



United States Department of the Interior



BUREAU OF LAND MANAGEMENT

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EA Number: CA-180-08-55

Proposed Action: Herbicide use by Amador County Department of Agriculture to control the Class B weed, oblong spurge, on public land, (as part of a county-wide effort).

Location: T. 5N, R. 11E, section 1; T. 5N, R. 12E, secs. 5 and 6; T. 6N, R. 12E, sec. 32.

1.0 Purpose of and Need for Action

1.1 Need for Action Oblong spurge displaces native vegetation. Unlike leafy spurge it is taprooted, but a single plant can produce multiple stems from a single root and can form a near monoculture if left unchecked. The species is increasing its range in the foothills of the Sierra Nevada. The latex of leafy spurge makes it unpalatable to native wildlife. The situation is probably comparable for the latex of oblong spurge although this has not been documented. Amador County is making a concerted effort to control this weed species, with one area of focus being the Mokelumne River canyon. The County is spraying on private land in the canyon. Clearly such an effort can only be successful with the participation of most if not all of the major landowners participating. Amador County has asked BLM to be included in the County spray program. BLM is a member of the Amador County Weed Management Area and as such has agreed to participate with the other agencies and groups involved in the organization to control, and where possible, eradicate noxious weeds in Amador County.

1.2 Conformance with Applicable Land Use Plans

The proposed action is subject to the 2008 Sierra Resource Management Plan (RMP) approved in February 2008. The proposed action is in the river reach North Fork/main Mokelumne River that was designated suitable for wild scenic designation in the Sierra RMP (2008). The reach where the project would occur was classified recreational. Objectives for this area include maintain free flowing character of the river, protect or enhance Outstandingly Remarkable Values (ORVs, i.e., cultural sites and historic sites, scenic qualities and water quality). Because this project controls a non-native invasive species without ground disturbance, and with the river buffered from herbicide use, this project is consistent with these objectives.

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 Appendix B-2 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 Proposed Action

Oblong spurge on public land along Electra Road will be sprayed by Amador County a part of an overall oblong spurge control strategy by the county. The active ingredient glyphosate will be used, but in a formulation that lacks a surfactant, (e.g., Rodeo). Such formulations are approved for aquatic uses because they lack the adjuvant polyoxyethylene amine or POEA, (a component of Roundup Original for instance), that has been found to be damaging to tadpoles (Relyea 2005). The material will be spot sprayed on oblong spurge plants, either from a wand at the end of a hose from a truck-mounted tank, or from a backpack unit. Spot spraying will minimize the amount of herbicide applied. A 2% solution (or less) of Rodeo, or equivalent glyphosate formulation without surfactant, will be applied, either once or twice per growing season as needed. (A 1% solution is the planned application rate. However if a 1% concentration proves to be of limited effectiveness during the first applications, a 2% solution may be tried.) Treatments will occur for one two or three seasons, (2008, 2009, 2010), again depending on the need for follow-up applications.

2.2 Project Design Features

The glyphosate formulation without surfactant, (e.g., Rodeo), will be used due to the proximity of the Mokelumne River 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. 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.

To further reduce the possibility of impacts to aquatic organisms these further measures will be incorporated:

- 1) No spraying will occur within 10 feet of the river's edge.
- 2) No spraying will occur within 10 feet of standing water
- 3) If rain is predicted within 24 hours, no spraying will occur
- 4) Spraying will be conducted as spot spraying of individual plants, reducing the overall amount of chemical applied.
- 5) Hand grubbing of oblong spurge plants will be used to control any plants that occur within 10' of the river or standing water.

To avoid any exposure of the public to spray drift:

The day of spraying the spray areas will be posted with "spraying, do not enter" signs.

To avoid impacts to valley elderberry longhorn beetles:

Elderberry plants will be flagged and oblong spurge plants within 20' of these shrubs will not be sprayed. Spray crews will be trained to observe this buffer and to recognize elderberry shrubs on their own. Hand grubbing of oblong spurge plants will be used to control any plants that occur within 20' of elderberry shrubs.

2.3 No Action

With the no action alternative, oblong spurge would continue to increase on federal land. Of equal importance, efforts to control oblong spurge on private lands in the Mokelumne River canyon would be rendered less effective, because the federal land would act as a continuing source of seed of the species. Amador County Department of Agriculture and our other partners in the Amador County Weed Management Area would be appropriately frustrated that BLM was thwarting a landscape level effort to rid the ecosystem of an exotic invasive species. Our lack of participation might discourage efforts on private lands, causing a positive feedback loop, accelerating the increase of the species in the canyon.

2.4 Alternatives Considered but Eliminated from Detailed Analysis

Complete reliance of manual removal of oblong spurge was considered. There is little published information about the effectiveness of manual removal for this species. The species has a robust taproot that can produce buds from below the root crown. Removal of most of the taproot is probably required to prevent regrowth. The size of this project makes the person-hours required and cost of manual removal impractical. Manual removal also presents possible safety issues. The latex of the plant has been reported to be a skin irritant and a possible cause of eye injury.

Manual removal will be used on a limited basis if oblong spurge plants are found adjacent to elderberry shrubs or within 10' of the river's edge and other open water.

3.0 Affected Environment

Soils: Soil Survey of Amador Area, California maps this portion of the lower Mokelumne River canyon along Electra Road as three units: Rockland; Sierra very rocky coarse sandy loam, moderately deep, 31% to 51% slopes; and Mariposa very rocky loam, 51% to 85% slopes.

Vegetation: The area where the oblong spurge occurs is near the bottom of the Mokelumne River canyon. Above the riparian zone there is oak woodland with a shrub understory, with interior live oak, canyon live oak, black oak, gray pine, California buckeye, toyon, holly leaf redberry, California coffeeberry, storax, poison oak. In riparian areas both along the river and in spring-fed side drainages there is Oregon ash, Fremont cottonwood, white alder, valley oak, red willow, sandbar willow, buttonwillow, blue elderberry, California wild grape, with non-native elements like edible fig, tree-of-heaven, Himalayan blackberry.

Wildlife:

The Mokelumne River corridor represents not only a wide diversity of habitat, but a relatively continuous corridor of riparian and upland wildlife habitat. In the canyon other habitat types represented include mixed conifer forest, montane hardwood, chaparral, oak woodland, and grassland. Each habitat type is important to different species of wildlife. Some wildlife species will use only one habitat type, whereas other species will use multiple habitat types. Elevation is also important in determining which species may occur. Micro habitats such as cliffs, snags, old trees, ponds, seeps, etc. will also influence wildlife use. The following paragraphs contain lists of species that most likely occur in the watershed. It does not give an indication to habitat types, micro-habitats, or elevations where each is most likely found.

Mammals:

The area provides both year-round and winter habitat for deer. Cougars tend to follow the deer as they migrate to and from their summer and winter ranges. Other mammals include black bear, Virginia opossum, various shrew species, broad-footed mole, several bat species, black-tailed jackrabbit, cottontail, western gray squirrel, northern flying squirrel, California ground squirrel, gophers, mice, voles, dusky-footed woodrat, porcupine, coyote, gray fox, ringtail, raccoon, marten, long-tailed weasel, western spotted skunk, river otter, and bobcat.

Birds:

Among the species of birds potentially found here are the great blue heron, mallard, common merganser, turkey vulture, several different raptor species (hawks, eagles, falcons), wild turkey, California quail, killdeer, mourning dove, several species of owl, Anna's hummingbird, acorn woodpecker, northern flicker, yellow-bellied sapsucker, several species of flycatcher, black phoebe, western kingbird, several species of swallow, scrub jay, Steller's jay, American crow, chickadee, plain titmouse, bushtit, red-breasted nuthatch, brown creeper, several species of wren, American dipper, ruby-crowned kinglet, western bluebird, American robin, varied thrush, wren-tit, northern mockingbird, European starling, vireos, several species of warbler, western tanager, black-headed grosbeak, rufous-sided towhee, several sparrow species, dark-eyed junco, red-winged blackbird, western meadowlark, northern oriole, house finch, lesser goldfinch, and evening grosbeak.

Amphibians and Reptiles:

Both the foothill yellow-legged frog and the red-legged frog are known to exist in the Mokelumne watershed, but neither has been found in the project area. Foothill yellow-legged frogs can be found on BLM lands in Esperanza Creek. Other amphibians are the Pacific tree frog, western toad, California newt, California slender salamander, and arboreal salamander. The non-native bullfrog is common.

Common lizards include western fence lizard, Gilbert's skink, and southern alligator lizard. Rinkneck snake, sharp-tailed snake, gopher snake, common king snake, garter snakes, and western rattle snake are the more abundant snakes. Western pond turtle are also quite abundant.

Invertebrates:

Several species of aquatic and terrestrial invertebrates thrive within the watershed. Aquatic invertebrate fauna is diverse and extensive, with many endemic species. Aquatic invertebrates are a major source of food for birds, mammals, amphibians, reptiles, fish, and other invertebrates in both aquatic and terrestrial habitats. Among the terrestrial invertebrates in the watershed is the valley elderberry longhorn beetle. The North Fork Mokelumne near Tiger Creek Reservoir has a fairly significant population of this threatened beetle.

Hydrology and water quality: This project will occur adjacent to the Mokelumne River, one of the major rivers that drains the west slope of the Sierra Nevada Mountains. Because of extensive damming, this river's natural flow cycle has been altered, dampening seasonal variations in flow. Spring flood events that might otherwise scour areas that are now supporting riparian and upland vegetation, no longer occur. The areas that support oblong spurge mostly fall within this region of potential scour if the river retained a natural flow regime.

The first impoundment downstream of the project is Pardee Reservoir. The upstream end of Pardee Reservoir is approximately 2 miles downstream of the project area.

Water quality was found to be high during BLM's evaluation of this segment of the river for suitability for inclusion in the Wild and Scenic River System. In fact BLM found water quality to be one of the outstandingly remarkable values of this segment of the river.

Fisheries: In the Mokelumne River Drainage, native species dominate the fish assemblage, including: Sacramento pike-minnow, Sacramento sucker, California roach, and speckled dace. Rainbow trout, and to a lesser extent the non-native brown trout, represent a small percentage of the total fish.

Recreation: This portion of the Mokelumne River is a popular kayaking site known as the Electra run. Kayakers put in upstream of the public land at the PG&E powerhouse, and they take out downstream of the public land at Middle Bar or at Pardee Reservoir. There is also picnicking and day use of the public land along Electra Road, usually at river's edge.

Visual resources: According to the Sierra Resource Management Plan (2/08), this segment of the Mokelumne River corridor is VRM Class 3.

Cultural: Important archaeological studies were conducted during the 1960s along the Mokelumne River and its tributaries, in the area that would become Camanche Reservoir. Rock shelters, villages, camps, rock art, lithic scatters, and other kinds of prehistoric remains were found here. The studies indicate that hunter-gatherers lived in the “foothill” reaches of the river for thousands of years prior to historic contact in the 1800s. By late prehistory (1500 to 200 years ago) the area’s inhabitants – thought to be the ancestors of the Miwok – were practicing a mode of hunting and gathering typical for the western Sierra. Acorn, deer, and salmon were of chief importance to these people as they made their seasonal migration. Bedrock mortars, lithic scatters, and camp sites have been found on BLM-administered land in rugged sections of the river canyon (the main, north, and middle forks) and elsewhere in the Mokelumne watershed. The finds suggests that these places played a role in the hunter-gatherer seasonal round.

All this began changing by the mid-1800s when Teodocio Yerba received a Mexican land grant named Arroyo Seco which included the Ione and Jackson valleys. After the Gold Rush started in 1848, miners, businessmen, and others arrived in the watershed en masse to settle the area and search for gold. Numerous mining towns were established. Fiddletown, Drytown, Amador City, Sutter Hill, Volcano, Jackson, Ione, Mokelumne Hill, Independence, and Railroad Flat (to name a few) emerged as centers of commerce along major roads. To this day these towns survive; many still boast well-preserved houses, churches, town halls, and business districts built in the 1800s and early 1900s.

A lack of water during the dry season was a problem throughout the watershed and in the southern Mother Lode generally. In response, elaborate systems of ditches, reservoirs, and other water-control works were built to tap abundant water sources at higher elevations in the Sierra.

Despite monumental efforts to control water, placer mining waned in the watershed by the late 1850s (though it has continued in one form or another to this day). Hardrock gold mining took its place as a major industry. Numerous hardrock mines existed within the watershed, including some of the most productive in the Mother Lode. The Gwin (near Paloma) and the Kennedy (near Jackson) are probably the best known. The Penn Mine, located near Campo Seco, produced copper and zinc. Many of the mines on or near BLM were quite small in scale and appear to have seen intermittent, low-capital development over a long period.

The Boston is an exception, not only for its scale but the amount of documentation that exists on the mine. Development here apparently began in the 1870s. A 40-stamp mill was built around 1875. In 1879, the mine was sold to a San Francisco company. In 1880, a 20-stamp mill and assay office were put in. A chlorination plant was in place and operating in 1883. By the early 1890s there was little activity. The mine was reopened in 1895 by another company which added a water-powered hoisting works, a blacksmith shop, a boardinghouse, and a new chlorination plant. In 1898 and 1899, electric lights were installed and the mill was expanded from 20 to 30 stamps. The mine was shut down around 1902 and, in 1912, the mill was destroyed by a fire. Sporadic development occurred under different owners and leasees in the 1920s and 1930s. Visible today are two chlorination works, two mill locations, a schist quarry, mine workings, and various platforms, foundations, and rock retaining walls.

Ranches owned by families of Italian, Portuguese, Chilean, and other immigrants are common in the Sierran foothills, particularly in the Mokelumne River watershed. Some of the ranches are still owned by descendents of the original founding families. BLM’s land base (the residue of the original public domain) contains evidence of this land-use pattern, including some examples of claims that were unsuccessful or short-lived for various reasons. One site found on BLM-administered land near Drytown was first homesteaded by Sebastian Knoble (a native of Germany) during the 1860s and 1870s, and later Gregorio Astorga (a native of Chile) during the 1880s and 1890s. Today, the site

consists of rock walls, terraces, house foundations, introduced trees, a possible cellar, and other residential remains, all typical of a mid- and late 1800s homestead.

Dam construction also affected BLM-administered land in the assessment area. By the late 1890s, the Mokelumne River watershed was being eyed by investors looking to tap its fast-flowing streams for their hydroelectric-power and water-storage potential. The remains of the Blue Lakes and Electra power houses represent hydroelectric power projects built on the Mokelumne River around the turn of the century. These projects had the financial backing of European Prince Andre Poniatowski and San Francisco banker W. H. Crocker.

Fire/fuels: Fuels are typical of the lower foothill belt, with a narrow band of well-watered riparian community at river's edge, and upland communities adjacent. The upland community in the canyon bottom is dominated by brush and herbs, with some oak overstory. Himalayan blackberry is prominent. Because of the steep canyon topography, winds tend to be upstream and uphill during warm/hot summer afternoons, and shift to downstream and downhill in the cool evenings. The steepness of the canyon and the predominance of lighter fuels would permit fires to move rapidly from the canyon bottom to the adjacent ridgetop.

Social/agricultural: BLM grazing lease #04114 includes the project area. The lease includes 237 acres of mostly upland grassland vegetation, and it authorizes 36 AUMs of grazing use. Cattle graze the project area and tend to concentrate near the river as temperatures increase and upland forage dries. A water development now provides water for livestock further up-slope, and a fence to prevent livestock access to the river is under construction.

Non-native weeds: This reach of the Mokelumne River supports a large complement of weeds including yellow starthistle, tree-of-heaven, Scotch broom, Spanish broom, French broom, edible fig, Italian thistle, along with oblong spurge.

Wild and Scenic Rivers: This portion of the Mokelumne River was found to be both eligible and suitable for designation as a wild and scenic river in the Sierra Resource Management Plan (2/08). The reach where the project would occur was recommended for classification as Recreational. This project will not affect to the outstanding and remarkable values of the river (scenic and cultural), free flow or water quality.

4.0 Environmental Effects

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, cultural resources, native American concerns, wetlands and riparian zones, wild and scenic rivers, wilderness, invasive nonnative weeds, and environmental justice.

4.1 Impacts of the Proposed Action and Alternatives

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. For this project spray personnel will observe a 10' buffer around open water, making pond contamination even less likely. Consumption of water from a pond after such a spill event would be extremely rare, even without precautions. 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).

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 oblong spurge plants. Immediately adjacent plants will receive over-spray and some will be damaged or killed. Because the oblong spurge 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 oblong spurge, the effects of the project on the vegetation should not be noticeable by the following growing season.

Riparian zones: Oblong spurge 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 spurge plants, native riparian plants will usually only receive small amounts of overspray, and little mortality is expected. The control of oblong spurge will open up substrate and may allow for some expansion of native riparian species. In some areas vacated by spurge, the expansion of another non-native species like Himalayan blackberry may occur. Overall effects to the riparian zone will be negligible.

Wildlife: Forest Service studies have shown that at typical application rates there is low risk or zero risk to wildlife species from using glyphosate, the active ingredient in Rodeo. Unlike other formulations of glyphosate like Roundup, formulations approved for aquatic use, (e.g., Rodeo), 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 spurge, 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 oblong spurge plants, and that don't disperse when the applicator arrives, are likely to be sprayed.

Although the ecological effects of oblong spurge invasion have not been studied, the impacts of this species are likely to exhibit similarities to the impacts of its close relative, leafy spurge. Leafy spurge has been shown to displace native vegetation. Unlike the native vegetation it displaces, leafy spurge has little value for native wildlife. Because of the latex it produces it is unpalatable to many forms of wildlife. For example elk and even domestic cattle are less likely to graze fields with substantial leafy spurge. So the control of oblong spurge is likely to produce a net benefit for native wildlife species.

Threatened and Endangered species: The only federally listed species suspected to occur in the project area is the valley elderberry longhorn beetle (VELB). Elderberry shrubs, the key habitat element for the species, occur in the project area. Because VELB is closely associated with elderberry shrubs, avoidance of the shrubs with an appropriate buffer should avoid impacts to this species. Spraying will not occur within a 20' buffer around each elderberry shrub.

Hydrology and water quality: This project should have no effect on the hydrology of the Mokelumne River, the stream adjacent to the project area.

Water quality effects should be negligible for several reasons. Mitigation measures include no spraying within 10 feet of water. 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). 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 Extoxnet, 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. (Water potability considerations are discussed under the Social/agricultural heading below.)

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).

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).

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. Visitors 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 oblong spurge 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. 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 did tribal consultation by contacting 6 local Indian groups to ascertain if they had 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.

Fire/fuels: Oblong spurge 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 Mokelumne River canyon.

Social/agricultural: This project will produce minor effects for the grazing lease in the project area. Unlike some other herbicides, glyphosate formulations like Rodeo have no labeled grazing restrictions (except for grazing by lactating dairy cows). Much research has been done on leafy spurge, a serious weed pest of the Pacific Northwest and Rocky Mountain region. Cattle avoid leafy spurge, and the latex in the foliage is toxic to cattle when consumed. Less is known about oblong spurge. Oblong spurge is a close relative of leafy spurge and its latex may have a similar effect. Cattle avoidance of oblong spurge would reduce the chance of their consuming foliage with the herbicide. And if the latex of oblong spurge is indeed toxic to cattle, the reduction of oblong spurge plants on the lease would be of benefit to the grazing lessee.

Pardee Reservoir, an impoundment of the Mokelumne River, forms a part of the drinking water system for the East Bay. It lies downstream of the project area. There is a label restriction for Rodeo herbicide, "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.).....(The Rodeo label is available at: <http://www.cdms.net/LDat/ld4TN010.pdf>) This restriction does not apply to intermittent inadvertent overspray of water in terrestrial use sites."

The restriction would not apply in this instance for several reasons. The upstream end of the Pardee Reservoir is more than 2 miles downstream of the public lands to be sprayed, and the water intake for the Mokelumne Aqueduct is at least 6 miles further downstream. Also any spray that did reach the water would be "inadvertent overspray of water in terrestrial use sites", which is specifically exempted from the label restriction. More importantly, by spot spraying, and staying a minimum of 10' from edge of any water, if any spray reaches water, it should be negligible.

Non-native weeds: This project is specifically designed to control a major weed of the Mokelumne River watershed, oblong spurge. Because the Amador County Department of Agriculture is spraying on private land as well, this project has the potential to be part of an area-wide control of this weed on the north side of the Mokelumne River. Unfortunately Calaveras County is not yet similarly investing in oblong spurge control. Until Calaveras County takes similar action, the watershed will still have populations of oblong spurge that can spread and set back progress made on the Amador County side of the river.

Wild and Scenic Rivers: This portion of the Mokelumne River was found to be both eligible and suitable for designation as a wild and scenic river in the Sierra Resource Management Plan (2/08). Having made this recommendation to Congress, BLM management must conserve the outstandingly remarkable values that made the river suitable for designation. This project will not affect to the outstandingly remarkable values of this river (cultural, scenic and water quality), and it will not impede the free flow of the river. (Cultural and historic sites, scenic qualities and water quality are each addressed under another heading above; i.e., cultural resources, visual resources and social/agricultural respectively.)

4.2 Impacts of the No Action Alternative

Public health and safety: No impact.

Soils: No impact.

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

Riparian zones: Oblong spurge might displace some riparian vegetation at the upper edge of the riparian zone if the species continues to expand. It is less likely to successfully compete in the wetter portions of the riparian zone.

Wildlife: Leafy spurge has been shown to negatively impact wildlife by reducing available forage for wildlife. The latex produced by leafy spurge plants is thought to discourage consumption by many herbivores. Although oblong spurge has not been similarly studied, it produces a similar latex and may be similarly distasteful or toxic to herbivores. If this is the case, the continued expansion of oblong spurge 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 oblong spurge continued to expand and suppressed other vegetation.

Visual resources: Negligible impact in the short term. Continued expansion of oblong spurge could eventually degrade the scenic quality of this stretch of the river by reducing species diversity and displacing native species.

Cultural: No impact.

Fire/fuels: Unknown impact. The behavior of fires burning with oblong spurge as their fuel is unknown. It is also not known which other species/fuels oblong spurge is most likely to replace as the weed spreads.

Social/agricultural: Without control of oblong spurge on public land, efforts by the Amador County Department of Agriculture to control this invasive species on county-wide would be frustrated. The public land would act as a sanctuary for the species, from which it could reinfest adjacent private lands. Because a well-used road and a river run adjacent to the project area, seed of the species could readily be transported long distances as well.

Non-native weeds: Oblong spurge would continue to increase on public land until equilibrium is reached, or a flood event restarts succession by wiping out the current vegetation in this stream reach. This increase of the weed could affect surrounding private lands by providing a reservoir of oblong spurge seed, some of which would be carried off the public land, by the river for instance.

Wild and Scenic Rivers: Continued expansion of oblong spurge could eventually degrade the scenic quality of this stretch of the river by reducing species diversity and displacing native species. This would affect one of the outstandingly remarkable values that made this reach suitable for designation under the Wild and Scenic Rivers Act. After a river reach has been determined to be eligible and suitable, BLM management must conserve the outstandingly remarkable values that made the river suitable for designation.

4.3 Cumulative Impacts

Amador County will spray oblong spurge on private lands as well as the federal land in the Mokelumne River canyon. The cumulative impact of spraying oblong spurge both on federal land and on private lands in the canyon will be synergistic in terms of weed control. With a comprehensive program, an area where spraying occurs and the plants are killed will not be at risk of reinfestation from propagules from an area where no control is being attempted. However the lack of a similar program on the south side of the river in Calaveras County will weaken the overall effort in the watershed.

5.0 Agencies and Persons Consulted

Outside agencies contacted

Amador County Department of Agriculture.
U.S. Fish and Wildlife Service, Sacramento Field Office
Calaveras band of Miwok Indians
Jackson Band of Mi-Wuk Indians/Jackson Rancheria
Buena Vista Rancheria
Ione Band of Miwok Indians, Heritage Cultural Committee
California Valley Miwok Tribe
Sierra Native American Council

5.1 BLM Interdisciplinary Team

		Signature	Date
James Barnes	Archaeologist, NEPA Coordinator		4/25/08
Peggy Cranston	Wildlife biologist		4/25/08
Al Franklin	Botanist		4/23/08
Jeff Horn	Recreation		4/23/08

5.2 Availability of Document and Comment Procedures

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

6.0 References

Relyea, R.A. 2005. The Impact of Insecticides and Herbicides on the Biodiversity and Productivity of Aquatic Communities. *Ecological Applications* 15(2): 618-627.

U.S. Department of Interior Bureau of Land Management (USDI BLM). 2007. Record of Decision, Vegetation Treatments using Herbicides on Bureau of Land Management Lands in 17 Western States, Programmatic Environmental Impact Statement. Reno, NV.

Electra area, Oblong spurge control project

This red line indicates the area in which spot spraying will occur, but only where oblong spurge is actually found.

