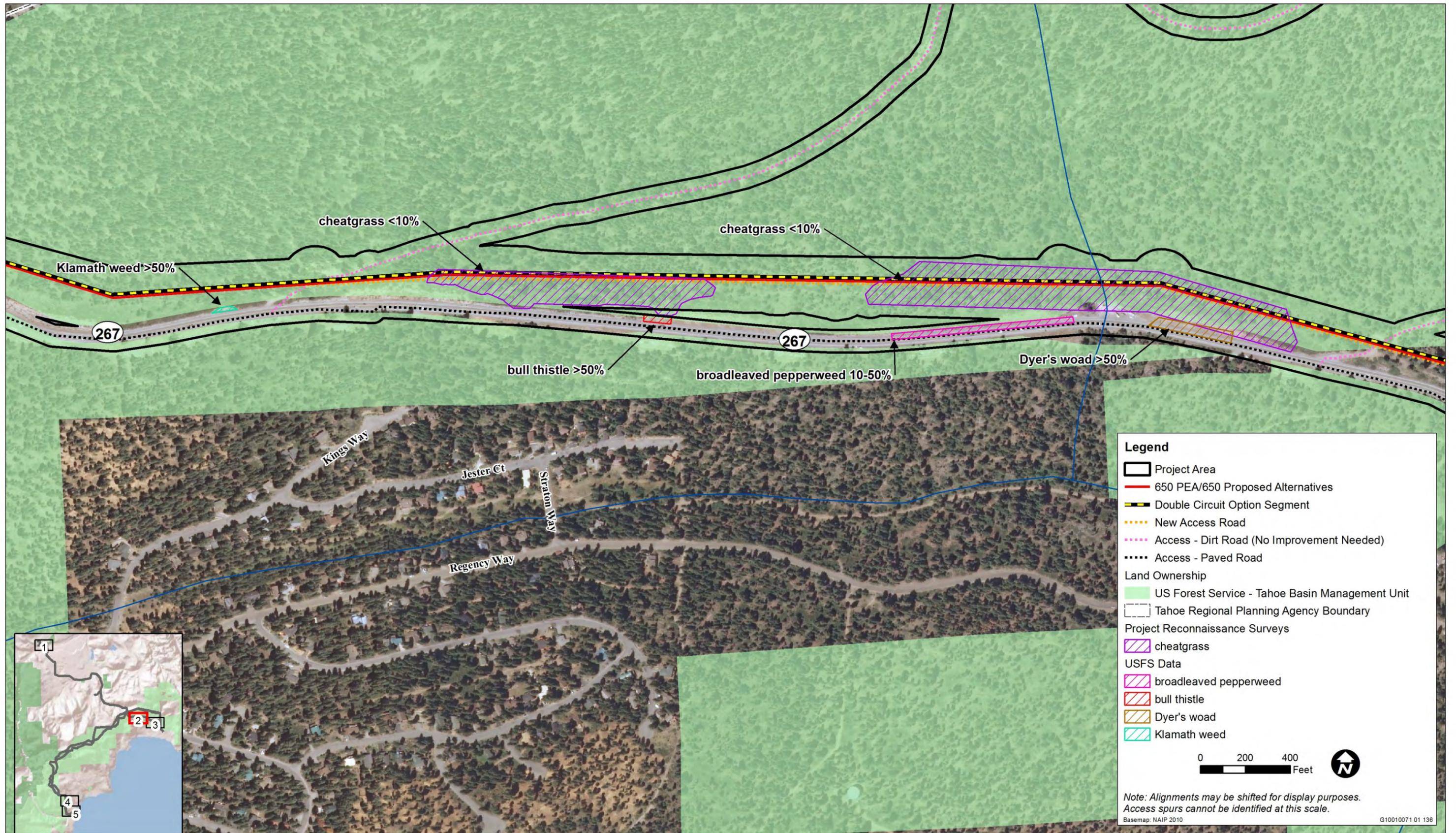


Exhibit C.2

Invasive Plant Infestations - Map 2





**Legend**

- Line Segment Boundary
- ▭ Project Area
- Existing 625 Line
- 625 PEA Alternative
- 650 PEA/650 Proposed Alternatives
- Double Circuit Option Segment
- Double Circuit Option Alternative Segment
- New Access Road
- Access - Dirt Road (No Improvement Needed)
- Access - Paved Road
- ▭ Staging Area
- Seasonal Drainage
- Land Ownership
- US Forest Service - Lake Tahoe Basin Management Unit
- Project Reconnaissance Surveys
- Scotch broom
- ▨ cheatgrass
- ▨ woolly mullein
- USFS Data
- bull thistle

0 200 400 Feet

Note: Alignments may be shifted for display purposes. Access spurs cannot be identified at this scale.

Base map: NAIP 2010 G10010071.01.137

Exhibit C.3

Invasive Plant Infestations – Map 3



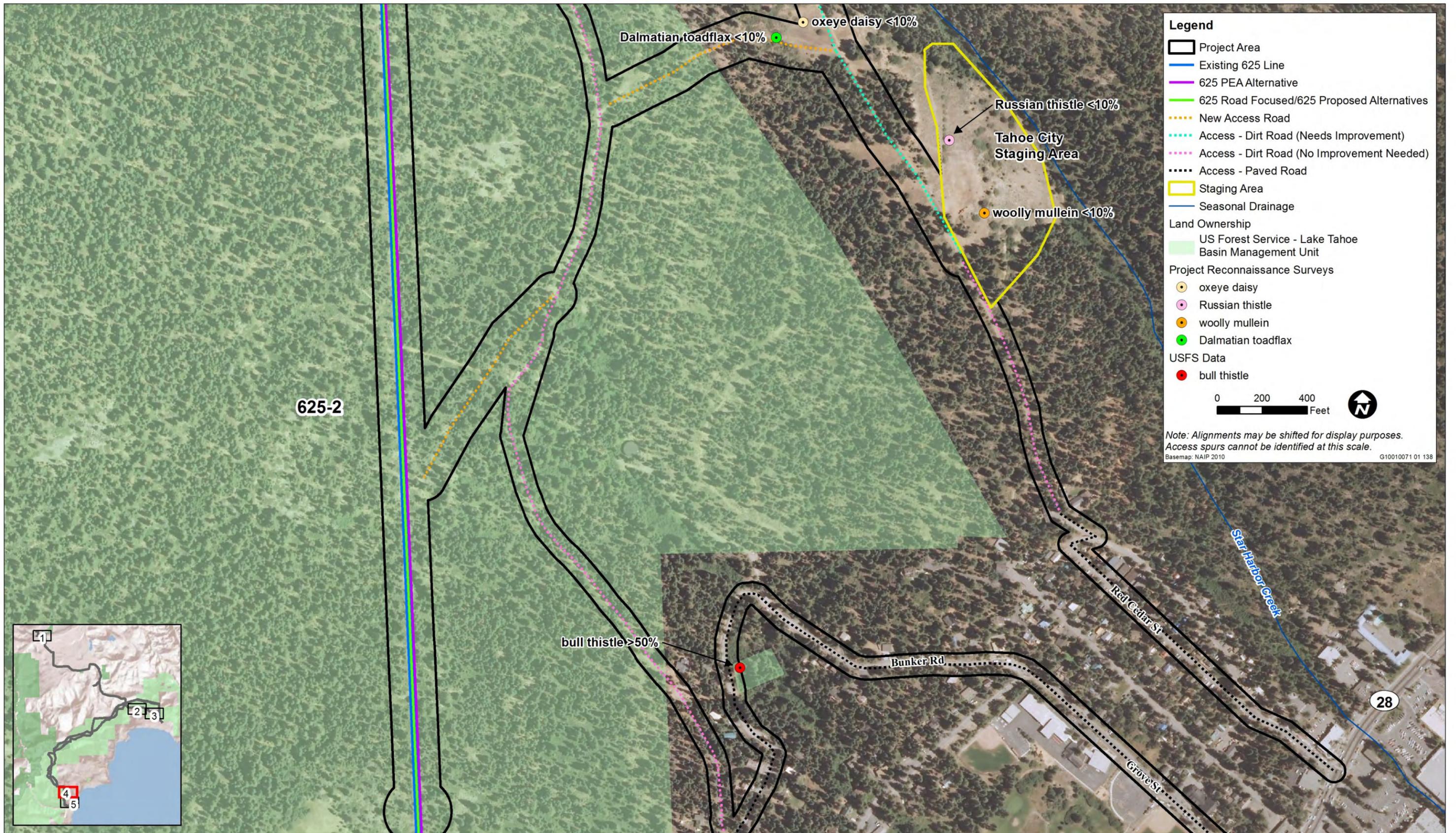


Exhibit C.4

Invasive Plant Infestations – Map 4



