

Oak Woodland Conservation as Mitigation for Roadway Improvement¹

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Abstract

East Side Potter Valley (ESPV) Road is a heavily used rural collector road running north/south through the unincorporated area of Mendocino County known as Potter Valley. The roadway is significantly deteriorated and in need of repair and upgrade. The Mendocino County Department of Transportation (MCDOT) road project encompasses approximately 6.4 km of roadway that will be rehabilitated, straightened, and widened to bring the road section up to federal highway safety standards. An estimated 144 utility poles and miles of ditches will require relocation to accommodate the widening. New pole installations are required to meet strict fire prevention standards, necessitating relatively complete vegetation clearance near transformer poles and under power lines.

The total number of trees to be removed due to lane widening and pole relocations is estimated to exceed 800. Slightly over half of the trees are valley oak (*Quercus lobata*), ranging in diameter from 5 cm to greater than 50 cm. Trees to be removed occur in fence lines, under utility lines, and in riparian corridors immediately adjacent to the roadway. Due to the small size of each individual impact site and the already “domesticated” nature of the project landscape, it was felt that site-specific mitigations would be difficult to implement and of limited biological value. As a result, the concept of doing larger, collective mitigation at alternative sites was a more realistic approach.

Departing from more traditional mitigation approaches, MCDOT is providing a three-phase mitigation of 1) restoring approximately 2 ha of valley oak woodland habitat, and 1.2 ha of seasonal wetland/riparian forest habitat within Potter Valley, to be protected in perpetuity through a land trust conservation easement; 2) implementing a Potter Valley oak awareness program, whereby MCDOT sponsored a day-long public oak awareness workshop in September, 2014. This community collaboration provided local residents with information on the benefits of and methods for restoring oaks on private lands. Additionally, in response to community interest, MCDOT is committed to assisting the Potter Valley Unified Community School District (PVCUSD) initiate an environmental education program for their students; and 3) a one-time donation to the existing Redwood Valley Outdoor Education Program (RVOEP) to be utilized for student transportation, staffing, equipment, and for support of ongoing Mendocino County Resource Conservation District habitat rehabilitation efforts at the 18.2 ha RVOEP site.

Some aspects of the mitigation have already been implemented; others are in their final stages of development and/or approval. MCDOT anticipates having all easements, agreements, permits, and MOUs in place with landowners, schools, and regulatory agencies so that tree removal for utility pole relocation can commence in 2015. This unique mitigation program is an example of community and agency collaboration for oak restoration and positive conservation outcomes associated with road construction projects.

Key words: conservation easement, linear transportation, mitigation, roads, valley oak, wetlands

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Introduction

Potter Valley is an unincorporated rural agricultural and residential community located in southern interior Mendocino County. The community is located about 209 km north of San Francisco and has a population of approximately 1,000. Water is plentiful in the valley as the result of an interbasin hydroelectric project that diverts flow from the upper mainstem Eel River into the headwaters of the East Fork Russian River in Potter Valley. Water from the project is distributed for irrigation over most of the valley floor. At this time, grapes, pears, hay, and pasture for livestock dominate the agricultural landscape within the valley. The irrigation water also sustains a shallow water table under much of the valley.

The abundance of water and the shallow water table have resulted in a significant presence of trees in Potter Valley, primarily valley oak (*Quercus lobata*). Unlike the typical “lollipop” distribution of this species on valley floors prior to development, the current population is much more linear in its presence, growing along fence lines, lining private roadways, grouped in yards, or adjacent to riparian corridors. Valley oak tends to be quite prolific in Potter Valley, but thrive only where trees are protected from grazing, crop cultivation, or other clearance pressures. Trees vary in size and age. There are many groups of densely spaced saplings, especially within fence lines. In other areas, more mature trees are found in small but stately groves that may represent old-growth relics. Other tree and shrub species are interspersed within the valley oak dominance, some native, others not.

While most landowners in Potter Valley conduct some form of agriculture on their lands, many also work and shop elsewhere such as in Ukiah, Willits, Lake County, or more distant destinations. Many students from Potter Valley also commute regularly to attend schools out of the valley. The roads in and out are a vital link for Potter Valley residents, used by most on a frequent if not daily basis.

Between the 1950s and 1990s, Potter Valley supported an active timber industry, utilizing conifers from the National Forest and private lands to the north and east of the valley. The East Side Potter Valley (ESPV) Road was the primary route for moving timber and lumber products to and from two commercial operations in Potter Valley, a large sawmill near the Eel River and a smaller pallet mill located within the valley itself. Decades of heavy truck use took its toll on ESPV Road, especially during winter months when high waters tended to saturate the minimal base layer under the road.

The Mendocino County Department of Transportation (MCDOT) is responsible for maintaining over 1770 km of roads and 137 bridges in Mendocino County, including those in Potter Valley (CSAC 2014). The ESPV Road is the larger and most heavily used of two arterial roads running north/south through Potter Valley. It is also the primary route to the Lake Pillsbury Recreation Area in the Mendocino National Forest. In addition to the degraded condition of its base and bed, ESPV Road is narrow by current standards (AASHTO 2014), lacks adequate shoulders, has abrupt edges into ditches along much of its length, and is lined by many trees and utility poles. There are numerous driveway entrances onto the main road, a series of unsafe curves, and intersections with three smaller rural collector roads. Sight visibility is inadequate at one abrupt rise in the road. ESPV Road is a busy road with an anecdotal history of too many accidents. As a result, MCDOT has pursued the rehabilitation and widening of ESPV Road since 1998, and is now acquiring needed right-of-way in anticipation of initiating utility pole relocation and reconstruction during 2015.

During preliminary environmental studies required to rehabilitate and widen ESPV Road, it became apparent that biological impacts would be significant including the removal of more than 800 trees and the filling of an area of jurisdictional wetland. The road project extends approximately 6.4 m with impact sites distributed the entire length. The challenge for MCDOT staff was creating a mitigation package that would be cost effective and yet would be deemed acceptable by the resource agencies responsible for issuing the various regulatory permits for the project.

Policy environment for transportation projects

Environmental policy for road projects is essentially the same as for any other “project” in California. Environmental impacts resulting from a project must be avoided, minimized, or mitigated (CEQA 2012). The level of compliance required for a project is determined by the funding source(s) for that project. If a county road project is locally funded or funded through a state source such as the California Transportation Commission (CTC), State Transportation Improvement Program (STIP), or local funds, then the level of environmental compliance must meet the requirements of the California Environmental Quality Act (CEQA). Compliance with CEQA is under the jurisdiction of the various state resource agencies such as the California Department of Fish and Wildlife (CDFW) and the Regional Water Quality Control Board (RWQCB); those agencies are responsible to see that the project proponent meet all CEQA obligations as well as their respective permitting responsibilities.

If county road project funds are federal in origin such as from the Federal Highway Administration (FHA) or the Federal Emergency Management Agency (FEMA), then the standard for compliance is to meet the requirements for the National Environmental Policy Act (NEPA) as well as CEQA. The NEPA provides environmental protections similar to CEQA. Compliance with the provisions of NEPA is administered through Caltrans in a process called NEPA Delegation. Federally listed species as defined under the Endangered Species Act (ESA 1972) are the responsibility of the U.S. Department of Fish and Wildlife (USFWS) or the National Marine Fisheries Service (NMFS), depending on the species involved. Also at the federal level, wetland and some water quality issues under the Clean Water Act (CWA 1973) fall under the jurisdiction of the U.S. Army Corps of Engineers (USACOE). Any interactions with these federal departments for a county road project are also administered through Caltrans by means of the Delegation process.

If a project has joint CEQA and NEPA obligations, then both levels of compliance must be met by the project proponent. In addition to the CEQA and NEPA, all required state regulatory permits must also be obtained by the road department. The CDFW is responsible for plants and wildlife while the RWQCB oversees wetland and water quality issues. There can be shared responsibility between federal and state agencies when jurisdictional responsibilities overlap.

It is well past the scope of this paper to indulge in the complexities of policy that have embroiled the ESPV Project over the past years. Funding sources have changed repeatedly as have environmental requirements. Suffice it to say that the project has strived to meet the requirements of both CEQA and NEPA. The permitting to date has been with three primary agencies: CDFW (1600 Lake or Streambed Alteration Agreement), RWQCB (401 Clean Water Certification), and USACOE (404 Clean Water Act – Dredged and/or Filled Waters). The CDFW Agreement was signed on

August 28, 2014. As of October 31, 2014, both other permits applications, also submitted during 2014, await final approvals.

Study area and proposed project

The MCDOT proposes to reconstruct, and widen approximately 6.4 km of ESPV. The bounds of the project extend from the bridge crossing the Russian River at mile post (MP) 2.46 northward to the intersection of Main St. and Eel River Road at MP 6.42. The current road structure is severely deteriorated and is in need of reconstruction. The existing road consists of two 2.7 to 3.7 m wide traveled lanes with paved shoulders as narrow as 15.2 cm. The proposed project consists of grinding and recycling the current pavement and base using a process called foamed asphalt. New base material will be added as needed. The lanes will be widened to approximately 4.3 m and will include aggregate base shoulders varying in width from 0.3 to 1.5 m (typically 1.2 to 1.5 m).



Figure 1—Project location map for the East Side Potter Valley Road Rehabilitation and Widening project.

For the most part, the road alignment will not be changed from its current position, only widened. The exception is a 427 m portion of the road near the northern end of the project that currently contains two sharp switchback curves. The

alignment of this section of road is to be straightened. The radius of the curve at the northern-most end of the 6.4 km straight stretch will be increased to meet current highway speed design criteria (AASHTO 2014).

In another road improvement, the abrupt cresting of the hill near MP 5.5 fails to meet current highway sight visibility requirements. This hill crest is to be brought into specifications by down-cutting the road approximately 3 m as it crests the hill. This will significantly reduce the vertical profile of the road at this site, increasing visibility for traffic in both directions.

An estimated 144 utility poles require relocation to accommodate the widening. The poles support both PG&E power distribution and AT&T communications lines. Some tree and brush removal will be required to complete pole relocation. When any PG&E poles are relocated, the new installations are required to meet current, stricter fire prevention standards, necessitating relatively complete vegetation clearance near transformer poles and under lines (PG&E 2010). Oaks and other native tree species will be affected including a small number of trees in various riparian corridors. A number of non-native fruit and ornamental tree will also require removal.

Most existing roadside drainage ditches and some Potter Valley Irrigation District (PVID) channels will likewise need to be moved outward from their current locations during reconstruction, but will be returned to their original dimensions and function. The PVID will use this replacement opportunity to upgrade some of their aged and undersized culverts, distribution boxes, and gates.

Methods

A preliminary Natural Environment Study (NES) was conducted in 2004 by an independent consulting firm, North State Resources (2012). That NES was updated and finalized in 2012 by the same consultant. The intent of these studies was to determine if any special status species or any biologically sensitive habitats were present in the Biological Study Area (BSA). The consultant first reviewed state and federal databases for known occurrences. Following that, field surveys were conducted by qualified professionals at appropriate times of the year to confirm presence/absence for any species of concern along the entire length of the project. Also, a wetland delineation conducted in 2002 was re-evaluated to confirm that the mapping remained accurate in 2012.

Though not classified as species of concern, it became apparent early in the planning process that a significant number of trees would need to be removed as a result of the road widening process. Private property fences are present at the margin of right-of-way along much of the 6.4 km length of the project. Widening the roadway requires the acquisition of a commensurate amount of new right-of-way to accommodate the construction. As a result, existing fences are to be moved back to the bounds of the new right-of-way acquisitions. In Potter Valley, fence lines are one of the most successful regeneration locations for various trees and shrubs; dense vegetation frequently results in fences becoming living hedgerows, especially when the fences are adjacent to pastures and irrigation channels. Moving fences requires the removal of the vegetation, in part, to meet clear zone requirements for vehicles traveling on the roadway. These clear zone requirements apply to new road construction as specified by the American Association of State Highway and Transportation Officials (AASHTO 2014).

The MCDOT conducted a tree survey in 2009 to enumerate losses directly attributable to project grading activities and fence relocation. Trees were categorized by species and by gross grouping based on diameter at breast height (1.37 m; DBH)

classes. The DBH bins were selected somewhat arbitrarily, but seemed appropriate to provide representation of the trees observed along the project corridor. The size bins were <15.2 cm, 15.2 to 30.5 cm, 30.5 to 50.8 cm, and >50.8 cm.

By 2011, PG&E confirmed that they would also be doing a significant amount of tree removal to meet their vegetation clearance requirements. The PG&E conducted their own independent survey in 2011 to document trees that would be removed as a result of their pole relocation activities. Some of these trees were common with trees being removed for grading and fence relocation; other tree removals were independent from the MCDOT identified removals and needed to be added to the project totals.

Both the MCDOT and PG&E surveys have been revisited more recently in an attempt to determine which entity will be financially responsible for removal of which trees. Also, as a result of right-of-way negotiations, some trees slated for removal may now be protected. As a result, the exact number of trees to be removed remains uncertain.

Verification of the exact location of each tree has been somewhat problematic given that the DBH's have been estimated by the surveyors. Also, there has been a differing interpretation of how many "trees" might be emanating from a single "clump" where stump sprouting has occurred. Jointly, both MCDOT and PG&E have agreed to conduct an additional GPS/GIS survey before finalizing the exact numbers. Both entities will participate in this survey that will be necessary prior to the removal of any trees.

Results

Biological surveys

The biological surveys for special status species (NES) indicated no listed species are present within the BSA. Salmonids are not present due to the barrier presented by Coyote Dam which has no fish ladder to allow passage to the East Fork Russian River. No listed amphibians are present due in part to the proliferation of the aggressive, non-native American bullfrog (*Lithobates catesbeianus*) in the numerous ponds and canals around Potter Valley. Though historically there may have been some plants now listed as being of species of concern, the highly disturbed and ruderal nature of the lands adjacent to the project resulted in no occurrences of such species.

Much of the 6.4 km project entails general habitat disruption as defined under CEQA. Most notable is the removal or disturbance of trees, shrubs, and various roadside herbaceous plants. The greatest impact was potentially from tree removal; it was determined independently through the MCDOT and PG&E surveys that more than 800 trees would be removed during utility pole, fence, and ditch relocations. While none of the trees are listed as species of special concern, this vegetation provides food and shelter for a variety of birds and other wildlife species.

Table 1 presents a summation of the combined tree removal for MCDOT and PG&E as it was known in 2011. At that time, it was believed that the number of trees to be removed would be 812. The table breaks out the results by species and size categories. As of September 2014, the total tree count was adjusted to 947, but without the detail presented in table 1. It is assumed that the diversity and ratios seen in this earlier accounting will remain approximately the same. An additional joint

survey is to be conducted by both entities before tree removal begins in 2015. These newer results will be tabulated more conclusively using a GPS/GIS format.

Table 1—Combined results from preliminary tree removal surveys conducted independently by Mendocino County Department of Transportation and by PG&E for the East Side Potter Valley Road Rehabilitation and Widening Project, current in December 2011

Tree species	Size ranges				Totals
	< 6"	6"- 12"	12"- 20"	>20"	
White oak	111	178	96	28	413
Oregon ash	8	54	4	7	73
Live oak	0	4	2	2	8
Apple	22	4	0	0	26
Locust	0	0	1	0	1
Willow	88	22	3	0	113
Walnut	1	13	9	11	34
Plum	28	6	0	1	35
Cottonwood	4	19	8	0	31
Sycamore	11	3	4	1	19
Pear	1	2	0	0	3
Cedar	0	1	0	0	1
Catalpa	0	1	2	2	5
Cypress	0	0	1	0	1
Pine	0	6	10	5	21
Redwood	1	0	1	2	4
Eucalyptus	3	14	0	0	17
Spruce	0	0	0	1	1
Douglas-fir	0	1	0	0	1
Maple	0	2	0	1	3
Mulberry	1	1	0	0	2
Totals	279	331	141	61	812

Jurisdictional sites

During the agency permitting process, three construction sites along ESPV Road project were deemed jurisdictional. Two sites are related to culvert replacements that will occur during road construction. The first site will be at MP 5.23 where an existing road culvert will be replaced due to its age and increasing potential for failure. The unnamed creek involved was historically ephemeral, but now remains wetted much of the summer due to leakage from the Potter Valley Irrigation District (PVID) East Canal. This canal intercepts this unnamed creek channel upslope of the road culvert. The creek channel is boarded off from the canal during the irrigation season when the creek would normally be dry. The metal arch culvert carrying this unnamed drainage under ESPV is currently 1.1 m in width. This culvert may be replaced in kind, but more likely will be replaced with a 2.4 m x 1.5 m reinforced concrete box culvert. Design options are still being evaluated.

A second site considered jurisdictional is where a culvert replacement will occur about 536 m to the north of the first site (approx. MP 5.50). At this location, the East Canal of the PVID (pipe # D 19) passes under ESPV through a 0.9 m culvert. (Note: Pipe # D 19 is to be upgraded to 1.2 m culvert at the time of replacement.) This canal is man-made and typically flows between 1 cfs and 25 cfs (0.03 m³ to 0.7 m³ per second), depending on water delivery demands. During winter storm events, the canal may carry as much as 50 cfs to 70 cfs (1.4 m³ to 2.0 m³ per second) with excess

water above that flow leaving the system through a series of overflow drains. The current overflow drain for this reach of the canal is located to the east of ESPV and will remain there following culvert replacement.

The third federal jurisdictional impact resulting from the proposed road construction activity is located approximately at M.P. 4.89 where there will be the filling of an estimated 0.07 ha of emergent wetlands as identified by the formal USACOE Wetland Delineation of 2002 and confirmed again in 2012. The filling of the wetland will occur as a result of the road widening. This wetland is located on the west side of ESPV, adjacent to a culvert passing under the road at that location. The wetland is not naturally occurring, but the result of a leaking irrigation pond. The crest of the pond's leaking earthen berm is approximately 23 m west of the road. The wetland lies between the pond berm and the road and is predominately vegetated with cattails (*Typha latifolia*) and Himalayan blackberry (*Rubus armeniacus*). The cattails and other vegetation are removed periodically by the landowner or by PVID to assure movement of storm runoff flows.

Discussion

A collaborative effort between MCDOT, CDFG (now CDFW), USACOE, and NCRWQCB, continuing since 2007, has resulted in what is a complex but seemingly appropriate mitigation for biological impacts anticipated from the 6.4 km long ESPV road rehabilitation and widening project in Mendocino County. The resulting mitigation package is comprised of three elements, all encompassing some level of general public awareness about oaks and oak restoration. The element that is the primary focus of this paper has to do with the creation of a conservation easement, which creates and protect two habitats, oak woodland and wetland. The remaining two mitigation elements provided funding for environmental education and a public workshop on oaks, but those will not be covered here.

The existing vegetation in Potter Valley is somewhat of an artifact due to the abundant irrigation water available in that community. A number of factors result in an abundance of trees, especially valley oaks. The elevated earthen distribution canals of the irrigation district tend to leak water to a relatively shallow water table, the primary source for local domestic water supplies and deep-rooted trees. In many areas, the upper levels of the soil are left moist as a result of regular irrigation, both by flooding of pastures and the sprinkling of crops. This moist condition, along with protection offered by the fence lines, roadways, and riparian corridors, contributes to the proliferation of vegetation in the valley, and particularly, an abundance of valley oaks.

The current linear forest pattern of trees in fence lines adjacent to roadways is the primary reason for the high number of trees requiring removal. Fence lines are located along road margins as a means to differentiate private ownership from public right-of-way. Utility poles lines are frequently located in the same corridor for maximum transmission efficiency and minimal intrusion on lands in agricultural production. And now, as the existing road needs an upgrade, the trees must be removed to make way for progress.

While the trees and shrubs being removed along the length of the project are not considered species of special concern, this vegetation provides significant habitat value for foraging, nesting, and shelter for a variety of birds and other wildlife. Birds, both resident and migratory, are one of the most significantly impacted groups since over half of the trees being lost are valley oaks. These majestic trees provide an abundance of insects and acorns for a broad range of birds from warblers to

woodpeckers (Roberts 1979). As oaks age, they provide an increasing abundance of cavity habitat utilized for nesting and evening shelter by many species (Block and Morrison 1990). The valley oak habitat is a feature limited to the valley floor in Potter Valley. It is replaced by drier oak and mixed plant communities on the surrounding hillsides. Birds, such as orioles and chats which prefer the larger trees are, therefore, somewhat restricted to the valley oaks of the lower elevations.

Birds may be heavily impacted by the significant tree removal, but other groups may feel the loss, also. Loss of valley oaks will likely impact large numbers of small mammals as well since many species utilize the acorns and shelter provided by these trees.

Much of the existing linear forest will be lost along the 6.4 km ESPV Road project during construction, but it is likely that significant natural recruitment of new trees will occur in subsequent years. The present tree distribution is primarily an artifact which has arisen since the road and fences were originally built many decades ago. Most fence lines will need to be taken down to allow for construction. When rebuilt, these fences will typically be no more than 1.5 m further back from where they were originally; a substantial number of fences will actually be replaced on their original alignments once ditching and grading is complete. Revegetation will utilize natural recruitment just as had been the case with the previous trees and vegetation. It is unlikely that revegetation will occur in the vicinity of the relocated utility poles since there will be active vegetation management in place to meet new safety requirements (PG&E 2010). As a result, there is no way to quantify the long-term net loss of trees along the road project. New tree recruitment will be affected not only by newly established pole and line clearance standards, but also by the discretion of the individual landowners and their desire to allow seedlings to establish again, or not, in the new fence lines.

Despite some natural restoration of oaks along the project corridor, it was clear that additional mitigation for project-induced loss of trees would be needed. With agency collaboration, it was decided that off-site mitigation might be the most expedient and appropriate way to mitigate for both the removal of trees and the loss of jurisdictional wetlands. To accomplish this, landowners on the valley floor were contacted and asked if they might consider placing a conservation easement on a portion of their land where wetland and oak loss could be mitigated. Willing owners were found, and the process of placing protections on portions of their lands was initiated in 2012 with assistance from the local Mendocino Land Trust.

The location of the off-site mitigation offered distinct enhancements for Potter Valley oak and wetland habitats. The polygonal configuration of the conservation easement lands will replace the linear forest of the roadside, resulting in a more natural habitat. This blocky shape allows easier wildlife access to a larger number of arboreal destinations, especially for avian inhabitants. Mammals will also have a more natural forest setting, suitable for sustaining greater diversity and populations than the linear forest being replaced. The mitigation lands are also in a much quieter part of the valley where wildlife will not be constantly confronted with the noise and rumble from the traffic on ESPV Road.

The oak woodland and wetland easement sites are located immediately adjacent to other highly desirable habitats. To the south of the oak site on an adjacent parcel, there is a grove of towering, mature valley oaks, still in their prime of life and offering the type of high canopy habitat required by many of the seasonal migrant bird species. This older grove will provide age diversity while the young oaks on the easement site develop over future decades. Along its northwestern edge, the oak mitigation site is bounded by a perennial drainage, Adobe Creek, which provides

approximately 300 meters of prime, mature riparian habitat (willows, Oregon ash, valley oak, bay laurel, and white alder). This mature habitat provides significant diversity to the site. The wetland easement site is located approximately 500 meters to the northwest of the oak easement site. It is also bounded by a perennial drainage, unnamed, which provides another approximately 200 meters of prime, mature riparian habitat along its western boundary. Once the adjacent agricultural uses cease, it is assumed that each of these riparian corridors will expand from their drainages, encroaching onto the easement lands. The extent of this expansion is unknown, but some increase in mixed species forest is expected, improving the overall habitat quality for both the oak and wetland easement areas. It has been demonstrated repeatedly that mixed species habitats tend to support far more diverse and stable wildlife populations; a greater variety of plant species helps prevent wildlife collapses due to a production failure by any one of the plant species (Block 1990, Roberts 1979, Yarrow 2009).

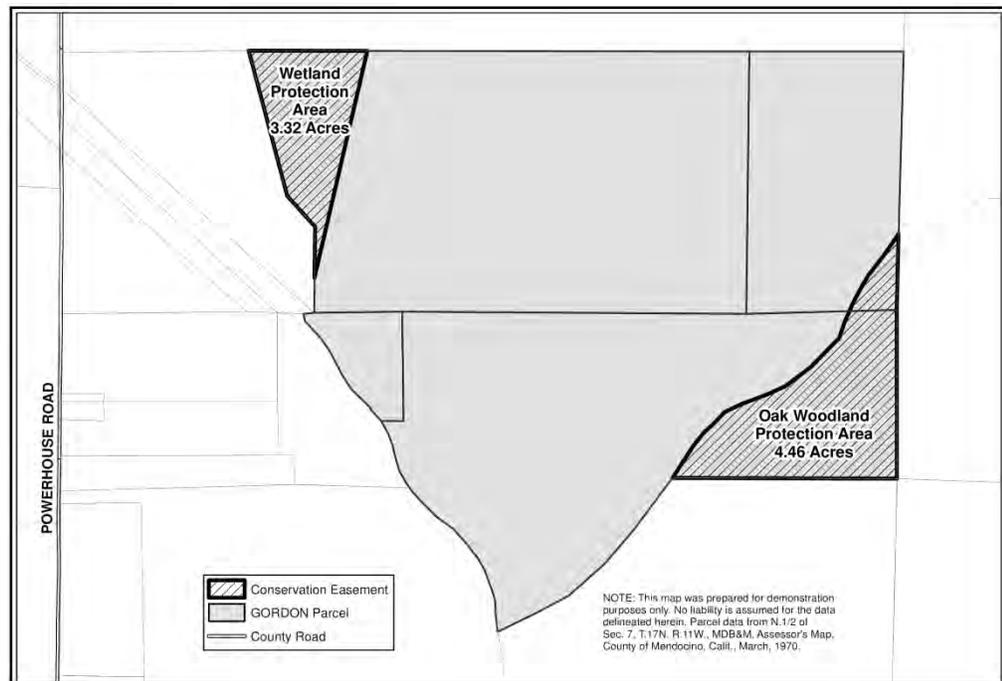


Figure 2—Conservation easement sites acquired as partial mitigation for the impacts incurred from the East Side Potter Valley Road Rehabilitation and Widening Project.

Conclusions

For the ESPV Road Project, much of the mitigation was triggered by the necessary removal of a large number of oak trees. Appropriately, much of the mitigation centers on restoration of oaks, their long-term protection, and enhanced public awareness regarding oaks. As of October 31, 2014, some portions of the biological mitigation package have been completed, other are pending. The status of those elements appears in table 2.

Environmental mitigation for road projects is increasing in complexity. The Clean Water Act (1972) and the Endangered Species Act (1973) are the basis for many direct mitigations resulting from impacts caused by large, disruptive projects such as road construction. The protections or mitigations emanating from these legislative

acts are very specific with the intent to maintain or improve the conditions of our natural environment and to protect the populations of sensitive creatures supported by that environment. The implementation of these acts requires that numerical goals be met, either in water quality parameters or in numbers of listed plants or animals.

Table 2—Status of the biological mitigation elements for the East Side Potter Valley Road Rehabilitation and Widening Project

Mitigation Element	Component	Current Status	Completion Date
Redwood Valley Outdoor Education Program Total: \$40,000	Habitat Restoration at 45-acre outdoor education site	- \$20K paid to RCD for ongoing program of site rehabilitation and invasive plant control	RCD – July 2014
	Environmental Education Supplement	- \$20K supports education, primarily for bussing, remainder for supplies and staffing	RVOEP/UUSD – June, 2014
Oak Woodland & Wetland Conservation Easement Total: est. \$75,000	Provide funding for procurement of easement and associated endowment	- Fund \$35K for drafting and refining of easement between land trust and owners, then final review and approval by permitting agencies.	Ongoing, but estimated complete by December 2014.
	Fund landowner legal review costs	- Covered under Agreement up to \$5K	Ongoing, but estimated complete by December 2014
	Fund RCD to build fence to separate wetland area from pasture	- Cost estimates running up to \$15K, but may be less if CCC's are available.	Spring or summer, 2015
	Finance an Environmental Enhancement Fund for the woodland and wetland sites	- Approximately \$20K remains available to create fund for enhancements. - Working to determine what entity will hold the funds until needed.	
Potter Valley Oak Awareness Program Total: est. \$40,000	Conduct a citizen workshop emphasizing protections and restoration of native oaks	- Speakers from University of California ANR and Mendocino County DOT, with program updates from RCD, NRCS	Conducted September 20, 2014 at Potter Valley Schools.
	Agency support to landowners	- Programs pre-existing, so no need to create new. - P.V. High School Ag program to make tree hoops & bird houses for local residents.	Funding not determined. \$3K for materials for Ag program is part of \$23 pending MOU.
	Institute an environmental education program at the Potter Valley Schools (PVCUSD)	- RCD funded \$15K to help choose curriculum, and to identify suitable grants. - Provide \$20K to PVCUSD for grant match, etc.	RCD funded July, 2014. \$23K MOU to fund PVCUSD awaiting completion of conservation easement.

Given its physical length, the ESPV Road Project has relatively few jurisdictional impacts. Most of these could likely have been mitigated with relative ease, probably on-site with protections, enhancements, or replacements. But parts of CEQA offer less-well defined mitigation goals for general habitat disturbances and loss of unprotected plant and wildlife species. There is no question that removing over 800 non-jurisdictional trees is a significant impact on many fronts. This tree loss, especially the larger oaks, amounts to a significant reduction in habitat for birds and small mammals. There are also other less quantifiable parameters such as aesthetics which must be considered, but can be challenging to mitigate.

The less-quantifiable CEQA impact mitigations are left somewhat to the discretion of the reviewing agency staff and the project lead agency. Public input can also play an important role in determining mitigation requirements. In the case of the ESPV Road project, the proponent, MCDOT, worked collaboratively with agency staff from the earliest project site reviews to identify mitigations that might encompass the full range of biological and water quality impacts, as well as addressing public concerns. The goal was to create a mitigation package acceptable to all three permitting agencies. Based on verbal acknowledgements and permitting efforts to date, this has been accomplished.

An important goal was also to keep the mitigation package cost-effective relative to the cost of the road project. Mitigation costs are as variable as locations and the road projects themselves. The original mitigation budget was based on an evaluation of property value at the impact sites. This number increased proportionally as it was determined that more trees would need to be removed. A goal of \$160,000 was derived and is still on track in spite of some unexpected exceedances. At this time, predicting that the road project may escalate to approximately \$15,000,000, a mitigation package running at approximately \$160,000 is slightly more than one percent of the total project cost, near the bottom of the range documented by Washington State (2013) for a number of their recent road projects. The ESPV Road Project value does not yet reflect stormwater erosion protections that will be required during construction, and those may be significant. Some of Washington State's mitigation numbers have exceeded 45 percent for total mitigation; the average for the projects they evaluated was approximately 13 percent.

The other hoped-for outcome of the agency and public collaboration process was to have mitigations approved and permits issued prior to the commencement of construction. This goal appears doable given that the earliest project work, pole relocation, is not scheduled until mid-spring 2015. As seen in table 2, some of the mitigation elements are in place and most appear likely early in 2015. The CDFW 1600 permit has already been issued and the remaining two permits are awaiting finalization of the conservation easement. It appears the remaining permits will also be issued in the near future.

The concept of acquiring a conservation easement geographically near the project site was the single mitigation element most desirable to the permitting agencies. The original mitigation element of funding to the RVOEP was acceptable in 2008, but as the scope of impacts increased over the years, it became clear that some habitat-based mitigation would be required. Going door to door to find landowners willing to enter into a conservation easement was a challenge, but persistence paid off. The pieces of land being protected are both exemplary examples of what they are meant to replace, so the agencies are satisfied with the results of the collaboration. The environmental education elements are also on track to bring enlightenment to numerous students, in the Ukiah Unified and Potter Valley Community Unified School Districts. Mitigations are as varied as the projects. Can future road projects use this mitigation package as a template? Not likely due to the complexity involved. Most county road projects are not as large, at least not in physical length and associated impacts. But elements within the package, especially the conservation easement, should well be considered when circumstances permit. The process of acquiring the easement has been overly complex and time consuming. It would be desirable if sources of easements were more readily available to entities such as road departments, possibly a worthy challenge awaiting local land trusts and land banks.

Creating the multifaceted mitigation package for the ESPV project has been challenging and rewarding. Working cooperatively with the various resource agencies, it was first necessary to determine the extent of the impacts. That in itself was somewhat of a moving target since the actual construction details for the project were not finalized during the permitting phase. So to move forward, the mitigation goals were kept somewhat conceptual, not a tree-for-tree replacement as was typical in the past. This flexibility allowed creative options which were massaged until acceptable to all parties including management within the county road department. The unconventional nature of this mitigation created additional implementation effort since there were few clear precedents to follow. Nonetheless, a partnership developed with the common goal of making the sum greater than the parts. Not only has there

been a reasonable habitat replacement with protection in perpetuity, but there has been support given to two separate environmental education programs and outreach to the community in general. Might this be a model for encouraging more flexible mitigation options in the future?

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