



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

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EA Number: CA-180-09-28

Proposed Action: Herbicide use by California Department of Food and Agriculture (CDFA) and Mariposa County to control the Class A weed, Iberian starthistle, on public land, (as part of a state-wide effort).

Location: T. 3S, R. 15E, section 1.

1.0 Purpose of and Need for Action

1.1 Need for Action Iberian starthistle (*Centaurea iberica*) is listed on CDFA's Noxious Weed List A, indicating that it is one of the highest priority weeds in the state. Species are included on CDFA's List A because: (1) they have the potential to produce major economic impacts, and (2) the distributions of these weeds in the state are sufficiently localized that they still can be eradicated from the state. (Many other weed species are too widespread for eradication to be feasible. For these species, control in specific localities is the only option.) Unlike yellow starthistle which is an annual species, Iberian starthistle is a biennial species. Therefore preventing the reproduction of plants is not sufficient to eliminate a population of this species, because individual plants can persist vegetatively. Experience with the application of manual control methods in 2007 and 2008 at Ned Gulch has shown that even cutting off roots well below the soil surface does not prevent regrowth of individual Iberian starthistle plants. In fact plants that have been prevented from flowering appear to continue growth beyond the usual lifespan of 2 years. Mariposa County has also made the control of this weed species a priority. CDFA and Mariposa County have asked that BLM-managed lands to be included in the CDFA/County spray program. BLM is a member of the South/Central Sierra Noxious Weed Alliance and as such BLM has agreed to participate with other agencies and groups involved in that organization to control, and where possible eradicate, noxious weeds in Mariposa County.

1.2 Conformance with Applicable Land Use Plans

The proposed action is consistent with the 2008 Sierra Resource Management Plan and Record of Decision (RMP) approved in February 2008. This project is consistent with the Vegetation Communities section of that document (section 2.4) that lists management actions:

Prevent, eliminate, and/or control undesired non-native vegetation or other invasive species using an Integrated Pest Management approach that combines biological, cultural, physical, and chemical tools to minimize economic, health, and environmental risks.

Use prescribed fire, mechanical mastication, herbicides, manual removal, seeding, propagation, and planting or combinations of these methods to promote healthy, diverse vegetation communities.

Implement and meet national BLM policies consistent with the Partners Against Weeds initiative (DOI 1998) and Executive Order 13112.

1.3 This Environmental Assessment is Tiered to the Bureau-wide Programmatic EIS for herbicide use

The proposed action is consistent with the Record of Decision Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic EIS (2007), (subsequently referenced as "USDI BLM 2007"). This Record of Decision is available at: http://www.blm.gov/wo/st/en/prog/more/veg_eis.html). Specifically this project incorporates the applicable standard operating procedures outlined in Table 2-8 of that document. This EA is tiered to the Vegetation Treatments ROD.

1.4 Relationship to Statutes, Regulations, and Other Requirements

The following Laws, Acts, Plans, Manuals, and Policies provide a foundation for noxious and invasive weed management by the BLM:

The *Carlson-Foley Act of 1968* directs agency heads to enter upon lands under their jurisdiction and destroy noxious plants growing on such land.

The *Federal Noxious Weed Act of 1974, as amended by Section 15, Management of Undesirable Plants on Federal Lands, 1990*, authorizes the Secretary "...to cooperate with other Federal and state agencies and others in carrying out operations or measures to eradicate, suppress, control, prevent, or retard the spread of any noxious weed."

The *Federal Land Policy and Management Act of 1976* directs BLM to "...take any action necessary to prevent unnecessary and or undue degradation of the public lands."

The *Public Rangelands Improvement Act of 1978* requires that BLM will manage, maintain, and improve the condition of the public rangelands so that they become as productive as feasible.

Interior Departmental Manual 609 prescribes policy to control undesirable or noxious weeds on the lands, waters, or facilities under its jurisdiction to the extent economically practicable, as needed for resource protection and accomplishment of resource management objectives.

BLM Manual 9015 provides policy relating to the management and coordination of noxious weed activities among BLM, organizations, and individuals.

2.0 Proposed Action and Alternatives

2.1 Alternative #1: Proposed Action

Iberian starthistle in Ned Gulch will be sprayed by California Department of Food and Agriculture or Mariposa County crews as part of an overall Iberian starthistle control strategy by the state and County. The active ingredient glyphosate will be used, but in a formulation that lacks a pre-mixed surfactant, e.g., Rodeo or Aquamaster. Such formulations are approved for aquatic uses because they lack the adjuvant polyethoxylated tallow amine or POEA, (a component of Roundup Original for instance), that has been found to be damaging to tadpoles (Relyea 2005). An herbicide approved for

aquatic uses is necessary because the Ned Gulch occurrence of Iberian starthistle (IST) runs along an intermittent stream, with reaches that can stay wet into summer. Many IST plants grow right in the stream channel. As specified on the herbicide labels, a surfactant safe for aquatic use will be added to increase herbicide effectiveness. The surfactant will either be a vegetable oil based or petroleum oil based. Nonylphenolethoxylate, (NPE), surfactants will not be used, because they have been shown to be toxic to some aquatic organisms when present in water in high concentrations (Bakke 2003; Monheit 2004). In most cases this toxicity has only been demonstrated at concentrations that are higher than normal application rates. But substituting a vegetable oil based adjuvant or crop oil concentrate adjuvant with surfactant properties for NPE surfactants provides an extra margin of safety for aquatic organisms. The herbicide plus surfactant will be spot sprayed on Iberian starthistle plants from a backpack spray unit. Spot spraying will minimize the amount of herbicide applied. A 2% solution (or less) of glyphosate formulation, (e.g., Rodeo or Aquamaster), will be applied, either once or twice per growing season as needed. Treatments will occur for one, two or three seasons, (2009, 2010, 2011), again depending on the need for follow-up applications.

Manual removal will also be used on a limited basis to remove IST plants that are bolting. In this way the production and dissemination of new seed can be prevented for plants that were missed during the spray process, and those plants that survive spraying.

2.2 Project Design Features

The glyphosate formulation without pre-mixed surfactant, (e.g., Rodeo, Aquamaster), will be used due to the proximity of the creek in Ned Gulch and because it is approved for use “in and around aquatic sites”. Other formulations of glyphosate, like Roundup Original, have been linked to amphibian mortality and are not labeled for aquatic use. This amphibian mortality has been traced to POEA, a surfactant included in Roundup Original and other formulations, but not in those formulations labeled for aquatic use. The active ingredient, glyphosate, does not produce these injurious effects to amphibians. A adjuvant/surfactant that is safe for aquatic applications (e.g., some vegetable oil based adjuvants and some crop oil concentrates) will be added to the spray mixture. NPE surfactants will not be used, because they have been shown to be toxic to some aquatic organisms, at least at high concentrations.

To avoid any exposure of the public to spray drift, on the day of spraying, the spray areas will be posted with “spraying, do not enters” signs.

2.3 Alternative #2: Continue Iberian starthistle control using only manual methods

Manual removal as practiced for two growing seasons in 2007 and 2008 would be continued. Cutting the root below ground with a short handled mattock would be continued as a technique to injure plants. During both seasons the IST occurrence was visited at least biweekly during most of the growing season. Each time plants were cut below ground. This intensive effort prevented any new seed set and renewal of the seed bank. Despite the lack of new seedlings and the cutting of all the older plants, there was an abundance of mature plants (i.e., older than seedling plants) in the winter of 2008-2009.

Variations on the techniques used previously (described above) could include: variation (1): manual control by cutting only bolting plants, or variation (2): manual control by deep excavation of the roots of each plant. There is abundant rock in the substrate in which the weed grows; sometimes plants grow in fissures in bedrock. Deep excavation is not feasible because of the amount of rock that would be encountered excavating the plants and the prohibitive number of person-hours that would be

required to excavate each plant in this relatively large weed population. For this reason, the deep excavation approach is not analyzed further.

2.3 Alternative #3: No Action

With the no action alternative, Iberian starthistle would not be treated with either herbicides or manual methods.

3.0 Affected Environment

Soils: Soil Survey of Mariposa County Area, California maps this portion of Ned Gulch as Blasingame-Las Posas stony loams, 9% to 30% slopes, eroded.

Vegetation: The area where the Iberian starthistle occurs is mostly confined to drainages. This drainage habitat has reaches with riparian vegetation, and other reaches that apparently dry completely. Above the riparian zone there is live oak woodland with a shrub understory, with interior live oak, gray pine, California buckeye, chamise, toyon, buckbrush, holly leaf redberry, poison oak. In the riparian areas which are degraded there is red willow, western spicebush, California coffeeberry, wild grape, large leather-root and facultative riparian species like Himalayan blackberry. The area was surveyed and no special status plant species were found in the project area.

Wildlife: The area supports a variety of birds including several species of songbirds and birds of prey. California quail are prevalent in the area. The area provides both year-round and winter habitat for deer. Other mammals may include various rodents, cotton tail and jack rabbits, coyote, bobcat, fox, black bear, mountain lion, bats, raccoon, and skunk. The area supports a variety of reptiles. Pacific tree frog is the most prevalent amphibian species in the area.

There are no special status animal species known to occur within the spray area.

Hydrology and water quality: This project will occur in Ned Gulch. This is a small drainage with an intermittent stream. Portions of the stream support riparian vegetation like willows. But much of the stream length only supports upland vegetation and may dry completely.

Recreation: This area is accessible to the public through an unlocked gate on Highway 132. However it has little recreational value. It is heavily grazed and there is little water. Some evidence of gold panning activity was observed.

Visual resources: According to the Sierra Resource Management Plan (2/08), this area is in VRM Class 3.

Cultural: The prehistory of the area is known mainly from archaeological studies conducted in Yosemite National Park, along the upper reaches of the Merced River. These studies indicate that hunter-gatherers groups inhabited Yosemite for thousands of years prior to historic contact in the 1800s, and that by late prehistory (1500 to historic contact about 150 years ago) these groups had a lifestyle typical for Californian hunter-gatherers of the western Sierra. Acorns, deer, and salmon were of primary importance to them. The upper reaches of the Merced River watershed were just one portion of a much larger area used by prehistoric people as they went about procuring these and other resources.

Less is known about the prehistoric land-use in the BLM-administered portions of the Merced River watershed between 3000 and 1000 ft in elevation. Bedrock milling stations and camp sites have been found on BLM-administered land in the watershed within this elevation range, and it seems certain that prehistoric people hunted, gathered, fished, and sought other resources within this part of the watershed, at least on a temporary basis, as part of their seasonal rounds (annual migration into the high country). More substantial settlement appears to have been focused on the river's tributaries on the canyon rim. At the time that Euro-Americans and other outsiders arrived in droves during the mid-1800s, the Miwok – thought to be the descendants of the area's prehistoric people – were living in the Merced River watershed.

The famous American explorer, soldier, and political leader John Fremont was among the earliest Euro-Americans to settle in the area. In 1847, he acquired a large Mexican land grant called Las Mariposas that included the present-day town of Mariposa. Not long after the start of the Gold Rush in 1848, prospectors began scouring his land, the Merced River canyon, and elsewhere in the region for placer gold. Sherlock Creek, named for the Sherlock brothers, may have been one of the earliest creeks to be mined in the Merced River canyon. Placer mining waned by the early 1850s as the easily found placer gold became depleted.

By the late 1800s, hardrock gold mining became a dominant industry within the Merced River watershed and Mariposa County generally. Production may have peaked during 1860s-1880s, (mining activity/returns for this period were poorly documented). Many of the operations, particularly those that endured well into the 1900s, appear to have been small scale, with few workers, sporadic development, shoestring budgets, and hodgepodge arrays of mining and milling machinery. By the mid-1900s, the mines still being developed were typically worked on the side by one or two men, who typically were involved full-time in ranching or some other occupation. Mines located on (or partially on) BLM-administered land in and around the Merced River canyon include the Schroeder, Diltz, Our Chance, Permit, Landrum, and Governor/Live Oak. The Jumper, Blue Moon, Orange Blossom, Mt. Gains, and Badger are located farther west, near Hornitos. The Mt. Gains was among the most productive mines in the county and was a large-scale operation during the 1930s.

The rugged brushy terrain of the Merced River canyon appears to have hindered ranching, farming, and homesteading during the late 1800s, but there was enough timber here to support commercial logging, particularly at higher elevations. By the early 1900s, many of the best virgin stands had been logged by operators like the Yosemite Lumber Company. Other industrial/commercial endeavors were attempted in lieu of gold mining and logging. The opening of Yosemite Valley as a major tourist destination by the turn of the century reinvigorated and changed the economy of Mariposa County. The Yosemite Valley Railroad, built in 1907, was designed to help get people to and from Yosemite Valley. The railroad grade ran along the Merced River from Merced in the Central Valley to El Portal just west of Yosemite Valley. The train passed through the BLM-administered part of the canyon, including portions of the Mountain King Mine complex, Railroad Flat, McCabe Flat, and Briceburg.

Ned Gulch was along the road (current Highway) connecting Granite Springs and Coulterville. Coulterville was named for George W. Coulter, who opened store in a tent here during the Gold Rush. After placer mining waned in the area by the mid-1850s, considerable hardrock gold mining was done through the 1890s and Coulterville became among the most important trading centers in the southern Mother Lode. Important mines in the district included the Malvina, Tyro, and Mary Harrison. Granite Springs was also associated with mining—though the mines here were not as productive as those in the Coulterville area. Mines in the Granite Springs district included the Anita, Burr, and White Rock, which is located on Ned Gulch, a tributary of Willow Creek. According to BLM records, the Ned Gulch area was rife with “mining claim occupancies” by the late 1940s. BLM attempted to identify

and deal with the unauthorized occupancies in this area during 1950s and 1960s. Court records from this period indicate that the White Rock was mined by James A. Goss in 1905, John Deneri in 1907, and Arthur and William J. Scheimer, on a part-time basis, from 1921-1934 before Roy and Mardel Bond established a house on the property in 1942.

Fire/fuels: Fuels are typical of the lower foothill belt. Along the gulch there are reaches with a narrow band of riparian habitat and at least one broader meadow. Overall, upland communities are dominant. The upland community in the creek canyon is dominated by brush with some oak and gray pine overstory. Because the IST site lies in a drainage, winds tend to be upstream and uphill during warm/hot summer afternoons, and shift to downstream and downhill in the cool evenings. The upland vegetation beyond the gulch itself is mostly grassland, but there are large patches of chaparral also in the vicinity. The hilly topography and the predominance of lighter fuels would permit fires to move rapidly from the vicinity of Lake McClure and Highway 132 to the adjacent ridgetops to the north.

Social/agricultural: BLM grazing lease #04179 includes the project area. The lease includes 1891 acres of mostly upland grassland vegetation, and it authorizes 281 AUMs of grazing use. Cattle graze the project area and tend to concentrate near the creek as temperatures increase and upland forage dries. The area where IST is concentrated is also an area of cattle congregation.

Non-native weeds: The creeks in this area support a large complement of weeds including Italian thistle, tocalote, bull thistle, cocklebur, sow thistle, Bermuda grass, Himalayan blackberry and tree-of-heaven along with Iberian starthistle. The riparian zone in perennial stream reaches and near-channel area for intermittent reaches are degraded, with native species contributing only a small proportion of total vegetative cover.

4.0 Environmental Effects: Impacts of the Proposed Action and Alternatives

The following critical elements have been considered for this environmental assessment, and unless specifically mentioned later in this chapter, have been determined to be unaffected by the proposal: air quality, areas of critical environmental concern, prime/unique farmlands, floodplains, threatened or endangered species, hazardous waste, wild and scenic rivers, wilderness, and environmental justice.

4.1 Impacts of Alternative #1: Proposed Action

Public health and safety: Glyphosate has been extensively tested for safety and health effects. The Material Safety Data Sheet (MSDS) for Rodeo herbicide (a glyphosate formulation without surfactant) (the MSDS is available at <http://www.cdms.net/LDat/mp4TN006.pdf>) for instance describes these health effects (under the heading "Toxicological information"): "May cause slight temporary eye irritation." "It is "Essentially non-irritating to the skin." It has "Very low toxicity if swallowed." About inhalation the MSDS says "Brief exposure is not likely to cause adverse effects." For other target organ effects it says with glyphosate, ".....in animals, effects have been reported for the following organ: liver." About cancer effects, glyphosate ".....did not cause cancer in laboratory animals." About mutagenicity the MSDS says for glyphosate "...in vitro and animal genetic toxicity studies were negative." About birth defects and reproductive effects the MSDS says that data are inadequate to make a determination. Because glyphosate has become one of the most widely used herbicides in the world since its introduction in 1974, if the compound caused reproductive effects or birth defects, it is unlikely these effects would have gone undetected this long. A Forest Service study evaluated numerous exposure scenarios for members of the public including direct spray, contact with

contaminated vegetation, consumption of contaminated fruit, consumption of contaminated water, and consumption of contaminated fish, all on an acute basis. They also studied a similar set of chronic exposure scenarios. In all but one case they found no risk from the exposure to glyphosate, i.e., the evaluated scenarios created glyphosate exposures less than the reference dose of glyphosate (USDI BLM 2007, page 4-188, Table 4-30). A reference dose is defined as, "An estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to not result in an appreciable risk of deleterious effects during a lifetime...." (USDI BLM 2007, page 7-14). The exception where there was a finding of risk was a low risk to human health with consumption of contaminated water from a pond spill, and only under the maximum application rate scenario. Clearly a pond spill is a rare event. Under any circumstances consumption of water from Ned Gulch is highly unlikely. It is a slow-moving, intermittent warm water creek with abundant growth of vegetation in the channel and evident cow use. Consumption of ponded water after a spill event in Ned Gulch would be extremely unlikely, even without precautions. However BLM would post warning signs if such a spill were to occur.

Soils: Glyphosate is moderately persistent in soils with an estimated half-life of 47 days. It is broken down primarily by microbes. Glyphosate is tightly adsorbed to soil particles and inactivated by adsorption (USDI BLM 2007, page 4-19). Erosion is not an issue for this project for two reasons: (1) slopes at the project site are generally less than 20%, and (2) spot spraying will leave most of the vegetation intact, so the treatment will not leave bare areas that would be subject to raindrop impact and susceptible to accelerated erosion. Soil productivity might be negatively influenced if there was microbial inhibition by glyphosate under field conditions. However Busse et al. (2004) cited in (USDI BLM 2007, page 4-19) studied ponderosa pine plantations and found that 9 to 13 years of glyphosate application had little effect on microbial communities.

Vegetation: Glyphosate is a non-selective herbicide. As such, it is likely to damage or kill most of the plants that are sprayed. By spot spraying with a wand, spray will be deliberately applied only to Iberian starthistle plants. Immediately adjacent plants will sometimes receive over-spray and some will be damaged or killed. Native annuals species hit by overspray will generally reoccupy much of their habitat by the following growing season, because their persistent seed banks are unaffected by glyphosate. Perennials will often recolonize their habitats the next growing season as well, although it will generally take these plants longer to reach full stature and maturity. Also additional habitat will be opened up for native and non-native species when Iberian starthistle cover is reduced by spraying. Because the Iberian starthistle is not arranged in large continuous patches, no large areas will be sprayed and potentially cleared of vegetation. Instead small holes in the overall vegetation will occur when small pockets of plants die. Because there are no rare plants or plant communities in the project area, the temporary loss of individuals of common species will not affect the vegetation long term. Except for a reduction of Iberian starthistle, the effects of the project on the vegetation should not be noticeable by the following growing season.

Riparian zones: Iberian starthistle is not a true riparian species, although it often inhabits mesic environments and often grows at the edge of riparian zones. Spraying adjacent to the riparian zone may cause damage to individuals of some riparian species. However riparian species are generally fast growing and tolerant of disturbance. Because spot spraying will target individual Iberian starthistle plants, native riparian plants will usually only receive small amounts of overspray, and little mortality is expected. The control of Iberian starthistle will open up some substrate and may allow for some expansion of native and non-native species, including other weeds. However, the weeds that might increase are already common species, both locally and state wide. Overall effects to the riparian zone will be negligible.

Terrestrial Wildlife: Forest Service studies have shown that at typical application rates there is low risk or zero risk to wildlife species from using glyphosate. Unlike other formulations of glyphosate like Roundup, formulations approved for aquatic use, (e.g., Rodeo, Aquamaster), do not contain the surfactant POEA. POEA has been shown to be damaging to amphibians.

Forest Service studies showed only two scenarios produced a moderate risk to terrestrial and airborne wildlife from the application of glyphosate (USDI BLM 2007, pages 4-106, 4-107): (1) at maximum application rates of glyphosate, there was a moderate risk to large and small mammals and to birds from direct spray and acute consumption of contaminated vegetation and insects, and (2) the direct spray of bees and other small animals, again only at the maximum application rate, similarly posed a moderate risk to these animals. However these moderate risks will not occur because herbicide will not be applied at maximum application rates in this project.

Other factors that reduce the potential for impacts include: (1) Because of the use of spot spraying and the patchy distribution of the Iberian starthistle, the acute consumption of sprayed vegetation or insects by wildlife is highly unlikely. In almost all cases the herbivore or insectivore would consume some sprayed food items and a much greater quantity of unsprayed food items, because only a small proportion of the area will be sprayed. Because of the use of typical rather than maximum application rates, even if there were acute consumption of sprayed food items there would be low risk to these animals. (2) Some bees and other small animals may be sprayed directly. As noted above, because of the use of typical rather than maximum application rates, there will be low risk to the individuals of these species that are sprayed at these concentrations. And because of spot spraying, only a small fraction of the local population of these species will be contacted by spray. Only those animals that are in exposed positions in the immediate vicinity of Iberian starthistle plants, and that don't disperse when the applicator arrives, are likely to be sprayed.

The use of a vegetable oil based adjuvant, (e.g., Competitor), or a crop oil concentrate adjuvant, (e.g., Agri-Dex), allows the increased efficacy provided by a surfactant but avoids the use of surfactants known to be toxic to aquatic wildlife. Polyethoxylated tallow amine (POEA) surfactants have been shown to be toxic to amphibians, and nonylphenoethoxylate (NPE) surfactants have been shown to be toxic to fish (rainbow trout were used in most studies) and some invertebrates, though usually at surfactant concentrations higher than normal application rates. To provide an extra margin of safety for aquatic wildlife, NPE surfactants will not be used in this project.

Although the ecological effects of Iberian starthistle invasion have not been studied, the impacts of this species are likely to exhibit similarities to the impacts of its close relative, yellow starthistle (YST). Yellow starthistle has been shown to displace native vegetation. Unlike the native vegetation it displaces, YST has little value for native wildlife. Because of the spines that it produces, YST can discourage access by wildlife even into areas that would otherwise provide forage or other resources. So the control of Iberian starthistle is likely to produce a net benefit for native wildlife species.

Hydrology and water quality: This project should have little if any effect on the hydrology of Ned Gulch, much less the larger streams of which it is a tributary, i.e., Willow Creek and the Merced River/Lake McClure.

Water quality effects should be negligible for several reasons. Spot spraying will result in the application of only a small amount of herbicide. No spraying will occur if rain is predicted within 24 hours. The formulation of glyphosate chosen is without surfactant, (e.g., Rodeo, Aquamaster). Rodeo for instance is labeled for use in aquatic applications because it is practically non-toxic by ingestion (LD₅₀ of 5600mg/kg in rats; reported by Exttoxnet, a project of cooperative extension offices of

Cornell, Oregon State Univ., Univ. of Idaho, Univ. of California Davis, Michigan State Univ.). Glyphosate is tightly adsorbed to soil particles and has low potential for runoff or leaching.

The estimated half life of glyphosate in water is 12 days to 10 weeks. However it is rapidly deactivated in surface waters by adsorption on organic matter and clay particles and by biodegradation. Glyphosate is unlikely to be carried into rivers or streams or by runoff or groundwater because it is so readily adsorbed on soil particles (USDI BLM 2007, page 4-30).

Drinking water from Lake McClure, an impoundment of the Merced River, is withdrawn near Barrett Cove by the Lake Don Pedro Community Services District. It lies downstream of the project area. There is a label restriction for Rodeo herbicide (the Rodeo label is available at: <http://www.cdms.net/LDat/ld4TN010.pdf>):

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.....

Aquamaster, a similar glyphosate formulation for aquatic applications, has a very similar label restriction.

These restrictions would not apply in this instance for several reasons. Barrett Cove is at least 5 miles downstream of Ned Gulch. Lake McClure would so dilute any herbicide input from Ned Gulch that it would be undetectable. More importantly, by spot spraying, the amount of spray reaching water should be negligible.

Fish and other aquatic organisms: A glyphosate formulation without surfactant like Rodeo will be used in this project. The material safety data sheet for Rodeo herbicide states that the material is “practically non-toxic to aquatic organisms on an acute basis (LC₅₀ or EC₅₀ is > 100mg/L in most sensitive species tested)”. Because of the nature of flowing water, chronic exposure will not occur. A Forest Service study found that with the less toxic formulations of glyphosate, like those to be used in this project, even under a routine acute exposure scenario, there is a low risk to most aquatic organisms, and a moderate risk to sensitive fish species (USDI BLM 2007, page 4-85). Tadpoles have been found to be very sensitive to the surfactant POEA included in popular formulations of glyphosate (e.g. Roundup). However formulations that lack the surfactant, like Rodeo, have been found to be relatively non-toxic (Relyea 2005).

Surfactants containing nonylphenolpolyethoxylates (NPE) have been shown to be toxic to a number of aquatic organisms, including rainbow trout and some invertebrates, although test treatments that showed adverse impacts were often at higher concentrations of the surfactant than normal application rates (Bakke 2003; Monheit 2004). To provide an extra margin of safety for aquatic organisms, no NPE surfactants will be used in this project.

Recreation: Except for the day of spraying, there should be no impact to recreation from this project. The day of spraying, signs will be posted to indicate that spraying is occurring, and this may deter some visitors from using the area. If there are visitors they will be asked to leave the immediate vicinity of target sites before they are sprayed, so no visitors are subjected to spray drift. After the herbicide has been applied and taken effect, some small patches of dead or dying vegetation may be noticed. Because of spot spraying, the vast majority of the vegetation will remain intact, mostly shielding the small dead zones from view.

Visual resources: The appearance of the landscape might be temporarily somewhat altered by the

death of Iberian starthistle plants. But because of the spot spraying approach, these dead plants will be surrounded by live vegetation, and in general the dead plants will not be obvious. Because the plants will be sprayed at the rosette stage, unsightly persistent large dead skeletons of Iberian starthistle will not develop. This project is consistent with VRM Class 3.

Cultural resources: Because of the use of herbicide to accomplish weed control, no ground disturbance will occur. For this reason there will be no effects to material cultural resources, like prehistoric native American sites and historic sites.

BLM has initiated tribal consultation by mailings to local Indian groups to ascertain if they have any concerns about this project. Of particular relevance were inquiries as to whether there were traditional collecting areas for plant materials at the project site. If traditional collecting sites occur within the project area, BLM will work with the appropriate tribe to address their concerns. A no-spray zone may be established to avoid impacts to the habitat at the collecting site.

Fire/fuels: Iberian starthistle forms a minor component of the fuel load in this area. This project will have no significant effect on either the fuels or fire situation in the vicinity of Ned Gulch.

Social/agricultural: This project will produce minor effects for the grazing lease in the project area. Unlike some other herbicides, aquatically labeled glyphosate formulations without pre-mixed surfactant have no labeled grazing restrictions (except for grazing by lactating dairy cows). Cattle avoid Iberian starthistle once the spiny heads have been produced. The lessee has been contacted about the project. The lessee has agreed to remove his cattle from this portion of the lease for a week, at the time of spraying, to allow translocation of herbicide from the shoots to the roots, before cattle resume consuming foliage. Because IST can inhibit cattle access and replace more palatable plant species, the reduction of Iberian starthistle plants on the lease would be of benefit to the grazing lessee.

Non-native weeds: This project is specifically designed to eradicate the CDFA Class A weed, Iberian starthistle, from Ned Gulch. Because CDFA and the Mariposa County Department of Agriculture are spraying on private land as well, this project has the potential to be part of an area-wide elimination of this weed in the vicinity of Granite Springs. And CDFA has made state-wide eradication of this weed species a priority

4.2 Impacts of Alternative #2: Manual-Removal-Only Alternative

Non-native weeds: Manual removal was practiced for two growing seasons in 2007 and 2008. Cutting the root below ground with a short-handled mattock was the technique used to injure plants. During both seasons the IST occurrence was visited at least biweekly during most of the growing season. Each time plants were cut below ground. This intensive effort prevented any new seed set and renewal of the seed bank. Despite the lack of new seedlings and the cutting of all the older plants, there was an abundance of mature plants (i.e., older-than-seedling plants) in the winter of 2008-2009. Excavation of these mature plants revealed that many had been cut in previous years and had regrown their tops from near the cut surface of the root. This experience suggests that a plant can survive being severed below ground, and might survive many such treatments. The depletion of the population by continuing this technique would be very slow, likely on the order of a decade or more. And only with a sustained intensive effort over the entire period could the prevention of additions to the seed bank be maintained. If a single visit to the site was missed during a seed development period, a new crop of seed would be added to the seed bank. A single lapse of the continuity of the effort in a single year, and years of progress could be lost. And if seed were produced, there would be the possibility of seed escaping and the founding of a new population of the species.

Variation (1): Manual control by cutting only bolting plants:

Theoretically, cutting only bolting plants could be an effective strategy to eliminate Iberian starthistle. Observations indicate that this species is monocarpic, (i.e., it only fruits once and then dies), so once the plant's energy is expended in bolting, it is unlikely that plants would have the resources to continue growth and development after being cut at the base. But this approach would involve unacceptable risk. Hundreds or even thousands of plants might bolt in a short timeframe. If even a portion of those plants are not removed before seed set and seed dissemination, new seed will be added to the seed bank and control effort will be set back, possibly for years. This strategy involves much more risk than continuing comprehensive plant chopping efforts, because with a comprehensive effort begun early in the season and targeting rosettes, very few plants reach the stage of bolting and flowering. Similarly with effective early-season spraying, only a small portion of plants will bolt, and those should be easy to address with regularly timed visits to the site. Under either the spray or comprehensive manual control scenarios, if there were to be any breakdown in followup visits and some plants did go to seed, the risk of substantial seed addition to the seed bank is greatly reduced relative to the cutting-only-bolting-plants option, because only a handful of plants would have the potential to flower.

Variation (2): Deep excavation of Iberian starthistle plant roots:

As discussed above, this variation is not further analyzed because rock at the site makes this approach infeasible.

Because all strategies of manual removal of Iberian starthistle fail to meet BLM's obligation to rapidly and reliably address this weed infestation, manual removal alone is not considered a viable alternative. For this reason manual removal alone is not considered further.

4.3 Impacts of Alternative #3: No-Action

Public health and safety: No impact.

Soils: No impact. No ground disturbance.

Vegetation: Continued expansion of Iberian starthistle would continue to displace native vegetation on the public land.

Riparian zones: Iberian starthistle might displace some riparian vegetation if the species continues to expand and if the current level of grazing disturbance continues. It is less likely to successfully compete with perennial riparian vegetation if grazing pressure is reduced.

Wildlife: The spiny mature stages of Iberian starthistle can inhibit wildlife access and feeding. Even skeletal plants can produce the same effect. Because the species is concentrated in drainage areas, it can reduce access to water and riparian forage and browse. The continued expansion of Iberian starthistle on public land would negatively impact wildlife.

Threatened and endangered species: No impact.

Hydrology and water quality: No impact.

Fish and other aquatic organisms: No impact

Recreation: Negligible impact. The user experience might be slightly altered if Iberian starthistle

continued to expand and suppressed other vegetation.

Visual resources: Negligible impact. Continued expansion of Iberian starthistle could further degrade the scenic quality of this stretch of the creek by reducing species diversity and displacing native species. Dead skeletons of IST plants are particularly noticeable, and because of their spines, difficult to walk through. However this area attracts few visitors, and the riparian zone is already degraded and weedy.

Cultural: No impact.

Fire/fuels: Unknown but small impact. The behavior of fires burning with Iberian starthistle as their fuel is unknown. It is also not known which other species/fuels Iberian starthistle is most likely to replace as the weed spreads. However even without control the species is unlikely to occupy much habitat beyond the creek corridors, so its contribution to the overall fuel profile would never be important.

Social/agricultural: Without control of Iberian starthistle on public land, efforts by the Mariposa County Department of Agriculture and CDFA to control this invasive species on county-wide and state-wide basis would be frustrated. The public land would act as a sanctuary for the species, from which it could reinfest adjacent private lands, many of which are used for grazing livestock. Relationships between BLM and Mariposa County, CDFA and the other members of the Southern/Central Sierra Noxious Weed Alliance would be injured.

Non-native weeds: Iberian starthistle would continue to increase on public land, probably having the greatest impact on riparian areas and intermittent drainages. IST would contribute to further degradation of riparian habitat that is already lacking in native species cover. This increase of the weed could affect surrounding private lands by providing a reservoir of Iberian starthistle seed, some of which would be carried off the public land by movement of seed in the creek, or by livestock for instance. The potential to eradicate Iberian starthistle from the state would not be realized, and the species would persist and increase on public land, posing an ongoing threat to both agriculture and wildland ecosystems in California.

4.3 Cumulative Impacts

CDFA and Mariposa County will continue to spray Iberian starthistle on private lands as well as the federal land in the area near Highway 132 in the vicinity of Granite Springs. So some of the effects of this project will be mirrored on nearby private lands.

Because Iberian starthistle control efforts on private lands in the project vicinity by CDFA involve the use of different herbicides, the overall eradication effort will not cause a cumulative application of glyphosate in the watershed.

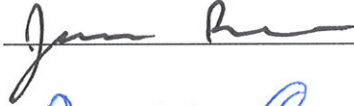

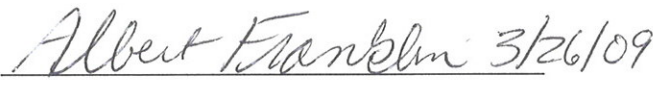
The cumulative impact of spraying IST both on federal land and on private lands in this area will be synergistic in terms of weed control. With a comprehensive program, a property where spraying occurs and the IST plants are killed will not be at risk of reinfestation from propagules from a property where no control is being attempted.

5.0 Agencies and Persons Consulted

Outside agencies contacted

Mariposa County Department of Agriculture
California Department of Food and Agriculture
Lyle Turpin, grazing lessee
Tuolumne Me-Wuk Tribal Council, Tuolumne, CA
Chicken Ranch Rancheria of Me-Wuk, Jamestown, CA
American Indian Council of Mariposa County, Mariposa, CA

5.1 BLM Interdisciplinary Team

		Signature	Date
James Barnes	Archaeologist, NEPA Coordinator		3/31/09
Peggy Cranston	Wildlife biologist/range conservationist		
Al Franklin	Botanist		3/26/09

5.2 Availability of Document and Comment Procedures

The EA, posted on Folsom Field Office's website (www.blm.gov/ca/folsom)

7.0 Finding of No Significant Impact (FONSI)

6.1 Plan Consistency

Based on information in the EA, the project record, and recommendations from BLM specialists, I conclude that this decision is consistent with the 2008 Sierra RMP, the Endangered Species Act; the Native American Religious Freedom Act; other cultural resource management laws and regulations; Executive Order 12898 regarding Environmental Justice; and Executive Order 13212 regarding potential adverse impacts to energy development, production, supply and/or distribution.

6.2 Finding of No Significant Impact

It is my determination that this decision will not result in significant impacts to the quality of the human environment. Anticipated impacts are within the range of impacts addressed by the Sierra RMP. Thus, the project does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement (EIS) is not necessary and will not be prepared. This conclusion is based on my consideration of CEQ's following criteria for significance (40 CFR §1508.27), regarding the context and intensity of the impacts described in the EA and based on my understanding of the project:

- 1) *Impacts can be both beneficial and adverse and a significant effect may exist regardless of the perceived balance of effects.* Potential impacts are minor, including the mortality of target non-native noxious weed, some mortality of nearby non-target plants (native and non-native) affected by overspray, slight increases of competing vegetation when the weed's habitat is cleared.
- 2) *The degree of the impact on public health or safety.* No aspects of the project have been identified as having the potential to significantly and adversely impact public health or safety.
- 3) *Unique characteristics of the geographic area.* This project area is typical of this portion of the Sierra Nevada foothills with characteristic topography, geology and soils.
- 4) *The degree to which the effects on the quality of the human environment are likely to be highly controversial effects.* No anticipated effects have been identified that are scientifically controversial. As a factor for determining within the meaning of 40 C.F.R. § 1508.27(b)(4) whether or not to prepare a detailed environmental impact statement, "controversy" is not equated with "the existence of opposition to a use." *Northwest Environmental Defense Center v. Bonneville Power Administration*, 117 F.3d 1520, 1536 (9th Cir. 1997). "The term 'highly controversial' refers to instances in which 'a substantial dispute exists as to the size, nature, or effect of the major federal action rather than the mere existence of opposition to a use.'" *Hells Canyon Preservation Council v. Jacoby*, 9 F.Supp.2d 1216, 1242 (D. Or. 1998).
- 5) *The degree to which the possible effects on the human environment are likely to be highly uncertain or involve unique or unknown risks.* The analysis does not show that this action would involve any unique or unknown risks.
- 6) *The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.* This action does not establish a precedent for future actions.

7) *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.* The only cumulative impact worth noting is the synergistic effect of the ongoing program of Iberian starthistle eradication from both public and private land, so that the species can be eliminated from the whole geographic region. By comprehensively addressing every occurrence of IST and not leaving behind remnant weed populations with the potential to act as reservoirs of seed, the likelihood of reestablishment of the species is reduced. No significant adverse site specific or cumulative impacts have been identified. The project is consistent with the actions and impacts anticipated in the Sierra MFP, as amended.

8) *The degree to which the action may adversely affect National Historic Register listed or eligible to be listed sites or may cause loss or destruction of significant scientific, cultural or historical resources.* The project area will not adversely affect any sites listed on the National Register of Historic Places or properties known to be eligible.

9) *The degree to which the action may adversely affect ESA listed species or critical habitat.* No ESA listed species (or their habitat) are known to occur in the project area.

10) *Whether the action threatens a violation of environmental protection law or requirements.* There is no indication that this decision will result in actions that will threaten such a violation.

8.0 Administrative Remedies

Administrative remedies may be available to those who believe they will be adversely affected by this decision. Appeals may be made to the Office of Hearings and Appeals, Office of the Secretary, U.S. Department of Interior, Board of Land Appeals (Board) in strict compliance with the regulations in 43 CFR Part 4. Notices of appeal must be filed in this office within 30 days after publication of this decision. If a notice of appeal does not include a statement of reasons, such statement must be filed with this office and the Board within 30 days after the notice of appeal is filed. The notice of appeal and any statement of reasons, written arguments, or briefs must also be served upon the Regional Solicitor, Pacific Southwest Region, U.S. Department of Interior, 2800 Cottage Way, E-1712, Sacramento, CA 95825.

The effective date of this decision (and the date initiating the appeal period) will be the date this notice of decision is posted on BLM's (Folsom Field Office) internet website.

William S. Haigh
Manager, Folsom Field Office

Date

R14E

R15E

R16E

BLM Iberian starthistle project

T2S

T2S

Lake Don Pedro
Tuolumne Co

132

Project Area

Coulterville

49

Mariposa Co
Lake McClure

T3S

T3S

Stanislaus Co

T4S

T4S

Merced Co

R14E

R15E

R16E




US Department of the Interior
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www.ca.blm.gov/folsom
 Date Prepared: 3/27/2009
 Project: ceib_site_hwy_132_area_map_ea

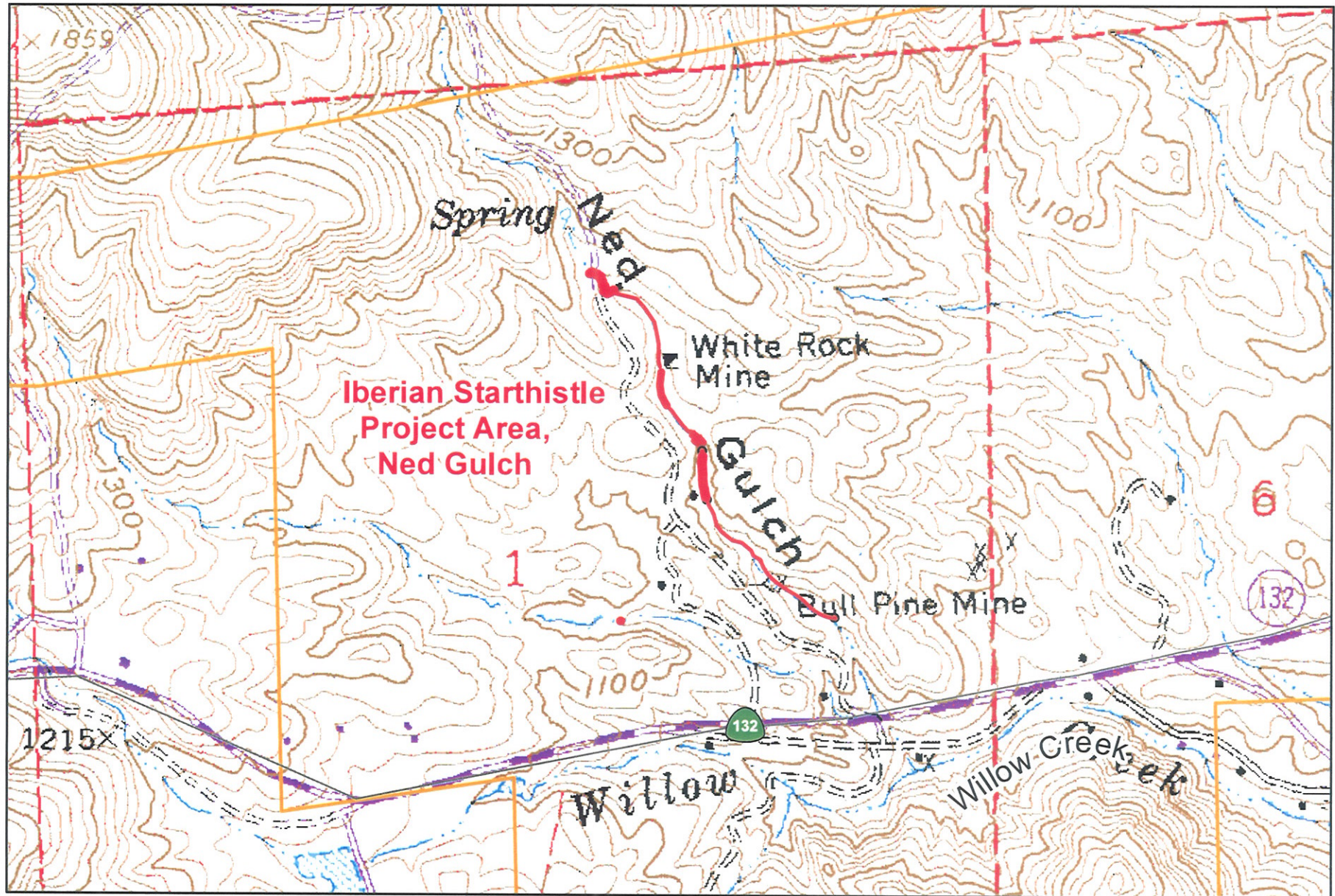
R15E

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 Date Prepared: 7/20/2007
 Project: ceib_site_hwy_132_update_7_07.mxd