United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Mother Lode Field Office
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El Dorado Hills, CA 95762
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Iowa Hill landscape fuels reduction project (CA-180-14-04)
Iowa Hill WUI and Succor Flat project areas
Finding of No Significant Impact
May 2014

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 in the Sierra Resource Management Plan/Final Environmental Impact Statement. The proposed action does not constitute a major federal action having a significant effect on the human environment; therefore, an environmental impact statement 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 associated Environmental Assessment (EA) CA-180-13-31, 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 of the proposed action include vegetation removal and temporary dust and smoke caused by pile burning. However, none of these impacts would be significant at the local level or cumulatively because of the very small scale of the proposed action.

2) The degree of the impact on public health or safety. No aspects of the proposed action have been identified as having the potential to significantly or adversely impact public health or safety. In fact, the proposed action is designed to help protect private property from wildfire, therefore, protecting public health and safety.

3) Unique characteristics of the geographic area. Environmental resources and visual resources are all typical for BLM-administered land within the west-central Sierra Nevada. Overall, implementation of the proposed action will enhance forest health.

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 whether or not to prepare a detailed environmental impact statement within the meaning of 40 C.F.R. § 1508.27(b)(4), "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. Fuels treatment using hand crews, a masticator, and/or prescribed burning within BLM parcels in the west-central Sierra Nevada foothills is not precedent setting.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. No significant cumulative impacts have been identified. The proposed action is consistent with the actions and impacts anticipated in the Sierra Resource Management Plan and the Mother Lode Field Office Fire Management Plan.

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 proposed action will not affect cultural resources listed on or eligible for the National Register of Historic Places and would not cause the loss or destruction of significant scientific, cultural or historical resources.

9) The degree to which the action may adversely affect ESA listed species or critical habitat. No ESA listed species (or their habitat) would be affected by the proposed action.

10) Whether the action threatens a violation of environmental protection law or requirements. There is no indication that the decision to move forward with the proposed action would result in actions that will threaten such a violation.

_____ _____

William S. Haigh Date
Field Manager, Mother Lode Field Office

United States Department of the Interior

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EA Number: CA-180-14-04

Project Name: Iowa Hill Landscape Fuel Reduction Treatments

Location:	Roach Hill	MDM, T 15 N, R 10 E, Sections 14 and 22
	Succor Flat	T 15 N, R 10 E, Sections 23
	Big Dipper Road	T 15 N, R 10 E, Section 34
	Iowa Hill WUI	T 15 N, R 10 E, Sections 28, 32, and 33
	Kings Hill	T 14 N, R 10 E, Section 7

Placer County, CA (see attached project area maps)

Supporting Documentation
CA-180-05-26 Iowa Hill Stewardship EA
CA-180-00-39 Succor Flat-Thinning and Hazard Reduction
CA-180-07-10 Kings Hill Fuel Reduction Project
CA-180-07-09 Iowa Hill WUI
CA-180-98-42 Mechanical Fuel Breaks and Brush Reduction, Programmatic EA

1.0 Purpose of and Need for Action

1.1 Need for Action

The Bureau of Land Management's Mother Lode Field Office (BLM) administers scattered public lands on the Iowa Hill Divide. These lands are managed by the BLM in partnership with members of the Iowa Hill Community Club and The Iowa Hill / Foresthill Fire Safe Council.

Much of this area has either not experienced wildfire or has not been subjected to fuels reduction treatment in many years. The Wildfires that have occurred within the North Fork American River and surrounding drainages have become more difficult and dangerous to manage. Fire effects experienced during these events Such as the Stevens Fire (2004) and the Robbers Fire of 2013 are increasing more undesirable and unnatural due to the current state of the forest ecosystem and lack of fire within the landscape of the Iowa Hill Divide. Shrub stands have aged and now contain a larger proportion of dead fuels, and in many forest stands, understory fuels have increased markedly, creating unhealthy forest conditions and making the probability that the area will experience a catastrophic wildfire more likely. At the same time, the local community has grown. There are now numerous private residences in the area, some of them are in close proximity to BLM parcels containing dense fuels. This area is considered to be within

the wild land-urban interface (WUI) and the local community (Iowa Hill and Colfax) is considered "at risk." Members of the local community and local state and county agencies are concerned about this situation and have been working with the BLM to improve forest health and reduce hazardous fuels within the Iowa Hill Divide.

With this need in mind, the primary purpose of the proposed action is to create healthy forest conditions and reduce the fire danger to several parcels of forested public land within the Iowa Hill community and treat these lands on a landscape level.

Our definition of healthy forest conditions within the project area derives from the findings of long-term US Forest Service research in the montane/mixed conifer forests of the west-central Sierra Nevada. This research is summarized in a report titled *An ecosystem management strategy for Sierran mixed-conifer forests* (North et al. 2009). This report contains key concepts and silvicultural principles that have been incorporated into the proposed action to achieve the goal of creating healthy forest conditions within the project area. Appendix A presents a summary of the research findings in this report.

A key finding is that mixed coniferous forests of this region (including forest types within the Iowa Hill project area) are well adapted to, and perhaps dependent upon, regular low severity, low intensity wildfire. In other words, wildfire was likely an integral part of the lifecycle of western sierran forests. The consequences of decades of suppression have been, the buildup of dead brush, slash, and litter debris in the understory and dense thickets of conifers (especially incense-cedar and ponderosa pine). These conditions are considered unhealthy with many potential downsides, such as loss of ecological diversity, and greater susceptibility to disease/insect infestation. Critically, these conditions are more likely to support a high severity, high intensity fire—such as a crown fire—that could be devastating to the environment, not to mention private property and lives. A key consideration then is how to restore the healthier pre-suppression conditions to the project area. This outcome would have the important effect of increasing the resilience of the forest to future wildfires and reducing the possibility of a high severity, high intensity fire on the Iowa Hill Divide. This is good for the environment ecologically as well as for local residents.

The most basic question is what would this forest look like if fire had been left to play its natural role? There would be far less brush and shrubs, fewer small diameter trees (including thickets of ponderosa pine and incense cedar), and widely spaced large diameter dominant trees of diverse species (sugar pine, Douglas fir, ponderosa pine, incense cedar, black oak, canyon live oak, madrone, etc.). There would also be more diversity in the herbaceous layer. This is the desired future condition we are working toward in the proposed action.

If a fire were to occur in this stand during the normal modern fire season in California, it would likely move into the upper story of the vegetation. The fire effects experienced would include higher temperatures of combustion, longer duration of the temperatures and the impacts to mature trees and a higher mortality rate experienced within mature stands of timber. These fire effects historically were not experienced as often, and these forested landscapes came to rely on a natural fire regime. The proposed treatments would move this stand to a healthier, more resilient condition so if a fire were to occur after treatment, it would just reduce the small

evergreen trees and remove much of the shrub and forb understory—which is what likely occurred historically.

Since the introduction of a fuels program to the Folsom Field Office in the mid 1990's, several fuel reduction or timber stand improvement projects were implemented. Environmental assessments and surveys were completed for individual projects that authorized various specific treatments, but did not authorize all specialized tools or treatments available to the fire management staff. It was also found that several fuels reduction projects are similar in nature when pre and post conditions and impacts were analyzed. During implementation, skills and methods needed to reduce fuel loading remain the same, but the past environmental assessment documentation that authorizes implementation techniques that can occur during project implementation is often limiting. When reducing fuel loading, a congruent technique is not always the most ecologically or financially appropriate over a landscape. Several different treatment skills and techniques used in conjunction with each other is the most effective way to move to desired conditions a crossed a landscape. With the ever changing and uncertain financial environment of the agency it is also imperative to have all the techniques available when implementing fuels reduction projects. The focus of this environmental assessment is to reauthorize past treatments and methods and include more techniques such as mechanical mastication, understory prescribed fire where appropriate.

1.2 Conformance with Applicable Land Use Plans

The proposed action—to improve the health of forests on public land within the Iowa Hill Divide and to make this forest more fire resistant to help protect adjacent private property—is consistent with the Sierra Resource Management Plan, approved in February 2008. The Sierra Resource Management Plan's Record of Decision (pages 15-16) gives BLM the goal of establishing a cost-efficient fire management program commensurate with threats to life, property, public safety, and environmental resources. BLM's objectives for meeting these goals are to 1). reduce the risk of wildfire in WUI communities; 2). reduce the risk of catastrophic wildfire through fuels management; 3). use prescribed fire, mechanical, and biological treatments to reduce fuels and promote ecosystem diversity and resilience, control invasive species, reduce ful hazard, improve wildife habitat, increase water yield, and enhance watersheds. The Mother Lode Field Office Fire Management Plan, approved in March 2011, gives BLM various fire and fuels treatment objectives and strategies for specific lands under BLM's administration. Specific objectives and strategies for the fire management unit, in which the project area is located, are laid out in the plan. The proposed action is consistent with these objectives and strategies.

2.0 Proposed Action and Alternatives

2.1 Proposed Action

Implementation would be carried out by the BLM. The BLM action is a large-scale fuels reduction project focusing on lands previously treated. The proposed work would occur when funding is available during the next several fiscal years, with follow-up maintenance work over the next ten years after the initial funded action.

Proposed Action: This action would occur in two phases. The first phase would change the arrangement of fuels by cutting select vegetation in one of two methods. The first and desired

method of implementation would be the utilization a forestry hand crew. Vegetation would be placed in 6 x 6 foot hand piles. Approximately 50 piles per acre would be constructed. The second method, using a mechanical masticator, chipper, or other similar forestry machinery may also be used where appropriate to rearrange the fuel loading over the selected project area . Methods would be chosen and used solely or jointly based upon ever changing topography and site specific features. A Fuels Management Specialist would determine the specific treatment to use for specific features. The second phase would involve the use of prescribed fire to burn the piles or a forested landscape understory burn in accordance with all applicable BLM and state of California rules, regulations, and policies. This would reduce the fuels. All work would be done by a hand crew (i.e., contracted fuels crew, inmates, Hotshots, etc.) crew would be under the close supervision of BLM's fuel/fire management specialists. The method of implementation used and combination of those methods on the specific
Piece of forested landscape can change by each acre and often changes several times throughout a project area or it found that a different method would be better. The quality and the end product of the treatment depend on where and how techniques are implemented.

The BLM Fuels Management Specialist will pre determine the best treatment for the selected project area but may implement several methods in conjunction with each other to obtain the best ecological outcome during implementation.

During the first phase, dead and decadent stands of whiteleaf manzanita, buckbrush, deerbrush, and other shrubby vegetation would be cut and placed in 6 x 6 foot piles and reduced by the above listed methods. Black and live oaks would be retained regardless of canopy position unless they constitute a potential ladder fuel. Portions of the Independence parcel contain dense stands of volunteer black oak. In these areas, nearly all black oaks less than 8 inches diameter at breast height (DBH) would be cut and placed in burn piles or offered up as woody biomass. Other broadleaf tree species such as madrone, tan oak, and dogwood would be left to create diversity unless they constitute a potential ladder fuel.

Douglas fir, ponderosa pine, incense-cedar, and other conifers less than 12 inches DBH would be cut and placed in burn piles or offered as woody biomass. Some conifers less than 8 inches DBH would be retained to ensure species diversity and a full range of size and age classes would be represented. Large conifers and groups of large conifers would be retained, with strategic clearing of potential ladder fuels around them to give them additional protection and to create some open gaps in the canopy. No conifers or other trees greater than 12 inches DBH would be removed even if they are potential ladder fuels or to decrease overall stand density.

A higher density of tree stems and canopy cover would be retained in the moist drainages, such as along the southern edge of the Kings Hill parcel. Defect trees, snags, and downed logs would be retained for wildlife to the extent feasible. In particular, snags greater than 24 inches DBH provide hiding, denning, nesting, and food storage sites for a variety of wildlife. These large snags would be retained unless to do so would create an unusually unsafe concentration of fuels.

The second phase would involve the use of prescribed fire either to burn the 6 x 6 foot piles, or in areas where appropriate, introduce a low intensity understory prescribed fire in accordance with a BLM-approved burn plan, other BLM policy, and state of California rules and regulations.

This would reduce the fuel loading. If conditions are favorable and necessary safety procedures can be maintained, the prescribed burn would be allowed to "creep" on the forest floor around the piles to emulate a low intensity surface fire. This would potentially reduce the one-hour fuels built up over time within the conifer stands and leave a "mosaic" pattern across the forest floor. During the construction of 6 x 6 foot piles, bark and branches around the basal area of the larger conifers would be reduced by 50 percent, lowering the likelihood that these trees would be killed during low-intensity, low-severity wildfire.

2.2 Project Design Features

All treatment work would be conducted subject to the following stipulations.

1. **Erosion and Sedimentation Control.** Erosion and sedimentation are potential issues affecting drainages within the project area. Indian Creek is a perennial stream that runs through the Independence parcel. This and other drainages have been degraded by previous land use. Mining and timber harvest have left areas without vegetation which has caused some sedimentation in the channel. Under the proposed action, no chippers, masticators, or other heavy equipment would be used. Only hand work would be allowed in selected areas.

2. **Weed Control.** To minimize the potential for introduction or spread of invasive weeds, equipment used for the proposed action would be cleaned prior to entering the area and, where possible, would avoid operating within weed-infested areas, such as stands of Scotch broom. Occurrences of these weed species were primarily found at the edge of the public land and avoidance should be feasible. If small infestations are identified within the project area, these will be pulled and piled for burning. If more weeds are discovered during project implementation, they will be appropriately treated or marked and avoided until a plan is developed.

   Crews will be educated by BLM to use best management practices to prevent weed spread, including cleaning equipment prior to entry into the project area.

3. **Cultural Resources.** Flagging-tape buffers would be established around identified cultural resources. These cultural resources would be protected during project implementation.

4. **Wildlife.** Avoid wood rat nests and large woody debris when creating burn piles. If a potential nest cannot be avoided, check the pile for signs of wildlife before lighting. If nests or dens are found, leave the pile alone. If it must be burned, restack it nearby or give the animal a path to escape from the fire.

5. **Wildlife.** Leave an uncut patch (minimum of 0.25 acres) for every 10 acres harvested, with patches totaling 5 percent of the area. Use leave-trees or large snags as the center for uncut patches. Riparian and other buffers can help to satisfy this goal.

6. **Wildlife.** Retain live trees with existing cavities.

7. **Wildlife.** Avoid damaging existing downed woody debris, especially large (18+ inches) hollow or rotten logs and rotten stumps during all harvesting operations. Leave all existing coarse woody material (more than 6 inches in diameter at the large end).Retain as many snags of all sizes as possible. Particularly, retain all snags 24 inches and greater in diameter at breast height unless to do so would create an unusual unsafe concentration of fuels.

8. **Wildlife.** Retention of coarse woody debris in managed stands should more closely model coarse woody debris found in natural stands. Retain and scatter tops and limbs from 20 percent of the trees harvested.

2.3 No Action

Under the no action alternative, BLM would not do the planned fuels reduction and weed treatments within the project area Fuels would continue to build up, increasing the likelihood of a high severity fire. Ladder fuels could carry wildfire into the tree canopy creating crown fire conditions. These conditions can be devastating to the environment, not to mention lives and property. Without the treatment, even a low intensity surface fire has the potential to move into the canopy of the larger conifers, potentially killing these trees and causing a relatively small fire to intensify and grow into a catastrophic crown fire.

3.0 Affected Environment

The project area is located in the north-central Sierra Nevada. The project area is located on the Iowa Hill Divide in the central foothills/low mountains of the Sierra Nevada. The project area consists of several separate parcels referred.

Vegetation. The Iowa Hill project area was inventoried by BLM botanists in 2012. The dominant vegetation type is mixed conifer Sierrian forest. The mature overstory canopy consists of Ponderosa pine (*Pinus ponderosa*), sugar pine (*Pinus lambertiana*), Douglas fir (*Pseudotsuga menziesii*), incense cedar (*Calocedrus decurrens*) and a few madrone (*Arbutus menziesii*). Understory tree species include young black oak (*Quercus kelloggii*) and canyon live oak *Quercus chrysolepis*). Shrubs consist of whiteleaf manzanita (*Arctostaphylos viscida*), deerbrush (Ceanothus integerrimus), mountain misery (*Chamaebatia foliolosa*) and toyon (*Heteromeles arbutifolia*). There was no habitat found that would support special status plant species.

Wildlife. The vegetation within the two project area parcels provides habitat for a variety of wildlife. Blacktail deer are commonly seen large mammals. There is abundant evidence of black bear, coyote and gray fox. Western gray squirrel, moles, voles, cotton tail rabbit, jackrabbit, mice, and wood rats are common small mammals. Local residents have reported observing mountain lion, bobcat, raccoon, and Virginia opossum.

To date, 103 species of birds have been documented to occur either seasonally or as permanent residents to the Iowa Hill Divide. Wild turkeys can be found. Several species of woodpeckers, including the pileated woodpecker, are present. Wood warblers are commonly seen in spring and early summer. Several birds including American robin, dark-eyed junco, chestnut-backed and black-capped chickadees, Steller's jay, and red-breasted nuthatch are common residents

Several species of reptiles and amphibians are present. Included among the reptiles are the western fence lizard, western skink, side-blotched lizard, Northern Alligator lizard, racer, western rattlesnake, rubber boa and king snake. Among the known amphibians are the California newt, western toad, Pacific tree frog, and the introduced bull frog.

Recreation. The project area is near the boundary of the Tahoe National Forest. In fact, the several parcels are adjacent to the Forest. There are residences on private land in the general area,. The level of recreational use in the project area is quite high. The project areas see s use by hunters and wildlife enthusiasts.

Visual Resources. The BLM manages this area in accordance with class II visual resource management (VRM) standards. The BLM's objective for class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Other. There are several active mining claims within the project area. The BLM is regulating the use of these claims under the federal mining regulations at 43 CFR 3809

4.0 Environmental Effects

The following critical elements have been considered in this environmental assessment and have been determined to be unaffected by the proposal: areas of critical environmental concern, prime/unique farmlands, floodplains, wilderness, and environmental justice.

4.1 Impacts of the Proposed Action and Alternatives

Soil – Air – Water. The proposed action would have negligible short-term negative impacts on atmospheric, water, and soil resources in the project area. Low impact equipment would be operated within the project area. The proposed action would not have more than a negligible impact on soils and water quality. Cutting and burning of vegetation, as proposed, would create some dust and smoke, but again dust and smoke created by the proposed action is small and not enough to seriously affect air quality. All applicable rules and regulations would be followed.

Vegetation. The BLM botanist analyzed the impacts of the proposed action on botanical/vegetation resources, especially special status plants. The analysis is designed to help BLM meet its obligations under the Endangered Species Act and other authorities and BLM policies. The botanist recommended that the proposed action would not affect threatened and endangered plants or BLM sensitive plants.

Project area plant communities including riparian zones along Indian creek and mixed conifer forests are adapted to periodic wildfire. The proposed treatments would mimic the effects of a low intensity wildfire. The project area has experienced natural wildfire events in the past (as well as broadcast burning) and has recovered after the removal of shrubs and other understory vegetation. Likewise, the common woody species (e.g., deerbrush, small black oak, whiteleaf

manzanita, etc.) that would be cut in the course of the proposed action would reestablish themselves within the project area over time.

Wildlife. The BLM wildlife biologist analyzed the impacts of the proposed action on wildlife, especially on special status wildlife. Her analysis was designed to help BLM meet its obligations under the Endangered Species Act and other authorities and BLM policies. The biologist recommended that the proposed action would not affect threatened and endangered wildlife or other BLM special status wildlife.

While fuels treatments can decrease the risk of catastrophic fire, they do not provide the ecosystem benefits of low intensity low severity fire, and they alter habitat needed by wildlife. In general, fire-dependent species, species preferring open habitats, and species that are associated with early successional vegetation or that consume seeds and fruit appear to benefit from mechanical fuel reduction activities. Increasing understory light for shrub patch development can increase habitat for some small mammals and birds. In contrast, species that prefer closed-canopy forests or dense understory, and species closely associated with those habitat elements that may be removed or consumed by fuel reductions, would likely be negatively affected by fuel reductions. Some habitat loss may persist for only a few months or a few years, such as the loss of shrubby understory vegetation which can recover quickly. The loss of large-diameter snags and down wood, which are important habitat elements for many wildlife and invertebrate species, may take decades to recover and thus represent some of the most important habitat elements to conserve during fuel reduction treatments. Retention of snags is addressed in the proposed action. Downed wood retention is addressed in project design features 7 and 8. These measures would reduce this impact.

Overall, direct mortality of wildlife owing to crushing from heavy equipment during fuel reduction is considered to be low, but this is mostly based on anecdotal information. It is believed that most species are able to find refuge microsites (e.g., inside burrows or under surface objects) or move away from approaching equipment. However, spring-season thinning during the breeding season may result in mortality of ground- and shrub-nesting bird nestlings and species living within litter such as small mammals, reptiles, amphibians, and invertebrates.

Black bear. By volume, about 25 percent of black bear diet can consist of insects (mainly ants and yellowjackets) obtained primarily from down logs. A decrease in down wood would result in fewer ants and yellowjacket nests available to black bears. Project design features 7 and 8 address the retention of coarse woody material. Fuels reduction would likely increase the amount of grasses and berries used by black bears for foraging.

Deer. The proposed fuels reduction strategy would increase forage quantity and quality for deer. However, escape cover for mule deer, and other animals that need high shrub cover to avoid predators would be reduced. Project design feature 5 which calls for the retention of uncut patches of vegetation would reduce the impacts of less escape cover.

Small Mammals. Shrubs, down wood, and snags provide important cover from predators thus the loss of these habitat elements may have negative consequences for some small mammal species. The strategy to be implemented, along with project design features 7 and 8, address snag and

down wood retention and would reduce this impact. Small mammal species that need high shrub cover to avoid predators may be negatively affected by shrub removal for the first few years post-treatment, but then exceed pretreatment population levels when shrubs recover and food sources are high from increased light, herbaceous growth, and seed production. Project design feature 5 that retains patches of uncut vegetation would reduce the impacts of shrub removal. However, other species prefer open habitat conditions and may benefit from the food resources provided by plentiful grasses and forbs that may establish after fuel reduction. Some species of small mammals prefer high canopy closure, such as northern flying squirrel, and thus may be adversely affected by thinning treatments. Thinned stands would likely be poor bushy tailed woodrat habitat due to their association with abundant large snags, mistletoe brooms and soft log cover. Project design feature 8 that addresses retention of pre-harvest coarse woody material and the proposed action which addresses retention of snags will reduce these impacts.

Bats. Several species of bats roost under the bark of tall, large-diameter trees or in cavities of large snags. If large-diameter snags and trees are protected during fuel reduction as proposed, it is likely that fuels reduction may have minimal or even positive effects on bat populations. Retention of large trees and snags is addressed in the proposed action and project design features.

Birds. Fuels reduction conducted during the nesting season is more likely to result in high mortality of nestlings, especially for species nesting on the ground and in shrubs and small trees. Fuels reduction prior to the nesting season is likely to reduce nesting habitat for ground- and shrub-nesting species. At the population level, the proposed project would not have a measurable negative effect on migratory bird populations. This is in part because the project is relatively small compared to the amount of mixed conifer forest within the field office boundary. The impact is further reduced by project design feature 5 which leaves patches of uncut vegetation.

Bird responses to fuels reduction are dependent on the species and other factors. Some bird species prefer early successional and open habitats, and these species are likely to increase in abundance after fuel reduction. In contrast, some bird species may be less abundant after fuel reduction. Hurteau et. al (2008) found that mountain chickadee and yellow-rumped warbler were particularly sensitive to thinning treatment in his study at the Southwestern Plateau. Removal of large trees or snags would likely affect species nesting in tree canopies and cavities of snags or live tree boles. Recruitment of large snags for cavity nesters may take decades or longer, depending on existing stand conditions. The proposed action which addresses the retention of large trees and snags would reduce these impacts. Further, project design feature 6 that addresses retention of live trees with cavities would reduce these impacts.

Cavity-nesting birds. If fuel treatments involve removing or eliminating snags, then a net loss of nesting habitat for primary and secondary cavity-nesting birds might be expected for many years. The majority of research studies report that fuel treatments result in a decrease in populations of cavity nesters owing to loss of dead trees used for nesting and roosting. The proposed action which addresses the retention of large trees and snags would reduce these impacts. Further, project design feature 6 that addresses retention of live trees with cavities would reduce these impacts.

Raptors. The more open understory created by fuel reduction may be advantageous to some species of hawks and owls that prey on small mammals and birds in open forests and small clearings. Prey species that have less cover are more easily captured, and some prey species prefer open forests (for example, deer mice). However, some raptor species and some small mammals and avian prey prefer closed canopy forests and thus may avoid stands that have been treated to reduce fuels. Raptor species that prefer closed canopy forest, such as California spotted owl and northern goshawk, are not present in the project area. The removal of trees with dwarf mistletoe brooms during thinning treatments would likely be detrimental to wildlife species that nest in mistletoe brooms, including great horned owl, Cooper's hawk, and red-tailed hawk. Retention of defect trees which is addressed in the proposed action would reduce this impact.

Amphibians. A few amphibians are strictly aquatic, but most use upland habitats at various times during the year, and a few species are strictly terrestrial. Upland habitat use by forest amphibians largely depends on the availability of moist duff and litter and rotting down wood. Amphibian response to reducing canopy cover would likely be unfavorable because of the warmer and drier conditions created in the understory vegetation, down wood, litter, and soil. Most terrestrial salamanders require moist soils or decomposing wood to maintain water balance, and dry conditions usually result in suppressed populations. Project design features 7 and 8 that address retention of downed wood would reduce this impact. Anurans (frogs and toads) may be less affected by changes in environmental conditions associated with the proposed fuel reduction project because of their tendency to travel at night and during rain events, their greater vagility than salamanders, and their close association with wetlands. Still, species that frequently occupy terrestrial habitats such as many salamanders, boreal toads, and tree frogs may be killed during fuel treatments or find post-treatment conditions unsuitable. These negative effects would be expected to be short-term. The direct mortality of amphibians during fuels reduction treatment is not anticipated to be high. Fuels reduction treatments may contribute fine sediment to streams because of increased surface runoff. Sedimentation causes reduced survivorship of eggs and tadpoles of some stream-breeding amphibians that lay their eggs and rear tadpoles under rocks or within interstitial spaces in the substratum. Project design feature 1 that establishes erosion and sedimentation controls to reduce this impact.

Reptiles. James and M'Closkey (2003) found that the removal of dead trees (standing and prone) during fuels treatment on the Colorado Plateau may limit the local distribution, abundance, and diversity of lizards, which include dead trees in their microhabitat for shelter, perching, foraging, courting, and defending territories. Removal of dead trees could seriously affect the local abundance and diversity of lizard species, which spend substantial time in this microhabitat. Project design features 7 and 8 address the retention of coarse woody debris, and the proposed action addresses retention of snags. The retention of snags and coarse woody debris would reduce these impacts.

Coarse Woody Debris. One of the key differences between biomass removal and a traditional timber harvest is the reduction of dead wood on the forest floor. Besides providing wildlife habitat, dead wood serves as a seedbed for regeneration, releases nutrients back into the soil and forest, decreases runoff and erosion, facilitates nitrogen fixation, and stores forest carbon.

Butts and McComb (2000) found in their study site in western Oregon that coarse woody debris reductions associated with thinning of stands may negatively impact salamanders and shrews. The abundance of ensatina and clouded salamanders increased with the volume of coarse woody debris. In addition, the probability of encountering either ensatina or Trowbridge's shrew increased with cover of coarse woody debris on the forest floor. The study suggests that current management guidelines for coarse woody debris retention may not provide adequate habitat for forest-floor vertebrates that depend on this component of the habitat. The authors suggest that the retention of coarse woody debris in managed stands should more closely model coarse woody debris found in natural stands, and thus recommend coarse woody debris retention in the range of 100-300 m3/hectare. This is more likely to provide coarse woody debris for terrestrial salamanders.

In three regions (West, North and East) of south and central Sweden, Gunnarson et. al. (2004) studied short-term effects of slash removal on species richness and abundance of beetles in coniferous and mixed forests. The study concluded that extensive slash removal leads to impoverished species richness of beetles at a local scale. Slash heaps left on site may provide important refuges for ground-active beetles. Moreover, the results support the general theory that microhabitat structure affects arthropod abundance and diversity. Project design features 7 and 8 that address the retention of coarse woody debris would reduce these impacts.

Cultural Resources. In the past BLM archaeologists have conducted cultural resource studies for the project areas to determine whether significant cultural resources could be affected by the proposed action. The study includes a background records search and intensive field inventories. In some cases, Native American consultation was attempted. The studies were designed to help BLM meet its obligations under Section 106 of the Historic Preservation Act. All cultural resources found within the project areas that could be affected by the proposed action would be flagged for avoidance. In other words, no cultural resources would be affected by the proposed action. It is anticipated that the proposed actions would not affect significant cultural resources. Consultation with Native Americans is occurring as this EA is put out for public review. All Native American input will be carefully considered. We do not anticipate that any places of traditional religious and cultural significance to Native Americans would be affected. If we do identify such places we will work with the affected Native Americans to modify the proposed action to avoid negative effects. Project design feature 3 addresses cultural resource protection.

Recreation. The proposed action could have negligible short-term negative impacts on recreational use. Hunters and motorists on designated routes might be inconvenienced temporarily during project implementation due to the noise and the dust caused by cutting and chipping fuels, and the use of the roads in the area by project-related vehicles. Recreationists would continue to use the project area after the proposed action is implemented with no additional inconvenience.

Visual Resources. The project area is near the North Fork of the American River Wild and Scenic section. The proposed project would have not have a impact on visual resources. Vegetation would be removed from the understory of timber stands only. Some might consider this an improvement to the scenery. Most importantly, the proposed action would be consistent

with BLM's VRM class II and III management objective under the 2008 Sierra RMP, which is to retain the existing character of the landscape.

4.2 Impacts of the No Action Alternative

There would be no direct impacts to environmental resources, such as atmospheric, soil, water, biological, and cultural resources. Though highly variable and difficult to predict with certainty, not implementing the proposed action could lead to detrimental impacts to forest health, firefighting efforts, and adjacent private properties. If a fire were to occur within the project area during the usual California fire season, it would likely move into the upper story—a crown fire—burning virtually all the trees and vegetation within the project area. By doing the proposed treatment, we can move this stand to a healthier, more resilient condition so if a fire were to occur after treatment, it would just kill the small evergreens trees and remove much of the shrub and forb understory—which is what likely occurred historically.

4.3 Cumulative Impacts

Negative cumulative impacts on the larger watershed scale are not anticipated. The proposed action would have negligible negative impacts on commonplace plants and wildlife. The current condition of the vegetation has been influenced by decades of wildfire suppression. Other than prescribed fire (or an uncontrolled wildfire), which has been removed from further consideration in this EA for a variety of reasons (refer to Section 2.4), there is not at present a better way to reduce dense understory vegetation that would have been reduced by wildfire in the past, before fire suppression was practiced. Prescribed burning is severely limited by safety and air quality concerns, especially in the wildland urban interface. The number of homes in close proximity to the project area would make burning here problematic. The proposed action is expected to have beneficial cumulative impact on wildfire suppression in the area, as long as BLM maintains the treatment area.

With respect to atmospheric, soil, and water resources, negative cumulative impacts on the watershed scale are not anticipated. The project design features would greatly limit the amount of potential erosion of sediments into the drainages/tributaries of the South Yuba River. The BLM has not recently proposed any projects of this scope on the San Juan Ridge within the South Yuba River watershed. Nothing like this is planned in the foreseeable future.

5.0 Agencies and Persons Consulted

5.1 Authors

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5.2 BLM Interdisciplinary Team/Reviewers:

/s/ James Barnes	*4/25/14*
NEPA Coordinator/Archaeologist	Date
/s/ Gerald Martinez	*4/25/14*
Fuels Specialist	Date
/s/ Peggy Cranston	*4/22/14*
Wildlife Biologist	Date
/s/ Beth Brenneman	*4/22/14*
Botanist	Date
/s/ Jeff Horn	*4/23/14*
Outdoor Recreation Planner/VRM Specialist	Date

5.3 Availability of Document and Comment Procedures

This EA will be posted on Mother Lode Field Office's website (www.blm.gov/ca/motherlode) under NEPA and will be available for a 15-day public review period. The EA is also available by mail upon request during this 15-day public review period. Comments should be sent to James Barnes at Bureau of Land Management, Mother Lode Field Office, 5152 Hillsdale Circle, El Dorado Hills, California 95762 or emailed to jjbarnes@blm.gov.

5.4 References Cited and Sources of Information

Butts, S.R., and W.C. McComb
2000 Association of forest-floor vertebrates with coarse woody debris in managed forests of western Oregon. *J. Wildl. Manage* 64: 95-104.

Cal Fire and Placer County Resource Conservation District.
2010 Forestland Steward Summer 2010. California Forest Stewardship Program. 12 pp. (Some of the wildlife project design feature ideas came from this publication.)

Evans, A.M., R.T. Perschel, and B.A. Kittler
2010 Revised assessment of biomass harvesting and retention guidelines. Forest Guild, Santa Fe, New Mexico. 36 pp. (Some of the wildlife project design feature ideas came from this publication.)

Gunnarson, B., K. Nitterus, and P. Wirdenas
2004 Effects of logging residue removal on ground-active beetles in temperate forests. *Forest Ecol. and Manage* 201: 229-239.

Hurteau, S.R., T.D. Sisk, W.M. Block, and B.G. Dickson
2008 Fuel-reduction treatment effects on avian community structure and diversity. *J. Wildl. Manage* 72: 1168-1174.

James, S.E., and R.E. M'Closkey
2003 Short communication. Lizard microhabitat and fire fuel management. *Biological Conservation* 114: 375-383.

North, M., P. Stine, K. O'Hara, W. Zielinski, and S. Stephens
2009 *An ecosystem management strategy for Sierran mixed-conifer forests*. Gen. Tech. Rep. PSW-GTR-220. US Department of Agriculture, Forest Service, Pacific Southwest Research Station, Albany, CA. 49 pp.

Pilliod, D.S., E.L. Bull, J.L. Hayes, and B.C. Wales
2006 *Wildlife and invertebrate response to fuel reduction treatments in dry coniferous forests of the western United States: a synthesis*. Gen. Tech. Rep. RMRS-GTR-173. U.S. Forest Service, Rocky Mountain Research Station, Fort Collins, CO. 34 pp. (Much of the wildlife impact section came from this publication.)

Raven, P.H. and D.I. Axelrod
1978 *Origin and relationships of the California flora*. University of California Publications in Botany Vol. 72. University of California Press.

Appendix A

Silvicultural Prescription for Sierran Mixed-Confier/Lower Montane Forest

A.1 Background and the Importance of Fire

Our definition of healthy forest conditions within the project area draws heavily from the research of North et al. (2009) in the western Sierra Nevada. Their recent report titled *An ecosystem management strategy for Sierran mixed-conifer forests* (North et al. 2009) contains key concepts and silvicultural principles that we feel can be incorporated into the proposed action to achieve the goal of creating a healthy forest conditions within the project area.

Chief among these concepts is the importance of wildfire. North et al (2009) explains that:

> Fire plays a pivotal role in reshaping and maintaining mixed-conifer ecosystems. Fire was once very common in most of the western Sierra and has been a primary force shaping the structure, composition, and function of mixed-conifer forests. … [Most of the fires were of low intensity and returned at frequent intervals.] The main effect of low-intensity fire is its reduction of natural and human-created (i.e., resulting from management activities) fuels, litter, shrub cover, and small trees. These reductions open growing space, provide a flush of soil nutrients, and increase the diversity of plants and invertebrates. By reducing canopy cover, fire also increases habitat and microclimate heterogeneity at site, stand, and landscape levels [North et al. 2009:5-6].
>
> Forest fuels are usually assessed in three general categories: surface, ladder, and canopy bulk density. Fuel treatments often focus on ladder fuels (generally defined to be variably sized understory trees that provide vertical continuity of fuels from the forest floor to the crowns of overstory trees.) Some studies and models, however, suggest a crown fire entering a stand is rarely sustained (i.e., sustained only under extreme weather conditions) if understory fuels are too sparse to generate sufficient radiant and convective heat. [North et al. 2009:3].
>
> By itself, prescribed fire is difficult to apply in some forests owing to fuel accumulations, changes in stand structure, and operational limitations on its use. Mechanical treatments can be effective tools to modify stand structure and influence subsequent fire severity and extent and are often a required first treatment in forests containing excessive fuel loads. [North et al. 2009:6-7]
>
> Prescribed fire is generally implemented very carefully, killing only the smaller size class trees. In some cases, it is ineffective for restoring resilience, at least in the first pass. For example, prescribed fire may not kill many of the larger ladder-fuel or co-dominant true fir trees that have grown in with fire suppression. In many stands, mechanical thinning followed by prescribed fire may be necessary to achieve forest resilience much faster than with prescribed fire alone. [North et al. 2009:7]
>
> Some forests cannot be prescription burned, at least as an initial treatment, because of air quality regulations, increasing wildland home construction, and limited budgets. Yet restoration of these forests still depends on modifying fuels because it reduces wildfire intensity when a fire does occur and can produce stand conditions that simulate **some** of fire's ecological effects. [North et al. 2009:7]

One measure of resilience is that fire disturbance produces mortality patterns consistent with the dynamics under which the forest evolved. Mixed-conifer resilience might be best ensured by (1) reducing fuels such that if the forest burned, the fire would most likely be a low severity surface and (2) producing a forest structure that keeps insect and pathogen

mortality at low, chronic levels. Where intermediate-size trees are abundant, they may present a fire and fuels risk, especially when live crowns are continuous to the forest floor (North et al. 2009:v).

Intermediate-size trees can contribute to overly dense stands that are moisture stressed and at risk of bark beetle attacks:

> In addition to ladder and surface fuels, managers have been concerned with reducing canopy bulk density in DFPZs and the defense zone of wildland urban interfaces (WUI). Overstory trees are commonly removed, and residual trees are evenly spaced to increase crown separation. The efficacy of canopy bulk density reduction in modifying fire behavior is largely a function of weather conditions. Research has suggested there is often limited reduction in crown fire potential through overstory thinning alone, without also treating surface fuels. [North et al. 2009:4]
>
> A concern with the widespread use of canopy bulk density thinning in defensible fuel profile and defense zones is the ecological effects of the regular tree spacing. In the Sierra Nevada, historical data, narratives, and reconstruction studies indicate mixed conifer forests were highly clustered with groups of trees separated by sparsely treed or open gap conditions. This clustering can be important for regenerating shade-intolerant pine, increasing plant diversity and shrub cover moderating surface and canopy microclimate conditions within the tree cluster and providing a variety of microhabitat conditions for birds and small mammals. [North et al. 2009:4]

A.2 Importance of Stand Heterogeneity and Density

Recent studies have shown that spatial heterogeneity was a key feature in forest resiliency and characteristic of frequent fire's effect on mixed-conifer forests. Fuel treatments that produce uniform tree spacing reduce this ecologically important spatial heterogeneity. North et al. (2009) explains that:

> Horizontal heterogeneity, however, used to be relatively common in Sierran mixed-conifer forests [due to logging/reforestation practices]. All of the Sierran reconstruction studies suggest mixed-conifer forests, under an active fire regime, had a naturally clumped distribution containing a variety of size and age classes. [North et al. 2009:15]
>
> At the stand level, vertical heterogeneity can still be provided by separating groups of trees by their canopy strata. For example, a group of intermediate-size trees that could serve as ladder fuels might be thinned or removed if they are growing under large overstory trees. The same size trees in a discrete group, however, might be lightly thinned to accelerate residual tree growth or left alone if the group does not present a ladder fuel hazard for large, overstory trees. [North et al. 2009:15-16]
>
> To increase horizontal heterogeneity, we suggest using microtopography as a template. Wetter areas, such as seeps, concave pockets, and cold air drainages, may have burned less frequently or at lower intensity. Limiting thinning to ladder fuels in these areas is suggested because with their potentially higher productivity and cooler microclimate, they can support greater stem densities, higher canopy cover, and reduced fire effects. A concern with current uniform fuel reduction is that these microsite habitats associated with sensitive species would be eliminated. Surface fuel loads at these microsites should still be reduced to lower their vulnerability to high-intensity fire.
>
> In contrast, upslope areas, where soils may be shallower and drier and where fire can burn with greater intensity, historically had lower stem densities and canopy cover. On these sites, thinning might reduce the density of small or, where appropriate, intermediate trees and ladder and surface fuels toward a more open condition. In some circumstances this thinning may reduce water stress,

> accelerating the development of large residual trees. Within a stand, varying stem density according to potential fire intensity effects on stand structure would create horizontal heterogeneity. [North et al. 2009:16-18]

> Historical forests can provide a better understanding of the ecological processes that have shaped mixed-conifer forest and the habitat conditions to which wildlife have adapted. All reconstruction studies, old forest survey data sets, and 19th-century photographs suggest that frequently burned forests had very low tree densities. … Studies reconstructing pre-European conditions all indicate that forests had a greater percentage of pine, a clustered pattern with highly variable canopy cover, and a high percentage of the growing stock in more fire resistant, large-diameter classes. … What these reconstructions do provide is inference about the cumulative process effects of fire, insects, pathogens, wind, and forest dynamics on stand structure and composition, producing forests resilient to most disturbances, including wildfire. … [Modeling] found a low-density forest dominated by large pines was most resilient to wildfire, sequestered the most carbon, and had the lowest carbon dioxide (CO2) emissions and thus contributed less to global warming. An analysis of carbon emissions and storage from different fuel treatments, found understory thinning followed by prescribed fire produced the greatest reduction in potential wildfire severity without severely reducing carbon stocks. [North et al. 2009:9].

> In fire-suppressed forests, shrubs are often shaded out, reducing their size, abundance, and fruit and seed production in low-light forest understories. Anecdotal narratives, a forest reconstruction, and a few early plot maps suggest shrub cover in active-fire conditions might have been much higher than in current forests, mostly owing to large shrub patches that occupied some of the gaps between tree clusters. [North et al. 2009:12]

> Studies in the Sierra Nevada and Klamath Mountains found that mixed-conifer structure and composition varied by fire patterns that were controlled by landscape physiographic features. Fire intensity, and consequently a more open forest condition, increased with higher slope positions and more southwesterly aspects. … Cumulatively these studies suggest that forest landscapes varied depending on what structural conditions would be produced by topography's influence on fire frequency and intensity. [North et al. 2009:19]

A.3 Silvicultural Strategy

North et al. (2009) asserts that a new silviculture for Sierran mixed-conifer forest that

> balances ecological restoration and wildlife habitat with fuel reduction can meet multiple forest objectives. By necessity, recent Sierran silviculture has first been focused on reducing fire severity through fuel reduction. For many reasons, including maintaining or restoring resilient forests, public safety, and property loss, fuel reduction remains a priority. We suggest that , with some modification, wildlife and ecological objectives can also be met. [North et. al. 2009:22]

> Diameter-limit prescriptions applied equally to all species will not remedy the significant deficit of hardwoods and pines in current forests. Prescriptions that differ by species can retain hardwoods, which are important for wildlife, and favor pines that can increase the forest's fire resilience. Given their current scarcity in many locations, there are few instances that warrant cutting either hardwoods or pines in mixed-conifer forests. [Id.]

In general, leaving pine and thinning white fir, Douglas-fir, and incense-cedar will help restore historical species composition and increase the forest's fire resilience. There are times, however, where removing pine can reduce fuels, decrease the risk of drought or insect induced mortality, and accelerate the growth of the residual pine trees.

> We suggest creating landscape heterogeneity in the Sierra Nevada by mimicking the forest conditions that would be created by the fire behavior and return interval associated with differences in slope position, aspect, and slope steepness. In general, stem density and canopy cover would be highest in drainages and riparian areas, and then decrease over the midslope and become lowest near and on ridgetops. Stem density and canopy cover in all three areas would be higher on northeast aspects compared to southwest. Stand density would also vary with slope becoming more open as slopes steepen. [North et al. 2009:20]

Locating gaps in areas with thinner soils or lower productivity may be logical to foster lower canopy cover since these areas historically supported lower tree densities and fuel loads. In the forest matrix between tree groups and gaps, frequent-fire forests generally consisted of widely spaced, large trees, most of which were pines. The relative proportion of these conditions (i.e., low density, dispersed large trees, and large and small gaps and tree groups) and their composition could be varied depending on existing forest conditions and topographic position.

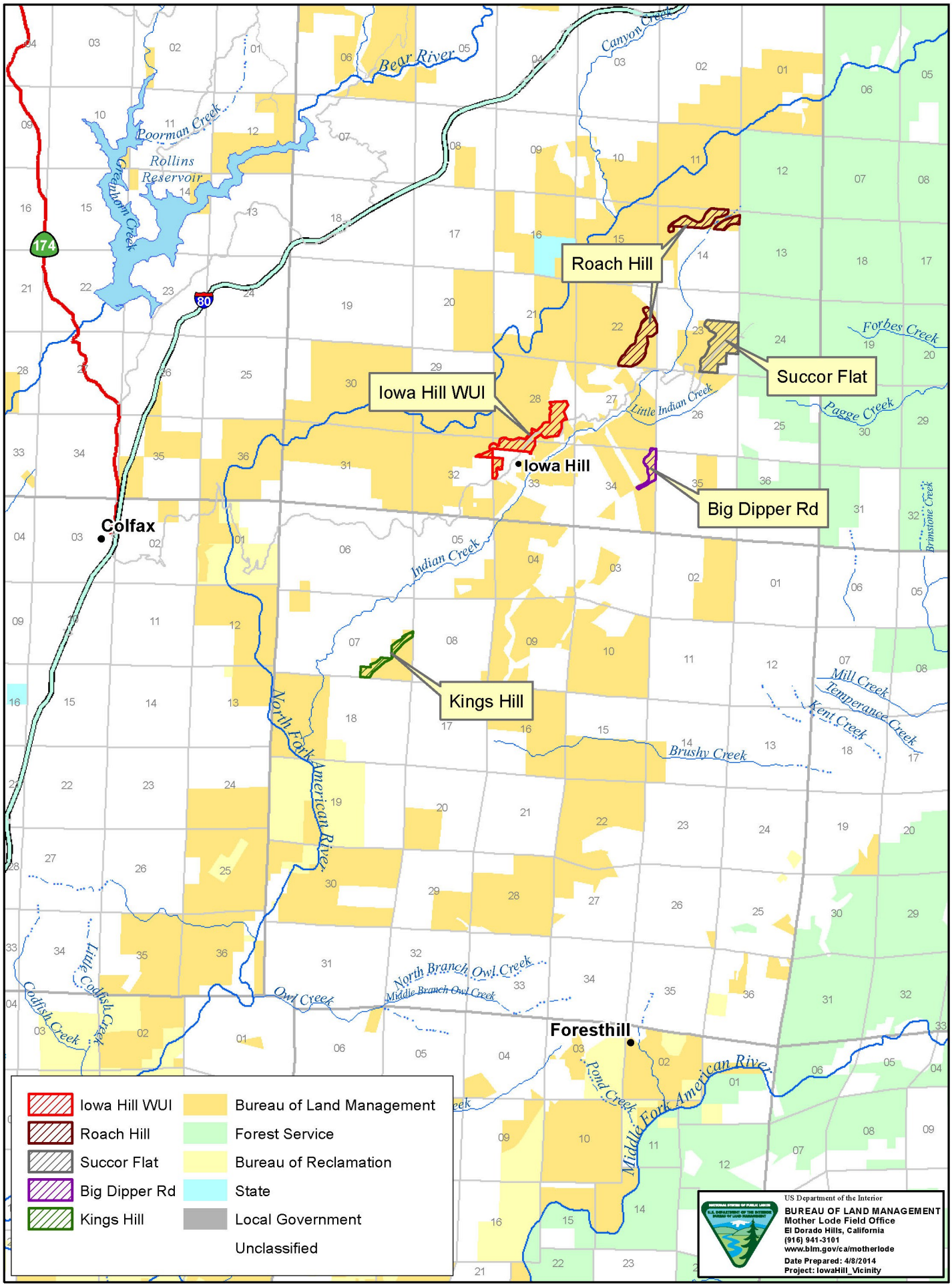
> The proposed silvicultural approach is a multiaged-stand strategy driven by the need for wildlife habitat, fire-resistant stand structures, and restoration of stand and landscape patterns similar to active-fire conditions in mixed-conifer forests. Although we use the term multiage, we are most interested in size and structure, and their associated ecological attributes. Multiaged stands are a flexible means of including variable stand structures with two or more age classes and integrating existing stand structures into silvicultural prescriptions. [North et al. 2009:22]

> Clusters of intermediate to large trees (i.e., >20 inches diameter at breast height [DBH]) are sometimes marked for thinning with the belief that they are overstocked and thinning would reduce moisture stress. Some evidence, however, suggests these groups of large trees may not be moisture stressed by within-group competition…. Reconstructions of Sierran forests with active fire regimes have consistently found large trees in groups. These groups, however, can be at risk if intermediate and small trees grow within the large tree groups. Thinning these small and intermediate trees will reduce fire laddering. [North et al. 2009:23-24]

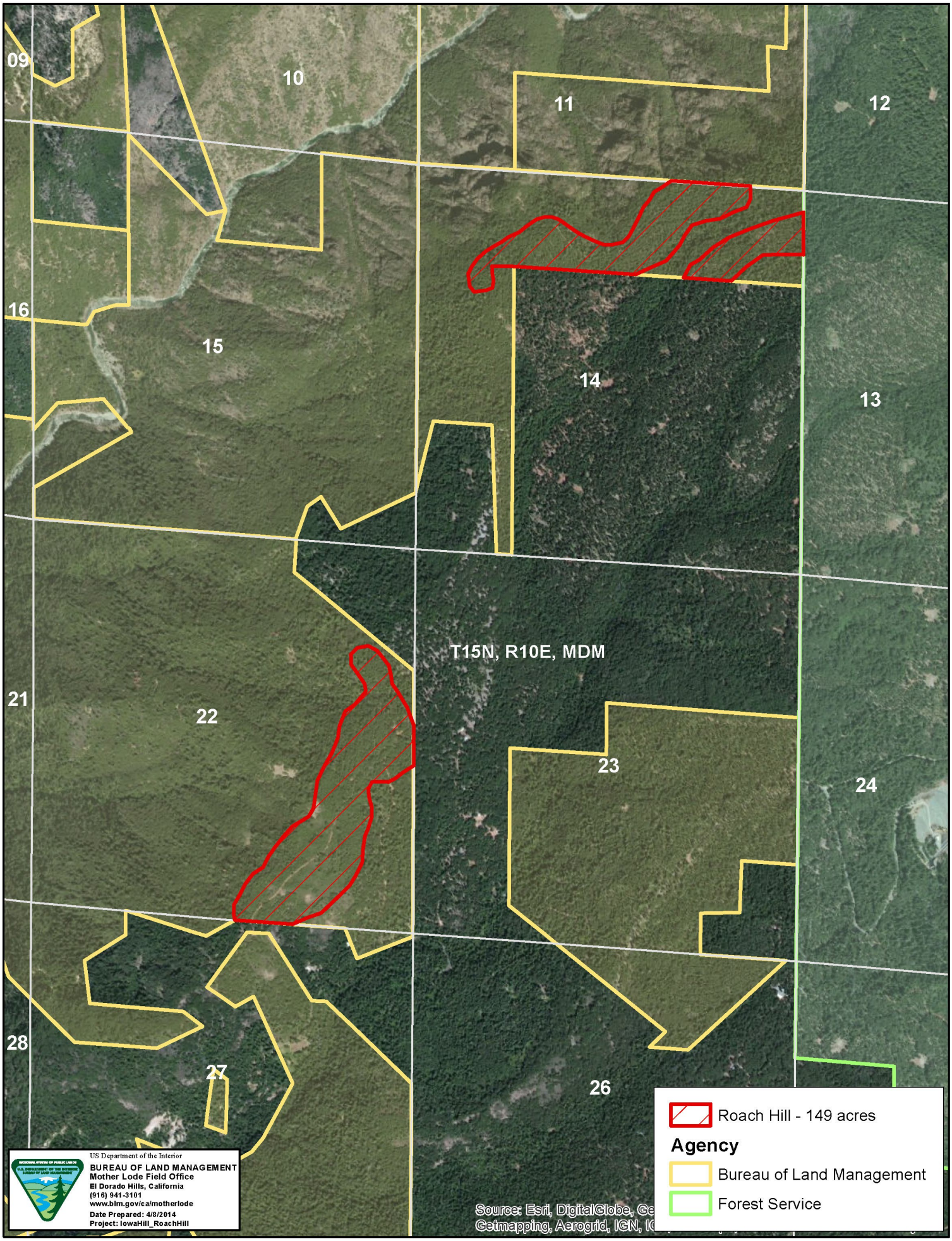
What is considered a ladder fuel differs from stand to stand, but typically these are trees in the 10- to 16-inch DBH classes. Trees larger than this may be thinned, for additional fuel reduction by reducing canopy bulk density in strategic locations. Removal of some of the intermediate sized trees would also have the economic benefit of providing revenue to help offset the costs of the fuels reduction and could fund additional projects (North et al. 2009:24).

> Thinned intermediate-size trees should only be fire-sensitive, shade-tolerant species such as white fir, Douglas-fir, and incense-cedar. In mixed-conifer forest, attempt to keep intermediate-size pines and hardwoods because of their relative scarcity and importance to wildlife and fire resilience. . . Some intermediate-size trees can still function as ladder fuel, particularly those that were initially grown in more open conditions. These trees can have live and dead limbs that extend down close to the forest floor providing a continuous fuel ladder. . . [In] middle to upper slope topographic position … some thinning of intermediate-size trees may help accelerate the development of large "leave" trees. We suggest, however, that these criteria not be applied to riparian areas, moist microsites often associated with deeper soils, concave topography, or drainage bottoms because these areas may have supported higher tree densities and probably greater numbers of intermediate size trees. [North et al. 2009:24-25]

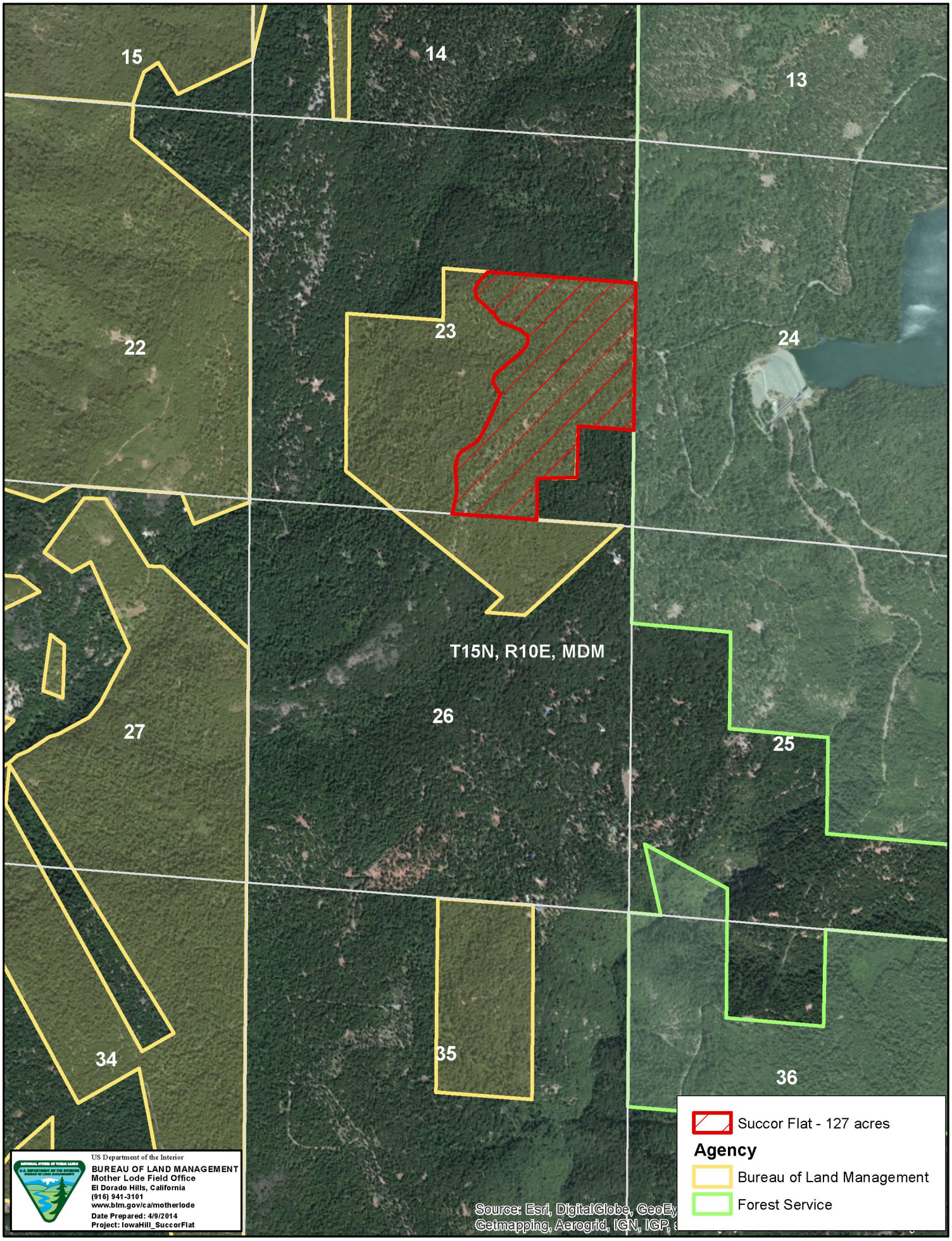
Iowa Hill Landscape Project Vicinity



Iowa Hill Landscape Project - Roach Hill



Iowa Hill Landscape Project - Succor Flat



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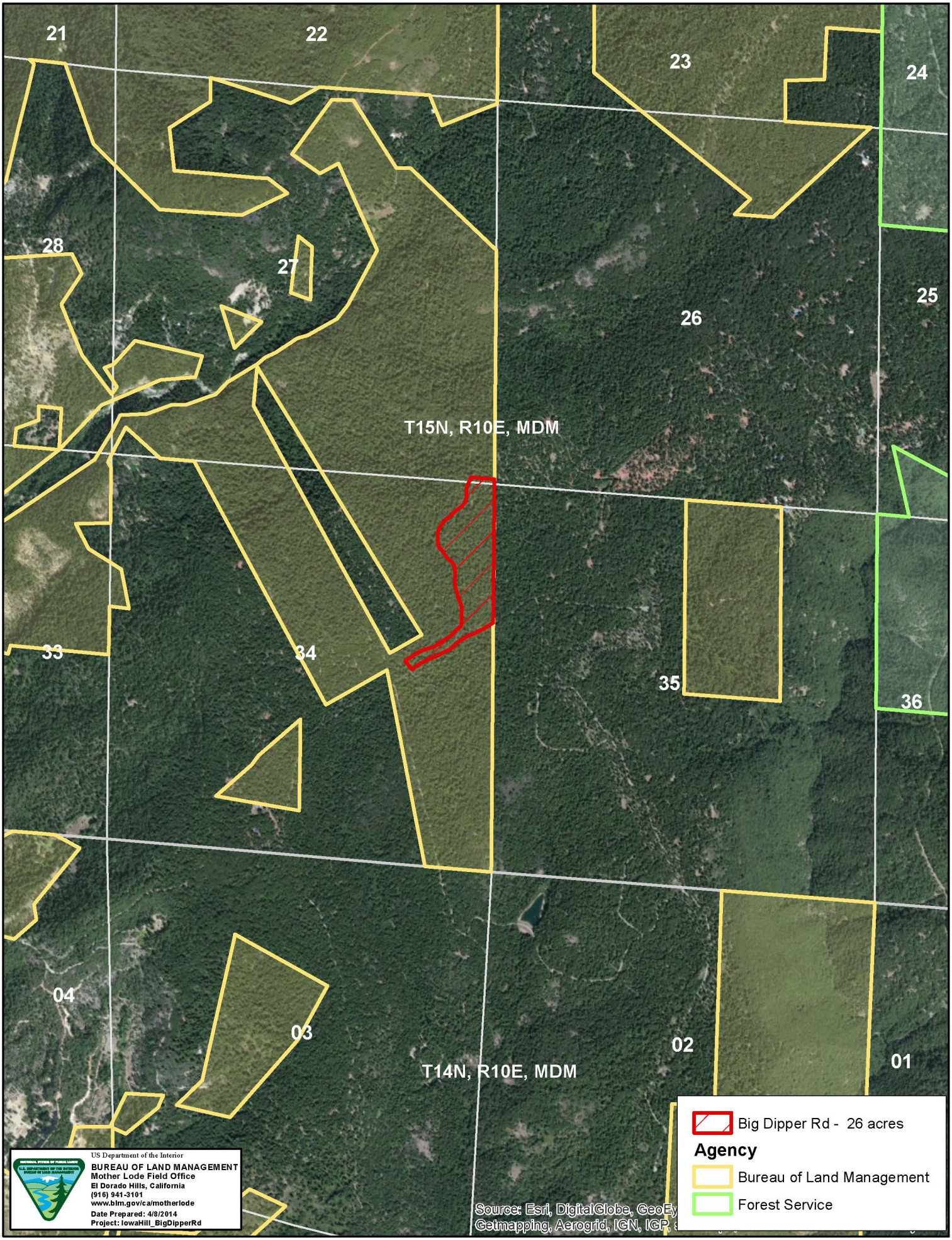

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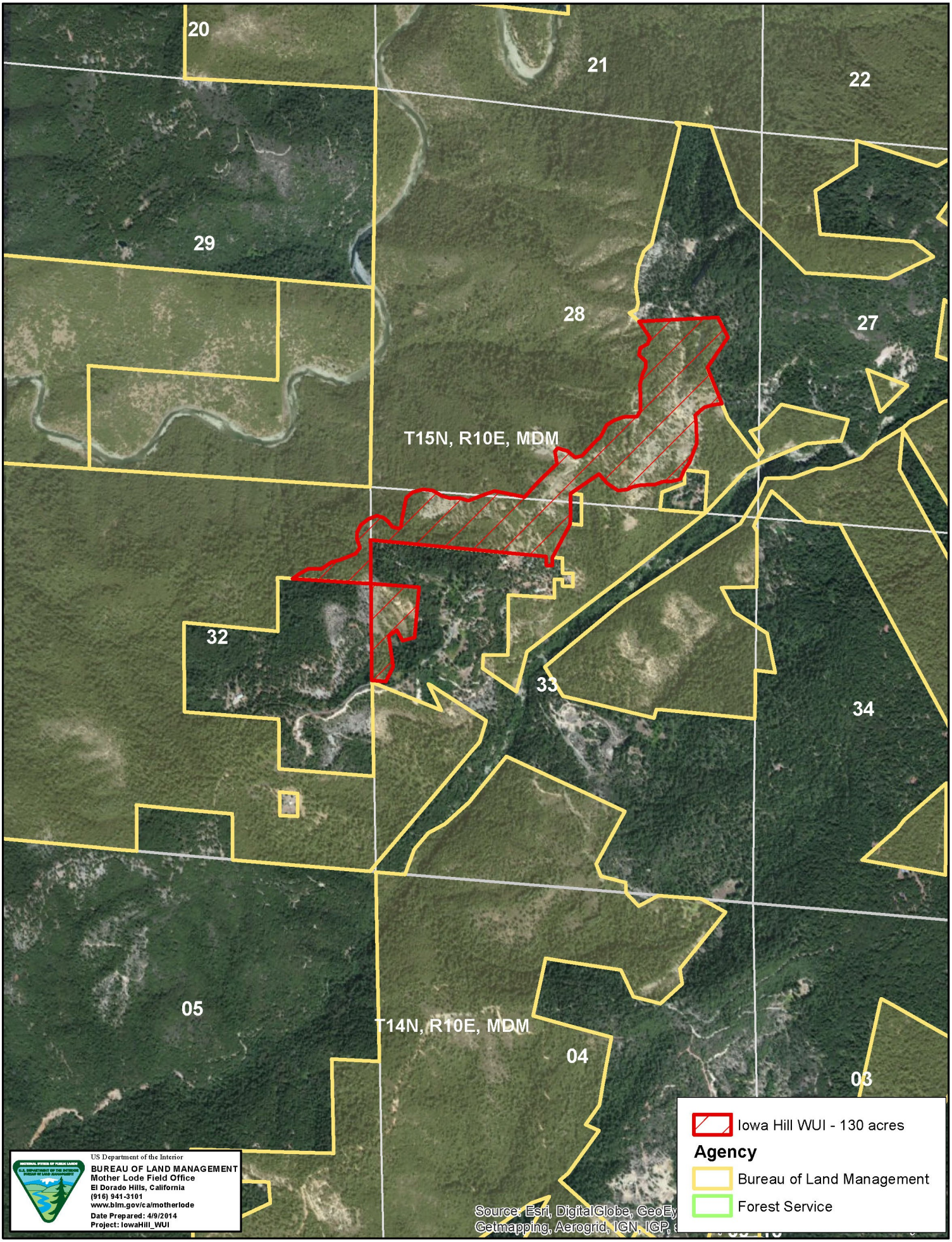
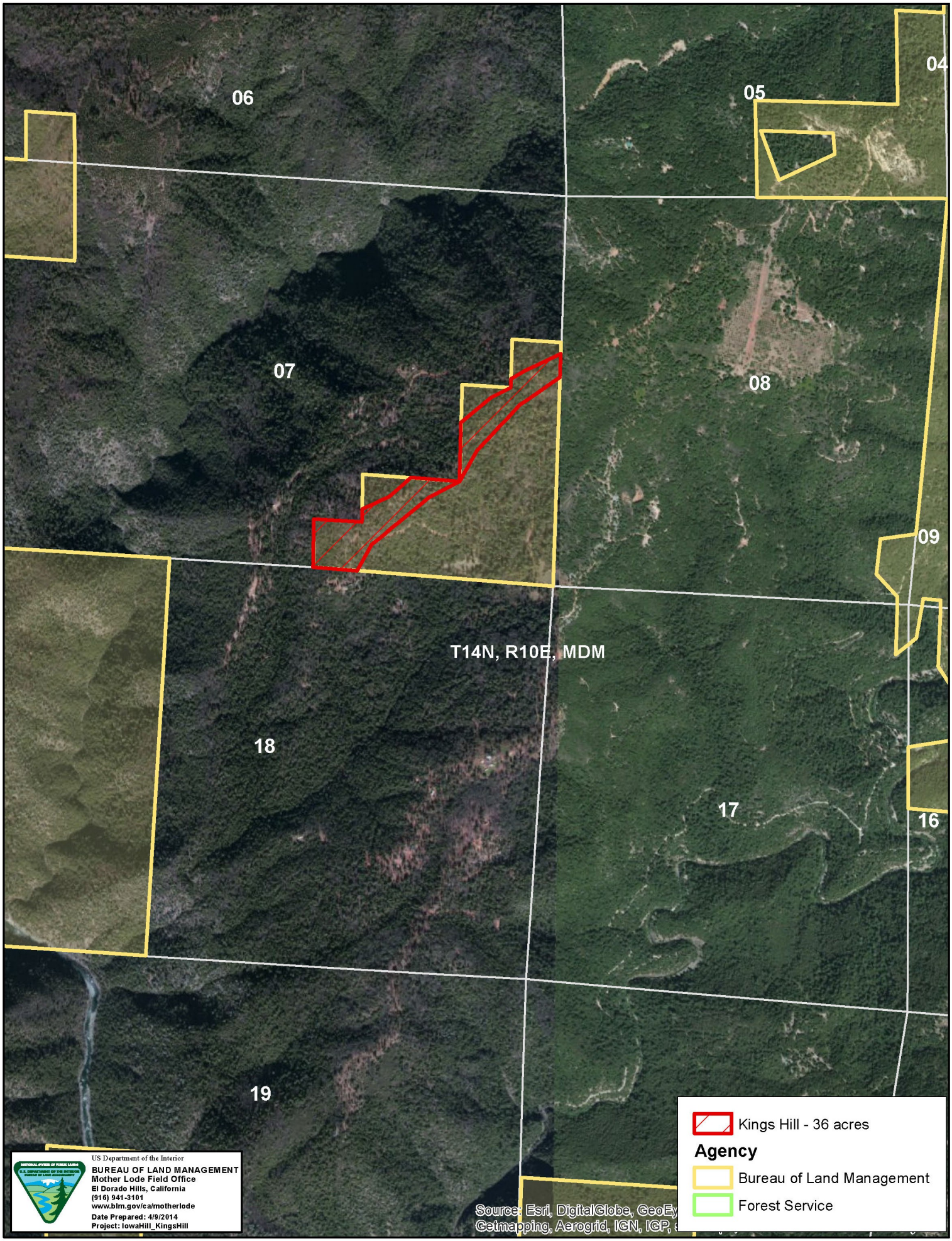
Iowa Hill Landscape Project - Kings Hill