

APPENDIX J
DRAFT INTEGRATED WEED MANAGEMENT PLAN
(see PDF files on enclosed CD)

DRAFT
INTEGRATED WEED MANAGEMENT PLAN

DESERT QUARTZITE SOLAR PROJECT
RIVERSIDE COUNTY, CALIFORNIA

BLM Project Number: CACA # 049397

Riverside County CUP Number 3721

May 2019

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Acronyms and Abbreviations

AC	alternating-current
BLM	Bureau of Land Management
CAISO	California Independent System Operator
CAL-IPC	California Invasive Plant Council
CDFA	California Department of Food and Agriculture
CRSS	Colorado River Substation
EPA	U.S. Environmental Protection Agency
Gen-Tie Line	generation interconnection transmission line
GIS	geographic information system
GPS	global positioning system
IWMP	Integrated Weed Management Plan
MM	Mitigation Measure
mph	miles per hour
MW	megawatt
NECO Plan	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act
NISC	National Invasive Species Management Plan
O&M	Operations and Maintenance
OHV	Off-highway vehicle
PAR	Pesticide Application Records
PPE	Personal Protective Equipment
Project	Desert Quartzite Solar Project
PV	Photovoltaic
PPA	Power Purchase Agreement
PUP	Pesticide Use Proposal
ROW	right-of-way
SCE	Southern California Edison
SDS	Safety Data Sheets

SPGF	solar power generation facility
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WEAP	Worker Environmental Awareness Procedure

1 Introduction

The purpose of this Integrated Weed Management Plan (IWMP) is to describe methods to prevent, mitigate, and control the establishment and spread of weeds during implementation of the Desert Quartzite Solar Project (Project). The objective of the IWMP is to describe the types and distribution of weeds in the Project area, assess risk of weed establishment and spread based on species occurrences and Project activities, and to outline effective control measures and monitoring efforts that would reduce their establishment and spread. This IWMP is applicable to the construction, operation and, decommissioning of the proposed Project, and the Project proponent and its approved contractors are responsible for its implementation. This IWMP is prepared in accordance with regulatory guidance from several agency sources, including the BLM Vegetation Treatments Using Herbicides in BLM Lands in 17 Western States (BLM 2007) and the National Invasive Species Council (NISC) National Invasive Species Management Plan (NISC 2008) and BLM Integrated Weed Management Manual (BLM 1992). The IWMP is prepared to be consistent for requirements in local BLM management plans, including the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan; BLM 2002). Additionally, the IWMP is consistent with applicable Federal and State laws, regulations and weed management guidelines established by the BLM and other regulatory agencies. These include the Federal Noxious Weed Act of 1974 including the 1994 amendment, the federal Plant Protection Act of 2000, and Section 403 of the California Food and Agriculture Code, among others.

APM BIO-5: *Prior to the Notice to Proceed, the Applicant will finalize and implement their Draft Integrated Weed Management Plan (IWMP; provided in Appendix J), a component of the VRMP, to control invasive and exotic weeds. The objectives of the IWMP are:*

- *Identify weed species currently present within the Project components*
- *Identify weeds not seen on the Project components that may have the potential to be present in the Project site*
- *Identify construction and maintenance activities that may increase the presence of weeds or introduce new weed species on and adjacent to the Project components; and*
- *Identify and implement proven, new, or improved practices on an ongoing basis to ensure that the presence of weed populations on and adjacent to the Project components shall not increase because of construction and maintenance activities. These steps shall be intended to prevent weeds not currently found on the Project site from becoming established there, and prevent weeds already present on the site from spreading to other areas.*
- *The Draft IWMP will be modified based on BLM comments on the Draft IWMP. The particular chemicals selected will be adjusted appropriately, including timing of treatment and specific techniques employed.*

Biological Opinion CM 1: *Integrated Weed Management Plan: The Project applicant will develop and implement an Integrated Weed Management Plan that describes measures to prevent, mitigate, and*

control the establishment and spread of weeds during all phases of the Project. The Integrated Weed Management Plan will provide descriptions of the types and distribution of weeds in the Project area, assess risk of weed establishment and spread based on species occurrences and Project activities, and outline effective control measures and monitoring efforts to reduce their establishment and spread, which also will be described in the Worker Environmental Awareness Program.

Biological Opinion CM 13: *...The success of the Habitat Restoration Plan will be achieved through consideration of and coordination with the Integrated Weed Management Plan and Vegetation Resource Management Plan, as success of the Habitat Restoration Plan will only be achieved by ensuring the natural vegetation communities being restored do not contain invasive, nonnative weeds and contain salvaged plants and propagules from special status plants...*

For the purpose of this IWMP, invasive weeds are defined as species of nonnative plants that are included on the California Invasive Plant Council's (CAL-IPC) list of invasive species for the Mojave Desert, have a rating of High or Moderate (CAL-IPC 2015) and are included on the United States Department of Agriculture (USDA) database of Federal Noxious Weeds (USDA 2015a), the USDA California State-listed Noxious Weeds (USDA 2015b), California Department of Food and Agriculture's (CDFA) Noxious Weed List (CDFA 2015), and the BLM National List of Invasive Weed Species of Concern (BLM 2008). Weeds are commonly categorized as either noxious, invasive, or both. The differences in definition lie in both legislative- and action-oriented considerations.

2 Project Summary

2.1 Project Location

The Project site is located in rural eastern Riverside County near the City of Blythe, California, (Figure 1) and situated on the Blythe U.S. Geological Survey (USGS) 7.5-minute Topographic Quadrangle. The site is situated just south of Interstate 10 (I-10). The majority of the Project site (2,538 acres) is located on land administered by the BLM. A 160-acre private parcel land inholding is also included in the Project's preliminary site plan (Figure 2).

The action area of the proposed Project includes the Project site where the solar facilities will be installed, a Gen-Tie Line alignment with 160-ft wide right-of-way (80-ft on either side of the centerline) extending from the west side of the solar facility to the SCE Colorado River Substation, and access roads for ingress/egress from the Project Site (Figure 2). Access to the Project site will be via I-10 exit 236 to State Route 78/South Neighbours Boulevard then west along 16th Avenue/Seeley Avenue.

Emergency access from the west of the overall Project Site will be provided by I-10 to Wiley's Well Road to Power Line Road (both Wiley's Well Road and Power Line Road are paved) and then from the north of the existing Colorado River Substation (CRSS) via a maintenance road along the proposed Gen-Tie Line route.

2.2 Project Description

The Project will consist of the construction, operation, and maintenance of an approximately 450-megawatt (MW) alternating-current (AC) photovoltaic (PV) solar power generation facility (SPGF).

Project components include on-site facilities, offsite facilities, and temporary facilities needed to construct the Project. Major on-site facilities will include the solar field (comprised of multiple blocks of solar PV panels mounted on fixed tilt or tracking systems and associated equipment), a project substation, an energy storage system, and an O&M facilities building. A permanent perimeter fence with tortoise exclusion fencing will be constructed around the on-site Project facilities, which will occupy an area of approximately 2,698 acres under the preferred action. The entrance to the completed Project will be gated and restricted to unauthorized entry. Other on-site Project elements include meteorological stations and anemometer towers, and a guard shack. The offsite facilities include an approximately 3-mile 230 kV Gen-Tie located on BLM-administered lands within a 160-foot wide operational ROW. Interconnection to the California Independent System Operator (CAISO) Grid will be via the Southern California Edison (SCE)-operated transmission system at the Colorado River Substation (CRSS).

Temporary facilities, which will be removed at the end of the construction period, include the on-site mobilization, laydown, and construction areas and, if needed, any water storage tanks utilized for dust

suppression. The total Project area under application for BLM and County of Riverside approval is approximately 5,275 acres (approximately 5,115 acres of BLM administered lands and 160 acres of private lands). The Project would permanently occupy approximately 2,782 acres when completed, including 2,698 acres for the solar facility site and 67 acres for the proposed 160-foot wide generation interconnection transmission line (Gen-Tie Line) ROW and other facilities. The Project's Preliminary Site Plan is presented in Figure 2.

3 Weed Management Objectives

The Project's weed management objectives include:

Identification and Risk Assessment: Identify the presence, location, and abundance of weed species on the Project site, both existing conditions and conditions over time.

Suppression: Strive to ensure that populations of existing weed species do not increase due to implementation of the Project.

Containment: Strive to prevent the spread of existing weeds to new areas and prevent the introduction of new weed species into the Project Site.

The following sections detail the identification of weeds on the Project site, an assessment of their risk, and methods for suppression and containment.

4 Weed Risk Assessment

4.1 Invasive/Noxious Weed Definitions and Rankings

Weeds are typically defined as nonnative plants that may be invasive or non-invasive and noxious or not noxious. **Invasive weeds** are nonnative plant species that are injurious to the public health, agriculture, recreation, wildlife habitat, or the biodiversity of native habitats. Many invasive plant species thrive in disturbed areas, and may out-compete native species in early successional environments. **Noxious weeds** are “competitive, persistent, and pernicious” plant species designated by federal, state, or county agencies as injurious to public health, agriculture, recreation, wildlife, or property (James et al. 1991; Sheley et al. 1999).

The California Invasive Plant Council (Cal-IPC) categorizes invasive plants as high, moderate, or limited according to the severity of their ecological impact (Cal-IPC 2015):

High – Invasive plants classified as high consist of species that have severe ecological impacts on physical processes, plant and animal communities and vegetation structure, and have a moderate to high rate of dispersal and establishment.

Moderate – These species consist of species that have substantial and apparent (but not severe) ecological impacts and have a moderate to high rate of dispersal and establishment, although establishment is generally dependent upon a disturbance regime such as soil disruption or fire.

Limited – These consist of species that are invasive, but their ecological impacts are minor on a state-wide level. Dispersal and establishment of species classified as limited are generally low to moderate.

These classifications are based on cumulative state-wide trends and can vary at local scales. As a result, a species classified as limited may be more invasive on a local scale than a species classified as high, depending on local conditions (Cal-IPC 2015). For this reason, all plants classified as invasive Cal-IPC, even those classified as limited, can potentially impact a local ecosystem. Not all nonnative plants that occur in California are listed in the Cal-IPC Invasive Plant Inventory. Most of these non-listed weeds have little invasive potential and are generally not considered harmful.

4.2 Identification of Target Weed Species in the Project Site

Weed surveys were conducted within the Project site in 2012 and 2013. These surveys, which included identifying and mapping the weed occurrences, determined that ten nonnative plant species occur on

the Project site (Ironwood 2015), of which six are considered invasive by Cal-IPC. These six species, listed in Table 1, are considered the target weed species specifically addressed by this IWMP. Non-target, nonnative, weeds present on the Project site include: lamb's quarters (*Chenopodium album*), nettleleaf goosefoot (*Chenopodium murale*), prostrate knotweed (*Polygonum aviculare* ssp. *depressum*), and puncture vine (*Tribulus terrestris*); however, this IWMP does not contain specific measures for these species.

TABLE 1. TARGET, NONNATIVE WEED SPECIES PRESENT ON THE PROJECT SITE THAT ARE CONSIDERED INVASIVE BY CAL-IPC.

<i>Species</i>	<i>Cal-IPC Degree of Invasiveness</i>
Sahara mustard (<i>Brassica tournefortii</i>)	High
Tamarisk (<i>Tamarix ramosissima</i>)	High
Bermuda grass (<i>Cynodon dactylon</i>)	Moderate
Eucalyptus tree (<i>Eucalyptus</i> sp.)	Limited
Russian thistle (<i>Salsola tragus</i>)	Limited
Mediterranean grass (<i>Schismus barbatus</i>)	Limited

4.2.1 Sahara Mustard

Sahara mustard (*Brassica tournefortii*) is a winter annual in the family Brassicaceae that occurs in desert scrub communities and desert dunes in the Sonoran and Mojave Deserts. Sahara mustard germinates with the first substantial winter rain, and may be the most rapidly developing annual where it occurs. The plants mature quickly, typically producing flowers and fruits between December and February and seeds between February and May, depending on the onset of winter rains. Seed longevity in soils may be several years. Sahara mustard readily invades newly burned areas, and is known to increase fire frequency and fuel load. Increased fire frequency can cause scrub habitats to convert to grasslands because the native shrubs are not adapted to recurrent fires. The high biomass of Saharan mustard, along with frequent fires, may deplete soils of important nutrients, making native habitat recovery more difficult. This species spreads easily, and its degree of invasiveness has been listed as 'high' by Cal-IPC (Table 1). This species is widespread and diffusely distributed throughout most of the Project site, with

areas of high abundance in areas of sandy soil. Millions of individuals were observed flowering and fruiting during the spring 2013 survey.

4.2.2 Tamarisk

Two tamarisk trees (*Tamarix ramosissima*), likely remnants of a planted windbreak, were observed north of the Project site in an off-site location during botanical inventories. This species is a semi-deciduous, loosely branched shrub or small to medium-sized tree that is native to Eurasia. In California it was used in windbreaks, but has become invasive in riparian areas, particularly within the Colorado River Basin. In invasive situations, this species displaces native plants, drastically alters habitat and food webs for animals, depletes water sources, and increases erosion, flood damage, soil salinity, and fire potential. This species spreads easily in riparian areas and lake margins with perennial water supply, and its degree of invasiveness has been listed as ‘high’ by Cal-IPC. Furthermore, it is considered a noxious weed by the California Department of Food and Agriculture (CDFA 2011).

4.2.3 Bermuda Grass

Bermuda grass (*Cynodon dactylon*) is a low-growing, wiry, perennial grass from Africa. This species is used as a turf grass because it spreads through both aboveground stolons and belowground rhizomes, but has become widespread as a weed throughout the Southwest and Southeast. It occurs as a weed in disturbed areas throughout California at elevations below 3,000 feet, and is considered moderately invasive by Cal-IPC (Table 1). This species was detected in Desert Woodland Wash habitat during the botanical inventory in an area north of the Project site in a location that provided limited microhabitat requirements (shade, mesic conditions) for this species to establish.

4.2.4 Eucalyptus Trees

Two eucalyptus trees, likely remnants of a planted windbreak, were observed north of the Project site in an off-site location during botanical inventories. Though these trees were not identified to species, there are two *Eucalyptus* species considered limited in their degree of invasiveness by Cal-IPC, including red gum (*Eucalyptus camaldulensis*) and Tasmanian blue gum (*Eucalyptus globulus*).

4.2.5 Russian Thistle

Russian thistle (*Salsola tragus*) is a large, bushy, annual plant native to Eurasia. The seeds of this cool-season species germinate with the first winter rains in December through February. The mature plants produce seed in July through October. A large Russian thistle plant may produce more than 200,000 seeds, which are dispersed as the main stem of the plant breaks and the weed skeleton “tumbles” across the landscape during windy conditions (hence the common name tumbleweed). This species grows in areas of loose, sandy soils, but also disturbed sites, waste places, roadsides, fields, cultivated fields, and disturbed natural and semi-natural plant communities. This species was locally abundant in portions of the Project site, primarily on sand dunes along the gen-tie line, but also in small occurrences across disturbed portions of the site. This plant represents the second most common weed onsite after

Sahara mustard. This species is considered limited in its degree of invasiveness by Cal-IPC, and it is considered a noxious weed by the California Department of Food and Agriculture (CDFA 2011).

4.2.6 Mediterranean Grass

Mediterranean grass (*Schismus barbatus*) is a small, tufted annual grass that is native to the Mediterranean region. Seeds of this species germinate with the first winter rains between December and February. Plants mature in March and April and drop seeds beginning in May. Seeds disperse by sheet flooding and by wind and often persist within the inflorescence, detaching after it is blown across the ground for a short distance from the parent plant. This species has become widespread in the Mojave and Sonoran Deserts, and is particularly abundant where grazing, off-road-vehicle use, or construction of linear corridors have reduced shrub cover and disturbed the soil. Mediterranean grass competes for limiting nutrients with native annual plants in spaces between shrubs (Brooks 1998), and may contribute to increased frequencies and extents of fires in recent decades in California deserts (Brooks 1998). Mediterranean grass was recorded as widespread, but not abundant, at the Project site during the botanical inventories. This species is considered limited in its degree of invasiveness by Cal-IPC.

4.3 BLM Weed Risk Assessment

4.3.1 Risk Assessment Procedure

The risk for establishment and spread of target weed species within the Project site was assessed using guidance contained in the BLM Integrated Weed Management Manual 9015 and BLM Herbicide Treatment Standard Operating Procedures (Table 2; Appendix A).

TABLE 2. PROCEDURE FOR BLM WEED RISK ASSESSMENT.

Factor 1: Likelihood of Noxious Weed Species Spreading to Project Area	
None	Noxious/invasive weed species not located within or adjacent to the Project site. Project activity is not likely to result in the establishment of noxious/invasive weed species in the Project site.
Low (1)	Noxious/invasive weed species present in areas adjacent to but not within the Project site. Project activities can be implemented and prevent the spread of noxious/invasive weeds into the Project site.
Moderate (5)	Noxious/invasive weed species located immediately adjacent to or within the Project site. Project activities are likely to result in some areas becoming infested with noxious/invasive weed species even when preventative management actions are followed. Control measures are essential to prevent the spread of noxious/invasive weeds within the Project site.

High (10)	Heavy infestations of noxious/invasive weeds are located within or immediately adjacent to the Project site. Project activities, even with preventative management actions, are likely to result in the establishment and spread of noxious/invasive weeds on disturbed areas throughout much of the Project site.	
Factor 2: Consequence of Noxious Weed Establishment in Project Area (consistent with Cal-IPC rating unless not rated)		
Low to Nonexistent (1)	None. No cumulative effects expected.	
Moderate (5)	Possible adverse effects on site and possible expansion of infestation within Project site. Cumulative effects on native plant communities are likely but limited.	
High (10)	Obvious adverse effects within the Project site and probable expansion of noxious/invasive weed infestations to areas outside the Project site. Adverse cumulative effects on native plant communities are probable.	
Risk Rating		
Step 1: Identify level of likelihood and consequence of adverse effects and assign values according to the following: None—0, Low—1, Moderate—5, High—10.		
Step 2: Multiply level of likelihood by consequence.		
Step 3: Use the value resulting in Step 2 to determine Risk Rating and Action as follows:		
Value	Risk Rating	Action
0	None	Proceed as planned.
1-10	Low	Proceed as planned. Initiate control treatment on noxious/invasive weed populations that become established in the Project site.
25	Moderate	Develop preventative management measures for the proposed Project to reduce the risk of introduction or spread of noxious/invasive weeds into the Project site. Preventative management measures should include modifying the Project site to include seeding the area to occupy disturbed sites with desirable native species. Monitor area for at least 3 consecutive years and provide for control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.
50-100	High	Project must be modified to reduce risk level through preventative management measures including seeding with desirable native species to occupy disturbed sites and controlling existing infestations of noxious/invasive weeds prior to Project activity. Project must provide at least 5 consecutive years of monitoring. Project must also provide for

		control of newly established populations of noxious/invasive weeds and follow-up treatment for previously treated infestations.
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In evaluating the risk of invasiveness in the Project site (Factor 1), the Cal-IPC's ratings of the degree of plant invasiveness for each species were reviewed. The 2015 Cal-IPC Invasive Plant Inventory rates non-native species according to degree of invasiveness using 13 different criteria and scoring them according to: (1) ecological impact, (2) invasive potential, and (3) distribution. Each of the three categories are interpreted as A=high, B=moderate, C=limited, D=none, and U=unknown. The documentation level for each species is based on the average level of references used to evaluate a particular species from 0 (no information) to 4 (all information). These three categories reflect the level of each species' negative ecological impact on California wildlands and are generally accepted in California as a reliable measure of a plant species' potential harmfulness:

- High – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically (Cal-IPC 2015). Project must be modified to reduce risk level through preventative management measures including seeding with desirable species to occupy disturbed sites and controlling existing infestations of invasive weeds prior to project activity. Projects must also provide for control of newly established populations of invasive weeds and follow-up treatment for previously treated infestations.
- Moderate – These species have substantial and apparent (but generally not severe) ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread (Cal-IPC 2015). Develop preventative management measures for the proposed project to reduce the risk of introduction or spread of invasive weeds into the area. Preventative management measures should include modifying the project to include seeding the area to occupy disturbed sites with desirable species. Provide for control of newly established populations of invasive weeds and follow-up treatment for previously treated infestations.
- Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic (Cal-IPC 2015). Proceed as planned. Initiate control treatment on invasive weed populations that get established in the area.

In evaluating the risk of consequences of spread of the weeds into the Project site (Factor 2), the USDA Federal Noxious Weeds list (USDA 2015a), the USDA California State-listed Noxious Weeds (USDA 2015b), the CDFA Noxious Weed List (CDFA 2015), and the BLM National List of Invasive Weed Species of Concern (BLM 2008) were reviewed to determine status for each species.

4.3.2 Risk of Target Weed Species

Following consideration of Factors 1 and 2, the risk ratings for target weed species on the Project site ranged from high to low (Table 3). The risk of these target species on the Project site is described further in detail below.

TABLE 3: RISK ASSESSMENT OF TARGET WEED SPECIES ON THE PROJECT SITE.

<i>Species</i>	<i>Occurrence in Project Site</i>	<i>Cal-IPC Degree of Invasiveness</i>	<i>BLM Factor 1 Score (Likelihood)</i>	<i>BLM Factor 2 (Consequences)</i>	<i>BLM Risk Rating</i>
Sahara mustard (<i>Brassica tournefortii</i>)	Widespread and locally abundant on sandy soils	High	10 (High)	10 (High)	100 (High)
Bermuda grass (<i>Cynodon dactylon</i>)	Scarce	Moderate	5 (Moderate)	1 (Low)	5 (Low)
Eucalyptus tree (<i>Eucalyptus</i> sp.)	Scarce	Limited	1 (Low)	1 (Low)	1 (Low)
Russian thistle (<i>Salsola tragus</i>)	Abundant on sandy soils in disturbed areas	Limited	5 (Moderate)	5 (Moderate)	25 (Moderate)
Mediterranean grass (<i>Schismus barbatus</i>)	Widespread	Limited	5 (Moderate)	5 (Moderate)	25 (Moderate)
Tamarisk (<i>Tamarix ramosissima</i>)	Scarce	High	1 (Low)	5 (Moderate)	5 (Low)

High Risk Weed Species

Sahara mustard was assessed a High risk rating (Table 3). This species is widespread throughout the Project site and abundant in areas of sandy soil. Sahara mustard is most common in wind-blown sand deposits and is particularly abundant in disturbed areas such as roadsides and graded areas. Thus, Project activities that contribute to ground disturbance are likely to cause the establishment and spread of this species.

Moderate Risk Weed Species

Russian thistle was assessed a Moderate risk rating (Table 3). This species is common in disturbed sites, particularly on sandy soils. Russian thistle is patchily distributed over portions of the Project site, being locally abundant in areas supporting sand dunes, along the Gen-Tie Line, and in other disturbed areas. Project activities that contribute to ground disturbance are likely to cause the establishment and spread of this species, particularly in areas containing sandy soils.

Mediterranean grass was assessed a Moderate risk rating (Table 3). This species is common throughout desert areas in southern California, particularly in areas that have been grazed or disturbed. Mediterranean grass is widespread in the Project site, though not particularly abundant. Project activities that contribute to ground disturbance are likely to cause the establishment and spread of this species.

Low Risk Weed Species

Bermuda grass was assessed a Low risk rating (Table 3). This species was found to occur in a limited area of the Project site, within the Dry Desert Wash community in the northwestern portion of the Project site. This species is known to spread in mesic, riparian habitats, particularly near urbanized areas. Activities at the Project site are not likely to cause this species to spread or become established.

Eucalyptus tree was assessed a Low risk rating (Table 3). Just two eucalyptus trees were encountered just outside of the Project site. They are considered invasive in coastal areas of California, and the risk of spread in the Project vicinity is low due to climatic conditions in the region. Project activities are unlikely to cause the spread or establishment of eucalyptus tree species.

Tamarisk was assessed a Low risk rating (Table 3). Just two eucalyptus trees were encountered just outside of the Project site. They are considered highly invasive in riparian areas in southern California deserts, and are particularly problematic along the Colorado River. Conditions in the Project site are not particularly conducive for this species, and Project activities are not likely to cause its spread or establishment.

5 Weed Management

Effective weed management will be accomplished at the proposed Project through the identification of problem species and areas, and implementation of BLM-approved measures intended to prevent the spread and establishment of new weed occurrences and treat known occurrences of weeds.

5.1 Weed Management Areas

Soil disturbed during construction will create habitat well-suited to disturbance-adapted invasive species; thus weed management will focus on areas of temporary surface disturbance, including the solar facility and Gen-Tie Line. Restored areas may also be prone to weed invasion and establishment. Areas that will be paved, graveled and compacted, or otherwise covered with a non-growing surface are excluded from weed management.

5.2 Recommended Actions

Based upon the likelihood and consequences of the occurrence of high, moderate, and low risk target weeds on the Project site, recommended actions are based upon the BLM Integrated Weed Management Manual 9015 and BLM Herbicide Treatment Standard Operating Procedures (Appendix A), and include control, prevention, and monitoring (Table 4). Specific treatment methods and preventative measures are described below; specific monitoring techniques are described in the next section.

TABLE 4. RECOMMENDED ACTIONS FOR TARGET WEED SPECIES ON THE PROJECT SITE.

<i>Risk Rating</i>	<i>Species</i>	<i>Recommended Action*</i>
High	Sahara mustard	Conduct pre-construction weed survey to document the locations and densities of Sahara mustard populations during the winter prior to the initiation of construction. Using approved treatment methods, control existing populations identified during pre-construction surveys. Develop and implement preventative management measures to reduce the risk of establishment and spread of high priority weeds into the Project site during construction, O&M, and decommissioning phases. Provide two consecutive years of post-construction monitoring.
Moderate	Russian thistle Mediterranean grass	Develop and implement preventative management measures to reduce the risk of the establishment and spread of moderate priority weeds into the Project site during construction, O&M, and decommissioning phases. Provide two consecutive years of post-construction monitoring.
Low	Bermuda grass Eucalyptus tree Tamarisk	Implement preventative management measures to prevent the establishment of populations of low priority weed species into the Project site during construction, O&M, and decommissioning phases.

*based on BLM Integrated Weed Management Manual 9051 guidance

5.3 Preventative Measures

The prevention of weed establishment is the most effective weed management practice. Preventing or reducing the potential for weed establishment reduces additional efforts, costs, and time invested in subsequent weed control or eradication measures. Several measures have proven to be effective toward preventing the spread and establishment of weeds on projects where surface disturbing activities are proposed. The following preventative measures will be implemented during the construction, operation, and maintenance phases of the Project.

5.3.1 Construction Phase

The following preventative measures will be implemented on the Project site during its construction phase:

- Weeds spread when their seeds are contained in soil or other materials that travel in or on dirty vehicles and equipment. To prevent the spread of weeds in this manner, the bodies and cabs of construction equipment entering the Project site will be inspected to ensure their cleanliness. If equipment is observed with excess soil or any plant material, they will not be allowed entry to the Project site unless they are cleaned/washed. Washing will occur off site at existing equipment washes with appropriate containment facilities.
- Equipment returning to the Project site following their initial visit will be subject to inspection upon re-entry. If soil or other materials are found on the body of the equipment, it will be directed to an off-site equipment wash with appropriate containment facilities.
- Maintain logs of equipment not allowed on site and wash logs. Cabs may be subject to inspection and cleaning in an effort to remove refuse, soil, or other materials susceptible to transporting weed seeds or other plant structures. Cabs that do not pass inspection will be cleaned at an off-site equipment wash with appropriate containment facilities prior to their entry to the Project site.
- All imported or procured materials used during site reclamation, revegetation, and installation of stormwater/erosion control measures will be certified as weed free by the vendor.
- Vehicle travel in the Project site will be restricted to designated roads and established overland travel routes.
- Disturbance areas will be limited to the smallest area needed for construction.
- The Project's WEAP training will include a section on weed spread and colonization.
- On BLM lands, standardized operating procedures will be implemented (Appendix A), including the use of BLM-approved herbicides (Appendix B), submitting BLM Pesticide Use Proposal (PUP) Submittal Forms (Appendix C), and filing BLM Pesticide Application Record Forms (Appendix D).

5.3.2 Operation and Maintenance Phase

The following preventative measures will be implemented on the Project site during its O&M phase:

- Operation and maintenance equipment bodies and their cabs will be inspected regularly to ensure cleanliness. If equipment or their cabs are deemed to be at risk of carrying weed seeds or other plant structures, they will be subject to cleaning to remove refuse, soil, or other susceptible seed-carrying materials.
- Washing will occur off site at existing equipment washes with appropriate containment facilities. Cabs that do not pass inspection will be cleaned using compressed air at an offsite equipment wash with appropriate containment facilities.
- All imported or procured materials used during site reclamation, revegetation, and installation of stormwater/erosion control measures will be certified as weed free by the vendor. Seed for revegetation may contain no more than 2.0% of “other crop,” seed by weight as authorized in Mitigation Measure VEG-8-19 of the Draft Desert Quartzite Solar Project Plan Amendment/Environmental Impact Statement /Environmental Impact Report (BLM 2018).
- Vehicle travel in the Project site will be restricted to designated roads and established overland travel routes.
- The Project’s WEAP training will include a section on weed spread and colonization.
- On BLM lands, standardized operating procedures will be implemented (Appendix A), including the use of BLM-approved herbicides (Appendix B), submitting BLM PUP Submittal Forms (Appendix C), and filling BLM Pesticide Application Record Forms (Appendix D).

5.3.3 Decommissioning Phase

The following preventative measures will be implemented on the Project site during its decommissioning phase:

- The bodies and cabs of construction equipment entering the Project site will be inspected to ensure their cleanliness. If equipment is observed with excess soil or any plant material, it will not be allowed entry to the Project site unless it is cleaned/washed
- Washing will occur off site at existing wash facilities with appropriate containment. Upon initial entry to the Project site, the equipment will be inspected to ensure it has been washed.
- Equipment returning to the Project site following their initial visit will be subject to inspection upon re-entry. If soil or other materials are found on the body of the vehicle or equipment, it will be directed to an off-site equipment wash with appropriate containment facilities.
- Equipment bodies and cabs may be subject to inspection and cleaning in an effort to remove refuse, soil, or other materials susceptible to transporting weed seeds or other plant structures.

Equipment that does not pass inspection will be cleaned at an off-site equipment wash with appropriate containment facilities prior to their entry to the Project site.

- Vehicle travel in the Project site will be restricted to designated roads and established overland travel routes.
- Disturbance areas will be limited to the smallest area needed for decommissioning.
- The Project's WEAP training will include a section on weed spread and colonization.
- On BLM lands, standardized operating procedures will be implemented (Appendix A), including the use of BLM-approved herbicides (Appendix B), submitting BLM Pesticide Use Proposal (PUP) Submittal Forms (Appendix C), and filling BLM Pesticide Application Record Forms (Appendix D).

5.4 Treatment Methods

Treatment methods are necessary to control and eradicate known invasive and noxious weed occurrences or populations. Treatment methods include a variety of approaches such as mechanical, chemical, and biological controls. The weed treatment measures described here are considered the most appropriate and effective in controlling the range of high, medium, and low priority weeds identified on the Project site. Because the Project site is located in the historic range of the desert tortoise and sign of the species was detected prior to construction of the Project, the application of herbicides may only be permitted on BLM lands through submission and approval of a PUP (Appendix C).

5.4.1 Manual/Mechanical Treatments

Manual and mechanical treatments include the use of physical means to remove plants, reproductive parts, or propagules. These treatments include manual methods (pulling weed plants from the soil), use of hand tools and hand-held power tools, mowing, and more aggressive efforts that involve removing above and below ground plant structures. Manual and mechanical treatments are effective for controlling most of the weeds known to occur in the Project vicinity. An exception is Mediterranean grass, which is generally too numerous and widespread for effective control. The designation of the appropriate mechanical treatment will depend on variables including season, plant life stage, weed species, size and population of each occurrence, and more.

Manual Removal

Manual removal techniques are recommended to control Sahara mustard and Russian thistle; if manual removal techniques prove to be impractical; other methods such as the use of approved chemical methods (per Section 6.4.3 below) or mechanical means (see below) may be used. Manual removal methods will focus on removing plants or fruits with hand tools. This removal technique is viewed as ideal, as it has the least potential for unwanted impacts on the natural environment. Special care will be

taken to use tools that will remove weeds effectively, while not disturbing native vegetation. When implementing manual removal of Sahara mustard and Russian thistle, both the above-ground vegetative portion of the plant and the root systems will be removed, as these species are capable of re-sprouting if the roots are left intact. Removal efforts will be timed appropriately for each species, before seeds set. Timing will also be flexible to reflect rainfall events and other factors that may speed up or delay weed growth and seed development. Multiple removals may be necessary to ensure that late-germinating plants are also removed (Trader et al. 2006).

Plants will be disposed of by hauling them off site, and either incinerating them (if permitted by air quality standards) or transporting them to a permitted waste facility.

Mechanical Removal

Although mechanical removal techniques are unlikely to be implemented due to the nature of the target weed species present at the Project, Desert Quartzite may implement mechanical techniques, such as hand weed trimmers, mowers, and chainsaws, in limited applications to control weed populations in situations where manual removal techniques are ineffective and mechanical techniques would not result in plant proliferation. Mechanical trimmers will not be used during periods of high fire risk and will only be used with implementation of fire prevention measures. Timing of efforts will ideally coincide with manual removal, and, when possible, areas where weeds have been removed will be revegetated to hinder a future reemergence of weeds in the same location.

5.4.2 Biological Control

Biological treatments include the use of plants and animals (particularly sheep) that parasitize, ingest, or out-compete weed species. Based on the target weed species expected to occur on the Project and other factors, biological controls are not expected to be a viable or appropriate alternative for treating weed occurrences at the Project site.

5.4.3 Chemical Control

Regulations

Chemical treatments involve the use and application of herbicides. The use of herbicides is highly regulated and involves a variety of specific protocols, safety measures, and precautions for eliminating, reducing, and mitigating for uncontrolled releases. The BLM regulates the use and type of herbicides on all of its administered lands. Included in the BLM's Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States (BLM 2007) is a list of the 14 active herbicidal ingredients approved for use on BLM lands. Appendix B includes the 2014 list of adjuvants, chemical additives intended to improve the efficacy of herbicides, approved for use on lands administered by the BLM. Guidelines for the use of chemical means to control vegetation on lands administered by the BLM are presented in the BLM Chemical Pest Control Manual (BLM n.d.). These guidelines require submittal of a PUP and pesticide application records (PAR) for use of herbicides on lands administered by the BLM.

Appendix C includes a BLM PUP submittal form, and Appendix D includes an example of a BLM PAR form.

PUPs are to be submitted to BLM several weeks before herbicide application on lands administered by the BLM. All personnel associated with application of weed control measures will be appropriately trained and hold all of the required certifications. PARs are to be submitted no more than 24 hours after application of the herbicide.

These regulations and guidelines will be generally followed and implemented on all areas of proposed disturbance BLM controlled land and generally utilized as a guideline throughout the project site. Project personnel will implement safety measures when applying herbicides, as well as cleaning and reporting spills, as described in Section 7 of this report.

Pre- and Post-Emergent Herbicides

Pre-emergent herbicides (e.g., diuron) are applied to the soil before the weed seed germinates. Application may occur along segments of the fence line and the road shoulder where populations of weeds are either dense or have been enhanced by Project activities. Both pre- and post-emergent herbicides will be applied at the recommended rate of the manufacturer. Post-emergent herbicides (e.g., glyphosate or triclopyr) are applied directly to plants, in those areas where manual removal is impractical due to the abundance of weed plants and damage to native vegetation would be minimal. Where existing Sahara mustard populations are dense and likely to spread in response to construction, weed seeds may be allowed to germinate so that can then be eliminated prior to seed set if time permits. For instance, this could occur along the Gen-Tie Line or sections of silt fencing or tortoise fencing where sediments and weed seeds collect.

Timing is critical for both pre-emergent and post-emergent herbicide application. In the Project vicinity, pre-emergent herbicides would primarily be applied in early fall, prior to fall/early winter rains and weed germination. Post-emergent herbicides must be applied while the weed is actively growing, most effectively in the early seedling stage, but always prior to seed set. Therefore, all post-emergent treatments will occur between February and early April, depending on the target species. Species-specific herbicides are currently being investigated and will be used as appropriate and available, along with other mechanical and chemical means for post-emergent elimination. When possible, selective herbicides will be used to target specific weed species, rather than all plant growth.

Application of herbicide would be by approved operators using low-pressure sprayers at an application rate equal to, or less than, the manufacturer's recommendation; certified operators would be required for those herbicides that legally restrict application only to a licensed applicator. Standard procedures recommend using the lowest amount of herbicide to effectively treat the target species. In no instance would using the maximum rate of herbicide for direct use exceed the maximum allowable rate per acre. According to the BLM (2007), field studies suggest that appropriate herbicide use is not likely to have significant direct toxicological effects on wildlife. Based on the analysis in BLM (2007), risks to wildlife

(terrestrial) from invasive plant treatments using herbicides proposed for potential use on-site would be as follows:

- Triclopyr – Low to moderate risk from direct spray for most wildlife. No to moderate risk from consumption of contaminated vegetation or prey.
- Glyphosate – No to moderate risk from direct spray; no to moderate risk from consumption of contaminated vegetation or prey.

Herbicides will only be applied using targeted methods (i.e., backpack sprayers or a spray rig with a hand held wand method); no broadcast treatment methods will be employed. This targeted application reduces potential impacts associated with application of herbicides to non-target vegetation and wildlife. That stated, herbicide treatments are proposed for use in areas that have been disturbed by the Project, so there is a substantially reduced potential for direct adverse effects to native plants and wildlife. The most likely affect would be associated with the drift of herbicides into adjacent habitat. Drift can occur as vapor drift or particle drift. Vapor drift can be minimized by selecting product formulations resistant to vaporizing and applying herbicides at ideal temperature and humidity conditions. Generally, high temperatures and low relative humidity enhance vapor drift, and so any herbicide application should ideally occur in the early morning during most of the year at this site. Particle drift is a function of application method and equipment. Droplet size and pressure of the herbicide applicator will be controlled carefully to minimize particle drift. Herbicides will also to the extent practicable be applied on low wind days (<5 miles per hour). Drift control agents may also be used, if necessary (Jordan et al. 2009).

5.5 Recommended Treatments

Treatments recommended for target weed species range from none for low risk and moderate risk weeds to manual, mechanical, and chemical for high and moderate risk weed species (Table 5). Most treatments will be used to control two target weed species, including Sahara mustard and Russian thistle.

TABLE 5. RECOMMENDED TREATMENT METHODS FOR THE REMOVAL AND CONTROL OF TARGET WEED SPECIES.

<i>Risk Rating</i>	<i>Species</i>	<i>Recommended Treatment Methods</i>
High	Sahara mustard	<p>Manual: Hand pulling might be effective in limited areas when seed pools have been suppressed. This technique must be used prior to seeding to be effective, and is most effective during the early flowering stage.</p> <p>Mechanical: Mowing this species may be problematic, in that root systems left intact may re-sprout.</p> <p>Chemical: The extremely early development of this species might make early chemical control a possibility, especially when desirable native species have not yet begun to develop. Pre-emergent treatments that may be appropriate for control of this species include chlorsulfuron (Telar), metsulfuron (Escort), and hexazinone (Velpar).</p> <p>Post-emergent herbicides that may be effective include dicamba (2,4-D, Banvel, or Vanquish), triclopyr (Garlon 3A, Garlon 4 Ultra), and glyphosphate (Roundup, Accord XRT II).</p>
Moderate	Russian thistle	<p>Manual: Hand pulling may be effective in limited areas where seed pools have been suppressed.</p> <p>Mechanical: Mowing or weed-trimming young plants may be an effective control technique.</p> <p>Chemical: Pre-emergent herbicides are the most effective chemical control of this species. Chemicals that may be appropriate for control of this species include BLM-approved pre-emergent herbicides, including bromacil (Hyvar), hexazinone (Velpar), and imazapyr (Arsenal). Use of chlorsulfuron (Telar), and sulfometuron (Oust) should be avoided, as Russian thistle populations may evolve resistance to these treatments within two years.</p> <p>Post-emergent herbicides may be applied to plants, but timing is critical. For best results, these herbicides must be applied while the weed is in its early growth stages, preferably the early seedling stage, before it becomes hardened and starts producing its spiny branches. Post-emergent herbicides that are effective when properly applied include dicamba (2,4-D, Banvel, or Vanquish) and glyphosate (Roundup). Post-emergent herbicides are not effective after the plant has seeded, nor during the later spiny stage.</p>

Moderate	Mediterranean grass	None; this species is not likely to be effectively controlled.
Low	Bermuda grass	None; this species is limited in its distribution and is not likely to spread or become established in the Project site.
Low	Eucalyptus tree	None; this species occurs outside of the Project boundaries and is not expected to spread or become established in the Project site.
Low	Tamarisk	None; this species occurs outside of the Project boundaries and is not expected to spread or become established in the Project site.

6 Weed Monitoring

All areas of the Project site that experience surface disturbance due to Project activities will be monitored for weeds by qualified biologists and/or appropriately-trained personnel during the construction, O&M, and decommissioning phases of the Project.

6.1 Success Criteria

The weed monitoring will ensure that the IWMP weed management objectives (identification and risk assessment, suppression, and containment, Section 5.1) are being met. While eradication of weed species is not likely possible due to their current prevalence in the Project area and vicinity, their management will ensure that they do not spread as a result of implementation of the Project. Success criteria for meeting these objectives are defined as:

Construction Phase: No more than 10 percent increase in area of weed population extent and/or increase in density of existing weed populations. The baseline for weed occurrences will be determined by pre-construction surveys.

Operations & Maintenance Phase: No increase (from baseline) in the area of weed population extent and/or increase in density of existing weed populations.

Decommissioning Phase: No increase (from baseline) in the area of weed population extent and/or increase in density of existing weed populations.

6.2 Monitoring Schedule

Monitoring efforts will be conducted at times when weed species are most likely to be detected and identified. For high and moderate risk species known to occur on the Project, detection of weeds would occur between December and May when they germinate, flower, fruit, and seed. Senesced individuals may be detected outside of this season. Control of the weeds may be accomplished as early as two weeks following germination, and is best exercised before the plants produce seed. Thus, monitoring visits will be targeted to identify weeds during their early growing season on the following schedule:

Construction Phase: Weed monitoring visits will be performed monthly by a qualified biologist or appropriately-trained personnel throughout the duration of Project construction. Monitoring visits will determine the status of known weed occurrence areas and search for new opportunistic weed

invasions, particularly in recently disturbed areas. A summary of the methods and results of these monitoring efforts will be provided to the BLM monthly.

Operations & Maintenance Phase: Weed monitoring visits will be performed monthly between December and February, followed by a visit in April (for a total of four visits), by a qualified biologist or appropriately-trained personnel for a period of 2 years following the end of construction.

Decommissioning Phase: For those areas subject to restoration after decommissioning, and if no other development of the Project site follows decommissioning (e.g., industrial, commercial, residential, agricultural development), weed monitoring visits will be performed annually in February by a qualified biologist or appropriately-trained personnel for a period of one year following the end of Project decommissioning.

6.3 Adaptive Management and Reporting

Upon identification of a new invasion of weeds or substantial changes in the known weed occurrences, a qualified biologist or appropriately-trained staff will determine the necessary course of action and implement treatment measures, accordingly.

An annual monitoring report will be prepared and submitted to the BLM that provides an evaluation of the effectiveness of the weed management program, including weed infestation identification, weed monitoring, and weed control, an evaluation of whether success criteria are being met, and recommendations for adaptive management strategies, as necessary. Annual reports will be submitted to the BLM throughout the duration of the construction phase, for the first two years post-construction during the O&M phase, and for the first year following Project decommissioning.

7 Safety Considerations for Herbicide Application, Handling, Spills and Cleanup

7.1 Herbicide Application

Weed management contractors/personnel that are responsible for applying herbicides will obtain all of the required Federal, State, or local agency permits and will hold all necessary certifications and have received all relevant training. Permits may include terms and conditions that are required but not directly addressed by this IWMP. A licensed contractor will apply herbicides in accordance with all applicable laws, regulations, and permit stipulation, including U.S. Environmental Protection Agency (EPA) label instructions. A PUP must be obtained from BLM prior to herbicide application. If faced with any of the following scenarios, herbicide application shall be suspended until such conditions no longer exist:

- Wind velocities in excess of 10 miles per hour (mph) during application of liquid herbicides and 15 mph during application of dry herbicides;
- Snow or ice present on weed foliage; or
- Precipitation is occurring or imminent.

For weed infestations readily accessible and passable by vehicle, and where vehicle operation is authorized, vehicle-mounted applicators will be used. Manual application methods will be used in weed occurrences that are relatively small, inaccessible by established road or ROW, or in rough, varied terrain. All herbicide applicators, spreaders and sprayers, will be calibrated before each use to ensure all applications rates and procedures are appropriately implemented.

Herbicide transport and handling will follow these methods:

- No herbicides will be stored on-site.
- Only the quantity of herbicide expected for each day's use will be transported.
- Herbicide concentrate will be transported in approved containers in a controlled manner so as to prevent spills. Concentrate will be positioned in delivery or work vehicles so as to be secured and separated from the driving compartment, food, clothing, and safety equipment.
- The mixing of herbicide materials will be conducted at an off-site location or within a controlled space in the O&M Area that is designated on-site. All mixing will take place over a drip/spill containment device and at a distance more than 200 feet from open or flowing water, wetlands, or other sensitive resources.

- Herbicides will not be applied to areas of open or flowing water, wetlands, or other sensitive resources unless authorized by the appropriate regulatory agency.
- All equipment and containers used for herbicide storage, application, and transport will be subject to quarterly inspection for leaks or damage.
- Emptied herbicide containers and/or unused herbicide will be disposed in accordance with instructions provided on the product label or as specified by the manufacturer, and in accordance with applicable laws and regulations.

7.2 Herbicide Spills and Cleanup

All spills and inadvertent releases of herbicides will be addressed immediately upon detection. Spill response kits will be readily available in herbicide contractor vehicles and in daily on-site herbicide storage areas.

Spill response will vary depending on a variety of conditions, including location, amount of spill, area impacted by spill, type of herbicide spilled, and more. For each spill the following procedures should be implemented:

- Disseminate the appropriate on-site and agency notifications of a spill.
- Secure the affected area barring pedestrian and vehicle traffic.
- All spill response personnel shall put on the appropriate Personal Protective Equipment (PPE) prior to entering the spill containment area.
- Personnel, while wearing the appropriate PPE and equipped with the necessary tools and equipment, shall stop the herbicide leak or release.
- All materials associated with spill response, including the released herbicide, affected soils and plants, absorptive material, clothing, and PPE shall be removed and containerized according to appropriate regulations and procedures.

All generated spill response containers shall be transported, following appropriate regulations, and disposed legally at an approved disposal facility.

7.3 Worker Safety and Spill Reporting

All contractors responsible for herbicide use, transport, application, and control at the site will hold the appropriate certifications. Such certifications shall be made available. Contractors transporting herbicides to the site shall also have legible Safety Data Sheets (SDS) and labels on-site. All herbicide spills and inadvertent releases shall be reported in accordance with all applicable laws and regulations.

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FIGURES

Figure 1: Regional Vicinity Map

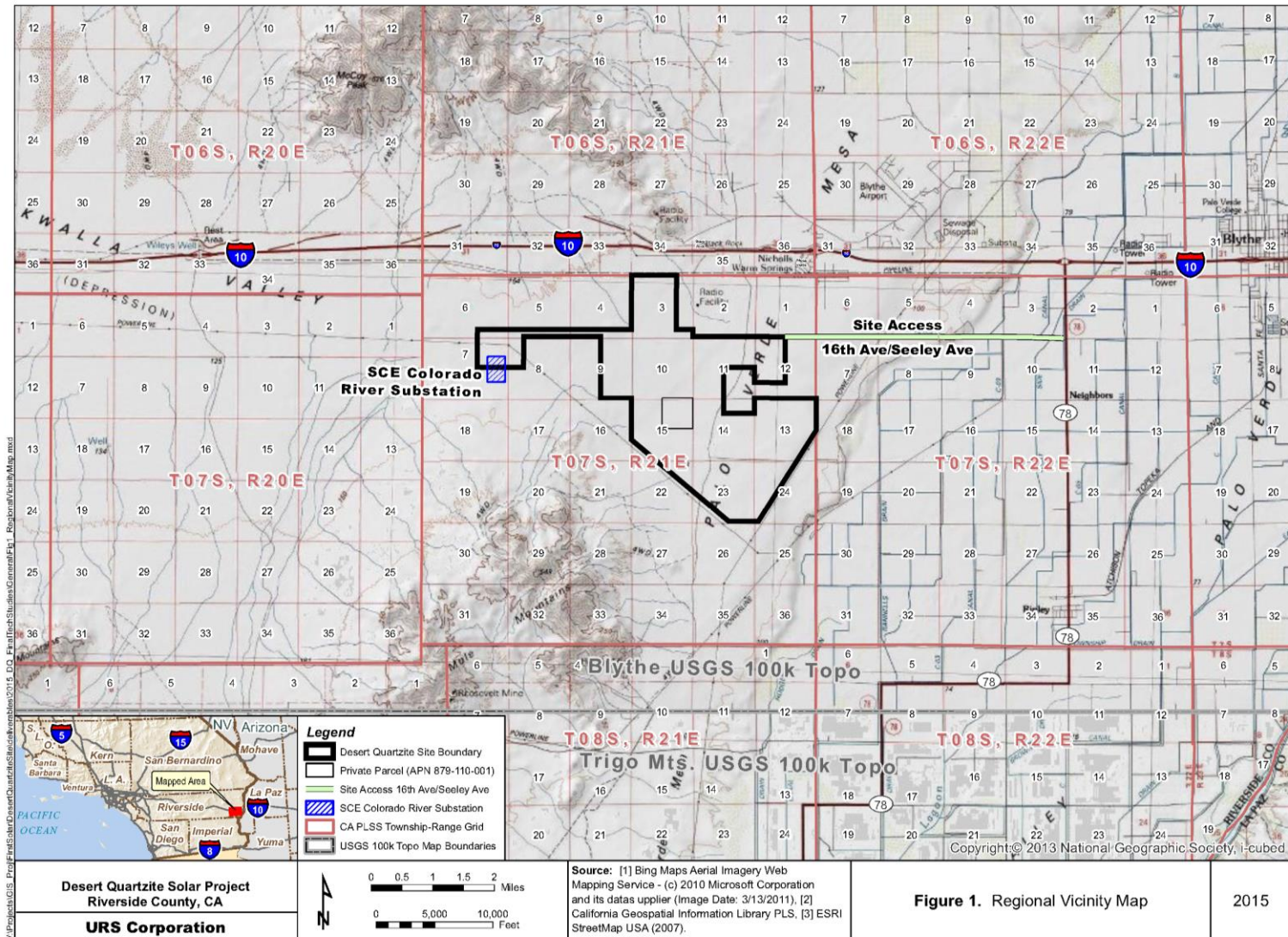
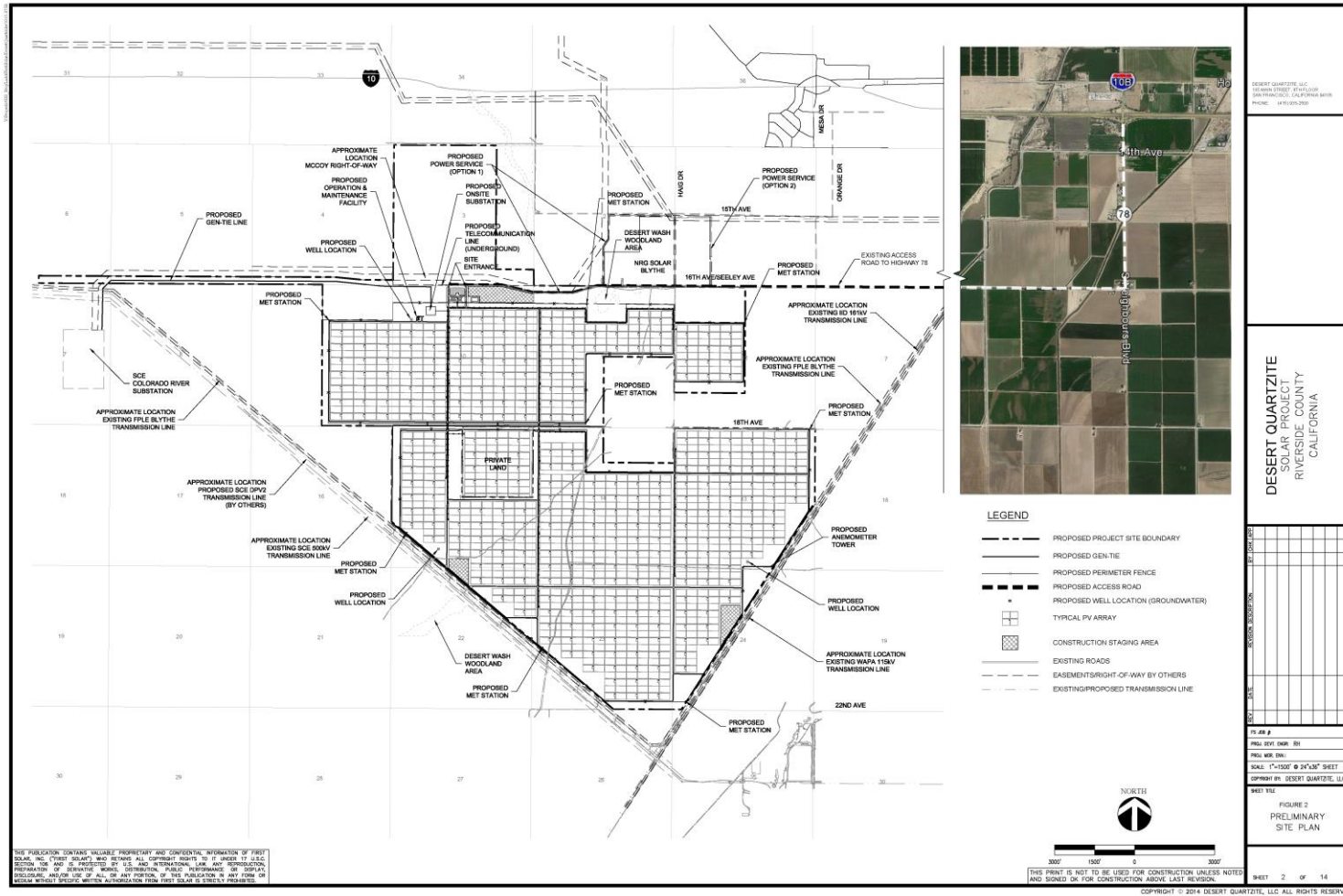


Figure 2: Preliminary Site Plan



Appendix A

BLM Herbicide Treatment Standard Operating Procedures Vegetation Treatments Using Herbicides in BLM Lands in 17 Western States (Appendix B of the Record of Decision)

Appendix B

Adjuvant and Herbicide Formulas Approved by the BLM

<i>Adjuvants Approved for Use on BLM Administered Lands</i>				
				Update: July 21, 2014
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Manufacturer	Comments
Surfactant				
	Non-ionic Surfactant			
		Agrisolutions Preference	Agriliance, LLC.	WA Reg. No. 1381-50011
		A-90	Alligare, LLC	
		Alligare Surface	Alligare, LLC	
		Alligare Surface West	Alligare, LLC	
		Aquafact	Aqumix, Inc.	
		Brewer 90-10	Brewer International	
		No Foam A	Creative Marketing & Research, Inc.	CA Reg. No. 1050775-50015
		Aquafact	Crop Production Services	
		Baron	Crown (Estes Incorporated)	
		Audible 80	Exacto, Inc.	
		Audible 90	Exacto, Inc.	
		N.I.S. 80	Estes Incorporated	
		Ad Spray 90	Helena Chemical Company	WA Reg. No. 5905-70020
		Inlet	Helena Chemical Company	CA Reg. No. 5905-50099-AA
		Spec 90/10	Helena Chemical Company	
		Spret	Helena Chemical Company	CA Reg. No.
		Optima	Helena Chemical Company	CA Reg. No. 5905-50075-AA
		Induce	Setre (Helena)	CA Reg. No. 5905-50066-AA
			Helena Chemical Company	CA Reg. No. 5905-50091-AA
		Induce pH	Helena Chemical Company	
		Activator 90	Loveland Products Inc.	CA Reg. No. 34704-50034-AA
		LI-700	Loveland Products Inc.	CA Reg. No. 34704-50035
				WA Reg. No. AW36208-70004
		Scanner	Loveland Products Inc.	CA Reg. No. 34704-50064
				WA Reg. No. 34704-09003
		Spreader 90	Loveland Products Inc.	WA Reg. No. 34704-05002-AA
		UAP Surfactant 80/20	Loveland Products Inc.	
		X-77	Loveland Products Inc.	CA Reg. No. 34704-50044
		Magnify	Monterey AgResources	CA Reg. No. 17545-50018
		Range Master	ORO Agri Inc.	
		NIS 90:10	Precision Laboratories, LLC	CA Reg. No. 9349-50002-AA
				WA Reg. No. 9349-13001
		Elite Platinum	Red River Specialties, Inc.	
		Red River 90	Red River Specialties, Inc.	
		Red River NIS	Red River Specialties, Inc.	
		Cornbelt Premier 90	Van Diest Supply Co.	

		Cornbelt Trophy Gold	Van Diest Supply Co.	
		Spray Activator 85	Van Diest Supply Co.	
		NIS-EA	Wilbur-Ellis	
		R-900	Wilbur-Ellis	
		Super Spread 90	Wilbur-Ellis	WA Reg. No. AW-2935-70016
		Super Spread 7000	Wilbur-Ellis	CA Reg. No. 2935-50170
				WA Reg. No. AW-2935-0002
		Agrisolutions Activate Plus	Winfield Solutions, LLC	CA Reg. No. 9779-50004-AA
				WA Reg. No. 1381-09001
		Agrisolutions Preference	Winfield Solutions, LLC	WA Reg. No. 1381-50011
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Surfactant				
	Spreader/Sticker			
		Agri-Trend Spreader	Agri-Trend	
		TopFilm	Biosorb, Inc.	
		Onside Kick	Exacto, Inc.	
		Bind-It	Estes Incorporated	
		Surf-King PLUS	Crown (Estes Incorporated)	
		CWC 90	CWC Chemical, Inc.	
		Cohere	Helena Chemical Company	CA Reg. No. 5905-50083-A
		Attach	Loveland Products Inc.	CA Reg. No. 34704-50026
		Bond	Loveland Products Inc.	CA Reg. No. 36208-50005
		Bond Max	Loveland Products Inc.	CA Reg. No. 34704-50060
				WA Reg. No. 34704-08003
		Tactic	Loveland Products Inc.	CA Reg. No. 34704-50041-AA
		Widespread Max	Loveland Products Inc.	CA Reg. No. 34704-50061
				WA Reg. No. 34704-09001
		Rocket DL	Monterey AgResources	CA Reg. No. 17545-50019
		Nu-Film-IR	Miller Chem. & Fert. Corp.	
		Nu Film 17	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50021-AA
		Nu Film P	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50022-AA
		Protyx	Precision Laboratories, LLC	WA Reg. No. 9349-13002
		Lastick	Setre (Helena)	
		Insist 90	Wilbur-Ellis	
		R-56	Wilbur-Ellis	CA Reg. No. 2935-50144
		Aqua-King Plus	Winfield Solutions, LLC	
		Surf-King Plus	Winfield Solutions, LLC	
	Silicone-based			
		Alligare OSS/NIS	Alligare, LLC	
		SilEnergy	Brewer International	

		Silnet 200	Brewer International	
		Scrimmage	Exacto, Inc.	
		Bind-It MAX	Estes Incorporated	
		Thoroughbred	Estes Incorporated	
		Aero Dyne-Amic	Helena Chemical Company	CA Reg. No. 5905-50080-AA
		Dyne-Amic	Helena Chemical Company	CA Reg. No. 5095-50071-AA
		Kinetic	Setre (Helena)	CA Reg. No. 5905-50087-AA
		Freeway	Loveland Products Inc.	CA Reg. No. 34704-50031
				WA Reg. No. 34704-04005
		Phase	Loveland Products Inc.	CA Reg. No. 34704-50037-AA
		Phase II	Loveland Products Inc.	
		Silwet L-77	Loveland Products Inc.	CA Reg. No. 34704-50043
		Speed	Precision Laboratories, LLC	
		Elite Marvel	Red River Specialties, Inc.	
		Sun Spreader	Red River Specialties, Inc.	
		Syl-coat	Wilbur-Ellis	CA Reg. No. 2935-50189
				WA Reg. No. 2935-12002
		Sylgard 309	Wilbur-Ellis	CA Reg. No. 2935-50161
		Syl-Tac	Wilbur-Ellis	CA Reg. No. 2935-50167
		Thoroughbred	Winfield Solutions, LLC.	
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Oil-based				
	Crop Oil Concentrate			
		Alligare Forestry Oil	Alligare, LLC	
		Brewer 83-17	Brewer International	
		CWR Herbicide Activator	Creative Marketing & Research, Inc.	CA Reg. No. 1050775-50020-AA
		Majestic	Crown (Estes Incorporated)	
		Agri-Dex	Helena Chemical Company	CA Reg. No. 5905-50094-AA
		Crop Oil Concentrate	Helena Chemical Company	CA Reg. No. 5905-50085-AA
		Power-Line Crop Oil	Land View Inc.	
		Crop Oil Concentrate	Loveland Products Inc.	
		Maximizer Crop Oil Conc.	Loveland Products Inc.	CA Reg. No. 34704-50059
				WA Reg. No. 34704-08002
		Herbimax	Loveland Products Inc.	CA Reg. No. 34704-50032-AA
				WA Reg. No. 34704-04006
		Monterey M.S.O.	Monterey AgResources	CA Reg. No. 17545-50025
		Exchange	Precision Laboratories, LLC	WA Reg. No. 9349-13008
		Red River Forestry Oil	Red River Specialties, Inc.	
		Red River Pacer Crop Oil	Red River Specialties, Inc.	

		Cornbelt Crop Oil Concentrate	Van Diest Supply Co.	
		Cornbelt Premium Crop Oil Concentrate	Van Diest Supply Co.	
		R.O.C. Rigo Oil Conc.	Wilbur-Ellis	
		Mor-Act	Wilbur-Ellis	CA Reg. No. 2935-50098
		Agrisolutions Prime Oil	Winfield Solutions, LLC	CA Reg. No. 979-50002-AA
		Agrisolutions Superb HC	Winfield Solutions, LLC	WA Reg. No. 1381-06003
	Methylated Seed Oil			
		Alligare MSO	Alligare, LLC	
		Alligare MSO West	Alligare, LLC	
		MSO Concentrate	Alligare, LLC	
		SunEnergy	Brewer International	
		Sun Wet	Brewer International	
		Premium MSO	Helena Chemical Company	
		Methylated Spray Oil Conc.	Helena Chemical Company	
		MSO Concentrate	Loveland Products Inc.	CA Reg. No. 34704-50029-AA
		Kixyt	Precision Laboratories, LLC.	WA Reg. No. 9349-12001
		Persist Ultra	Precision Laboratories, LLC.	CA Reg. No. 9349-50005
				WA Reg. No. 9349-13003
		Elite Supreme	Red River Specialties, Inc.	
		Red River Supreme	Red River Specialties, Inc.	
		Sunburn	Red River Specialties, Inc.	
		Sunset	Red River Specialties, Inc.	
		Cornbelt Base	Van Diest Supply Co.	
		Cornbelt Methylates Soy-Stik	Van Diest Supply Co.	
		Hasten	Wilbur-Ellis	CA Reg. No. 2935-50160
				WA Reg. No. 2935-02004
		Renegade 2.0	Wilbur-Ellis	CA. Reg. No. 2935-50194
				WA Reg. No. 2935-13001
		Super Kix	Wilbur-Ellis	
		Super Spread MSO	Wilbur-Ellis	
		Agrisolutions Destiny HC	Winfield Solutions, LLC	WA Reg. No. 1381-09002
		Atmos	Winfield Solutions, LLC	
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Oil-based (cont.)				
	Methylated Seed Oil + Organosilicone			
		Alligare MVO Plus	Alligare, LLC	
		Inergy	Crown (Estes Incorporated)	
		Inergy	Winfield Solutions, LLC	
	Vegetable Oil			

		Motion	Exacto, Inc.	
		Noble	Estes Incorporated	
		Amigo	Loveland Products Inc.	CA Reg. No. 34704-50028-AA
				WA Reg. No. 34704-04002
		Elite Natural	Red River Specialties	
		Competitor	Wilbur-Ellis	CA Reg. No. 2935-50173
				WA Reg. No. AW-2935-04001
Fertilizer-based				
	Nitrogen-based			
		Quest	Setre (Helena)	CA Reg. No. 5905-50076-AA
		Quest	Helena Chemical Company	CA Reg. No. 5905-50076-AA
		TransActive HC	Helena Chemical Company	
		Actamaster Spray Adjuvant	Loveland Products Inc.	WA Reg. No. 34704-50006
		Actamaster Soluble Spray Adjuvant	Loveland Products Inc.	WA Reg. No. 34704-50001
		Dispatch	Loveland Products Inc.	
		Dispatch 111	Loveland Products Inc.	
		Dispatch 2N	Loveland Products Inc.	
		Dispatch AMS	Loveland Products Inc.	
		Flame	Loveland Products Inc.	
		Cornbelt Gardian	Van Diest Supply Co.	
		Cornbelt Gardian Plus	Van Diest Supply Co.	
		Bronc	Wilbur-Ellis	
		Bronc Max	Wilbur-Ellis	
		Bronc Max EDT	Wilbur-Ellis	
		Bronc Plus Dry	Wilbur-Ellis	
		Bronc Plus Dry EDT	Wilbur-Ellis	WA Reg. No.2935-03002
		Bronc Total	Wilbur-Ellis	
		Cayuse Plus	Wilbur-Ellis	CA Reg. No. 2935-50171
		Agrisolutions Alliance	Winfield Solutions, LLC	CA Reg. No. 1381-50002-AA
				WA Reg. No.1381-05005
		Agrisolutions Class Act NG	Winfield Solutions, LLC	WA Reg. No. 1381-01004
		Agrisolutions Corral AMS Liquid	Winfield Solutions, LLC	WA Reg. No. 1381-01006
Special Purpose or Utility				
	Buffering Agent			
		Yardage	Exacto, Inc.	
		Buffers P.S.	Helena Chemical Company	CA Reg. No. 5905-50062-ZA
		Spray-Aide	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50006-AA
		Oblique	Red River Specialties, Inc.	
		Brimstone	Wilbur-Ellis	
		Tri-Fol	Wilbur-Ellis	CA Reg. No. 2935-50152

Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Special Purpose or Utility - cont.				
	Colorants/Dyes			
		Hi-Light	Becker-Underwood	
		Hi-Light WSP	Becker-Underwood	
		Hash Mark Green Powder	Exacto, Inc.	
		Hash Mark Green Liquid	Exacto, Inc.	
		Hash Mark Blue Powder	Exacto, Inc.	
		Hash Mark Blue Liquid HC	Exacto, Inc.	
		Hash Mark Blue Liquid	Exacto, Inc.	
		Spray Indicator XL	Helena Chemical Company	
		Marker Dye	Loveland Products Inc.	
		TurfTrax	Loveland Products Inc.	
		TurfTrax Blue Spray Indicator	Loveland Products Inc.	
		BullsEye	Milliken Chemical	
		Mark-It Blue	Monterey AgResources	
		Mark-It Red	Monterey AgResources	
		Signal	Precision	
		SPI-Max Blue Spray Marker	PROKoZ	
		Elite Splendor	Red River Specialities, Inc.	
		Mystic HC	Winfield Solutions, LLC	
	Compatibility/Suspension Agent			
		E Z MIX	Loveland Products Inc.	CA Reg. No. 36208-50006
		Support	Loveland Products Inc.	WA Reg. No. 34704-04011
		Convert	Precision Laboratories, LLC	WA Reg. No. 9349-13007
		Blendex VHC	Setre (Helena)	
	Deposition Aid			
		Alligare Pattern	Alligare, LLC	
		Cygnnet Plus	Brewer International	CA Reg. No. 1051114-50001
		Poly Control 2	Brewer International	
		CWC Sharpshooter	CWC Chemical, Inc.	
		Offside	Exacto, Inc.	
		Clasp	Helena Chemical Company	WA Reg. No. 5905-13002
		Grounded	Helena Chemical Company	
		Grounded - CA	Helena Chemical Company	CA Reg. No. 5905-50096-AA
		ProMate Impel	Helena Chemical Company	
		Pointblank	Helena Chemical Company	CA Reg. No. 52467-50008-AA-5905
		Strike Zone DF	Helena Chemical Company	CA Reg. No. 5905-50084-AA

		Compadre	Loveland Products Inc.	CA Reg. No. 34704-50050
				WA Reg. No. 34704-06004
		Intac Plus	Loveland Products Inc.	
		Liberate	Loveland Products Inc.	CA Reg. No. 34704-50030-AA
				WA Reg. No. 34704-04008
		Reign	Loveland Products Inc.	CA Reg. No. 34704-50045
				WA Reg. No. 34704-05010
		Reign LC	Loveland Products Inc.	CA Reg. No. 34704-50048
		Weather Gard	Loveland Products Inc.	CA Reg. No. 34704-50042-AA
		Mist-Control	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50011-AA
		Sustain	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50015-AA
		Exit	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50014-AA
		Border AQ	Precision Laboratories, LLC	WA Reg. No. 9349-13009
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Special Purpose or Utility - cont.				
	Deposition Aid - cont.			
		Direct	Precision Laboratories, LLC	
		Volare DC	Precision Laboratories, LLC	CA Reg. No. 9349-50004-AA
				WA Reg. No. 9349-13006
		Elite Secure Ultra	Red River Specialties, Inc.	
		Secure Ultra	Red River Specialties, Inc.	
		Sta Put	Setre (Helena)	CA Reg. No. 5905-50068-AA
		Agripharm Drift Control	Walco International	
		Bivert	Wilbur-Ellis	CA Reg. No. 2935-50163
		Coverage G-20	Wilbur-Ellis	
		Crosshair	Wilbur-Ellis	
		EDT Concentrate	Wilbur-Ellis	
		Droplex	Winfield Solution, LLC.	
		Agrisolutions Interlock	Winfield Solutions, LLC	
	Defoaming Agent			
		Fast Break	Agrisolutions	CA Reg. No. 1381-50006-AA
				WA Reg. No. 1381-50006
		Alligare Anti-Foamer	Alligare, LLC	
		Defoamer	Brewer International	
		Tripleline	Creative Marketing & Research, Inc.	CA Reg. No. 1050775-50023-AA
		Reverse	Exacto, Inc.	
		Foambuster Max	Helena Chemical Company	
		Fighter-F 10	Loveland Products Inc.	
		Fighter-F Dry	Loveland Products Inc.	
		Unfoamer	Loveland Products Inc.	CA Reg. No. 34704-50062

				WA Reg. No. 34704-09002
		Foam Fighter	Miller Chem. & Fert. Corp.	CA Reg. No. 72-50005-AA
		Gundown Max	Precision Laboratories, LLC	WA Reg. No. 9349-13013
		Red River Defoamer	Red River Specialties, Inc.	
		Foam Buster	Setre (Helena)	CA Reg. No. 5905-50072-AA
		Cornbelt Defoamer	Van Diest Supply Co	
		FTF Defoamer	Wilbur-Ellis	WA Reg. No. 2935-13002
		No Foam	Wilbur-Ellis	CA Reg. No. 2935-50136
	Diluent/Deposition Agent			
		Improved JLB Oil Plus	Brewer International	
		JLB Oil Plus	Brewer International	
		Bark Oil EC	Crop Production Services	
		Bark Oil	Crop Production Services	
		Hy-Grade I	CWC Chemical, Inc	
		Hy-Grade EC	CWC Chemical, Inc	
		Elite Premier	Red River Specialties, Inc.	
		Elite Premier Blue	Red River Specialties, Inc.	
		Red River Basal Oil	Red River Specialties, Inc.	
		Thinvert TRU	Waldrum Specialties, Inc.	
		Thinvert Concentrate	Waldrum Specialties, Inc.	
		In-Place	Wilbur-Ellis	CA Reg. No. 2935-50169
		W.E.B. Oil	Wilbur-Ellis	CA Reg. No. 2935-50166
				WA Reg. No. AW 2935-70023
Adjuvant	Adjuvant	Trade		
Class	Type	Name	Munufacturer	Comments
Special Purpose or Utility - cont.				
	Foam Marker			
		Align	Helena Chemical Company	
		Tuff Trax Foam Concentrate	Loveland Products, Inc.	
		Trekker Trax	Loveland Products, Inc.	
		Red River Foam Marker	Red River Specialties, Inc.	
		R-160	Wilbur-Ellis	
	Invert Emulsion Agent			
		Redi-vert II	Wilbur-Ellis	CA Reg. No. 2935-50168
	Tank Cleaner			
		Wipe Out	Helena Chemical Company	
		All Clear	Loveland Products Inc.	
		Back Field	Exacto, Inc.	

		Tank and Equipment Cleaner	Loveland Products Inc.	
		Red River Tank Cleaner	Red River Specialties, Inc.	
		Elite Vigor	Red River Specialties, Inc.	
		Kutter	Wilbur-Ellis	
		Neutral-Clean	Wilbur-Ellis	
		Cornbelt Tank-Aid	Van Diest Supply Co.	
	Water Conditioning			
		Alligare Water Conditioner	Alligare, LLC	
		Rush	Crown (Estes Incorporated)	
		Completion	Exacto, Inc.	
		AccuQuest WM	Helena Chemical Company	
		Hel-Fire	Helena Chemical Company	
		Smoke	Helena Chemical Company	CA Reg. No. 5905-50104-AA
		Blendmaster	Loveland Products Inc.	
		Choice	Loveland Products Inc.	CA Reg. No. 34704-50027-AA
				WA Reg. No. 34704-04004
		Choice Xtra	Loveland Products Inc.	
		Choice Weather Master	Loveland Products Inc.	CA Reg. No. 34704-50038-AA
				WA Reg. No. 34704-05005
		Import	Precision Laboratories, LLC	WA Reg. No. 9349-14001
		Transport LpH	Precision Laboratories, LLC	
		Transport Plus	Precision Laboratories, LLC	WA Reg. No. 9349-13014
		Elite Imperial	Red River Specialties, Inc.	
		Cornbelt N-Tense	Van Diest Supply Co.	
		Climb	Wilbur-Ellis	CA Reg. No. 2935-50181
				WA Reg. No. 2935-09001
		Cut-Rate	Wilbur-Ellis	

Appendix C

Example of BLM Pesticide Use Proposal Submittal Form

UNITED STATE DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
PESTICIDE USE PROPOSAL

STATE: _____
COUNTY: _____
DISTRICT: _____
DURATION OF PROPOSAL: _____

LOCATION: _____

DATE: _____
PROPOSAL NUMBER: _____
EA REFERENCE NUMBER: _____
DECISION RECORD (DR) NUMBER: _____

ORIGINATOR – NAME: _____
ORIGINATOR – COMPANY: _____
ORIGINATOR – CONTACT INFORMATION: _____
PROPOSAL PREPARER - NAME: _____
PROPOSAL PREPARER – COMPANY: _____
PROPOSAL PREPARER – CONTACT INFORMATION: _____

.....
I. APPLICATION INFORMATION – Including mixtures and adjuvants):

1. TRADE NAME(S): _____
2. COMMON NAME(S) _____
3. EPA REGISTRATION NUMBER(S): _____
4. MANUFACTURER(S): _____
5. METHOD OF APPLICATION: _____
6. MAXIMUM RATE OF APPLICATION – AS STATED IN THE EIS:
 - a. Pounds Active Ingredient or Acid Equivalent: _____
7. MAXIMUM RATE OF APPLICATION – AS STATED ON THE LABEL:
 - a. Formulated Product: _____
 - b. Pounds Active Ingredient or Acid Equivalent: _____
8. INTENDED RATE OF APPLICATION: _____

- a. Formulated Product: _____
- b. Pounds Active Ingredient or Acid Equivalent: _____
9. APPLICATION DATE(S): _____
10. NUMBER OF APPLICATIONS: _____

II. PEST [List specific pest(s) and reason(s) for the proposed application of the pesticide]:

III. DESIRED RESULTS OF THE APPLICATION – LINKED TO THE OBJECTIVES OF THE APPLICATION:

IV. APPLICATION SITE DESCRIPTION:

1. ESTIMATED NUMBER OF ACRES: _____
2. GENERAL DESCRIPTION (Describe land type or use, size, stage of growth of target species, soil characteristics, and any additional information that may be important in describing the area to be treated.)

V. SENSITIVE ASPECTS AND PRECAUTIONS (Describe sensitive areas – marsh, endangered, threatened, candidate, and sensitive species habitat – and distance to application site. List measures to be taken to avoid impact to these areas):

VI. NON-TARGET VEGETATION (Describe potential immediate and cumulative impacts to non-target pests in project area as a result of the pesticide application. Identify any planned mitigation measures that will be employed – BE GENERAL, SPECIFICS DISCUSSED IN THE EA):

VII. INTEGRATED PEST MANAGEMENT PRACTICES CONSIDERED IN THE OVERALL PROJECT:

.....

VIII. SIGNATURES:

1. Pesticide Use Proposal's Originator: _____ Date: _____
 - a. Company: _____
2. Certified Pesticide Applicator: _____ Date: _____
 - a. License Number: _____
 - b. Certifying Organization: _____
3. Field Office Pesticide/Noxious Weed Coordinator: _____ Date: _____
4. Field Office Manager: _____ Date: _____
5. BLM State Pesticide Coordinator: _____ Date: _____
6. Deputy State Director: _____ Date: _____

- ☐ Concur or Approved
- ☐ Not Concur or Disapproved
- ☐ Concur or Approved With Modifications
 - Any changes (modifications) to this proposal by the State Pesticide Coordinator will be listed in an attached memo to the manager requesting approval from the Deputy State Director.

Appendix D

Example of a BLM Pesticide Application Record Form

Example California BLM Pesticide Application Records Form

1. General Information

- a. Project Name: _____
- b. Operator: _____
- c. Pesticide Use Proposal Number: _____
- d. Reference Number: _____

2. Name of Applicator or Employee(s) Applying the Pesticide:

3. Date(s) of Application: _____

4. Time Frame of Application: _____

5. Location of Application: Township _____, Range _____, Section _____.

County _____

6. Type of Equipment Used: _____

7. Pesticide(s) Used: _____

Company or Manufacturer's Name: _____

Trade Name: _____

Type of Formulation: Liquid ____/ Granular ____/

8. Rate of Application Used:

- a. Active Ingredient per Acre _____
- b. Volume of Formulation per Acre _____

9. Treatment Area

- a. Actual Area Treated: _____
- b. Total Project Area: _____

10. Primary Pest(s) Involved: _____

11. Stage of Pest Development: _____

12. Site Treated: ____/ Native Vegetation ____/ Seeded Vegetation ____/ Other

13. Weather Conditions:

a. Wind velocity: _____ b. Wind direction _____ c. Temperature _____

14. Monitoring Record (IF INSUFFICIENT SPACE-CONTINUE ON BACK):

This record is required and must be completed, except for monitoring within 24 hours after completion of application of pesticides. This record must be maintained for minimum of 10 years.