Exhibit A

MANAGEMENT PLAN FOR THE FOREST SPRINGS MOBILEHOME COMMUNITY PHASE IV APNs 23-250-72, 23-280-13, and 23-280-12; ± 23 ACRES GRASS VALLEY, CALIFORNIA

March 5, 2014

Prepared for:
Janeane Martin
Nevada City Engineering, Inc.
505 Coyote Street, Suite B
PO Box 1437
Nevada City, CA 95959

Prepared by:
Tina Costella
Costella Environmental Consulting
P.O. Box 215
Nevada City, CA 95959

TABLE OF CONTENTS

APPENDICES

SITE INFORMATION

Site Name: Forest Springs Mobilehome Community
APNS: 23-250-72, 23-280-13, and 23-280-12
Location: northwest 1/4 of Section 12, Township 15 North, Range 7 East, MDM on the Grass Valley USGS topographic map

INTRODUCTION

This Management Plan contains recommendations for avoiding and minimizing impacts to a landmark oak grove and for the removal of two landmark black oak (*Quercus kelloggii*) trees (greater than 36 inches diameter at breast height) that were found on the site. A feasible design plan could not be devised that achieved project objectives and requirements yet incorporated these trees into the planned Phase IV development of the Forest Springs Mobilehome Community. Nevada County Land Use and Development Code (Chapter II Zoning Regulations, Section L-II 4.3.15C.2 & 3) states: "Projects shall be approved only when they do not remove or disturb landmark oak trees (*Quercus* sp. greater than 36" DBH), or landmark oak groves (groves with 33% or greater canopy cover). A Management Plan shall be prepared to evaluate the impact of the project on defined trees and groves and recommend project modifications that avoid or minimize impacts. Emphasis shall be placed on protecting groups of trees rather than individuals as follows:

> CEQA - Public Resources Code Section 21083.4: Oak Woodland Mitigation. Counties determine if a project could result in significant conversion of oak woodlands. Mitigation options include, but are not limited to:
> 1. Conserving oaks through conservation easements
> 2. Planting and maintaining an appropriate number of trees (either on-site or by restoring former oak woodlands); tree planting limited to half the mitigation requirement
> 3. Contribute funds to Oak Woodland Conservation Fund for the purpose of purchasing conservation easement.

For these reasons, the goal for the lost value of the two landmark oak trees is for this project to restore a ±5 acre Landmark Oak Grove to an overall high value woodlands and to implement fire protection measures for the safety of the surrounding community. This report fulfills the requirements of the policies and ordinances for oak resource protection contained in the Nevada County zoning ordinances.

ENVIRONMENTAL SETTING

The study area is situated on a dry, mostly flat terrain located in the Sierra Nevada foothills in the south portion of Nevada County. This area of the county exhibits both oak woodlands and low-elevation montane forest. There is an area of approximately ± 8.27-acres on site with a south-slope orientation that is mostly composed of black oak trees. The other ± 15 acres on the site are composed mostly of lower elevation conifers including Ponderosa pine, sugar pine, and some incense cedar and Douglas fir. The shrub layer is mostly an impermeable layer of manzanita chaparral, interspersed with non-native grasses, poison oak, invasive Scotch broom, downed wood and other debris. There were very few native forbs to speak of throughout the proposed subdivision.

The parcels that make up the Phase IV addition have not been managed for many years, if ever, once they were initially logged. Coniferous trees can maintain a healthy forest even with trees in close proximity to each other and growing to 60 to 100 feet high. However, oaks do not fare as well, and these parcels are evidence of poorly maintained woodlands. For example, the understory is either littered with broken tree limbs or heavily infested with manzanita and Scotch broom, scattered under the woodlands. The infestation of these plants and the lack of routine maintenance over the years has resulted in poor overall woodland health coupled with a very high fire risk.

Landmark oak groves (with hardwood canopy coverage >33 percent) occur along the south sloping parcel. This ± 8.27 acre site is considered a Landmark Oak Grove due to its tree canopy which measures as greater than 33 percent canopy closure throughout most of the stand. The average tree trunk measures 12 - 16 inches diameter at breast height (DBH). There is a moderate amount of regeneration of black oaks found throughout this woodland. It is also considered a closed stand, evidenced by the fact that the tree crowns are narrow and slender with rather spindly branches. This is typical of stands where a dense canopy is formed by small to medium diameter trees with relatively low diversity of other plants, and it provides only limited special wildlife values.

However, long-term conservation within the area designated as Open Space would increase the woodlands' overall health and likewise would reduce the level of on-site fuels This would be accomplished by selective cutting of some woody vegetation, including certain of the smaller trees (but not all, to ensure long-term sustainability of the woodland from recruitment of new trees), and reduction of fine-caliber ground fuel loads.

METHODS

An oak assessment field survey was conducted in October 2013 and multiple site visits have been conducted since that time. This survey is based on the tentative and February 2014 revised maps prepared by Nevada City Engineering, Inc. The original map is an aerial map

overlaid with the site plan. The entire site was walked using a GRS densitometer to determine the areas where there was oak canopy coverage greater than thirty-three percent. Particular attention was paid to those sites designated for construction and fire prevention safety.

SUMMARY

This Management Plan was developed to specify mitigation actions for direct impacts to the two-landmark oak trees and to restore and improve the 5-acre landmark oak grove site. This Management Plan was prepared in conjunction with the biological inventory report for the same site; see that report for a more detailed description of the on-site resources.

Landmark oak groves (with hardwood canopy coverage >33 percent) occur along the south sloping parcel. This ± 8.27 acre site is considered a Landmark Oak Grove due to its tree canopy which measures as greater than 33 percent canopy closure throughout most of the stand. The average tree trunk measures 12 - 16 inches diameter at breast height (DBH). There is a moderate amount of regeneration of black oaks found throughout this woodland. It is also considered a closed stand, evidenced by the fact that the tree crowns are narrow and slender with rather spindly branches. These conditions are often found in situations with a dense canopy formed by small to medium diameter trees with relatively low diversity of other plants, and as noted, they provide only limited special wildlife values.

Required mitigation measures will include thinning in the the south sloping area (Landmark Oak Grove), especially the smaller diameter trees, and removal of the understory debris to promote the health of the woodlands and for fire protection. The acreage comprising the Landmark Oak Grove will be designated as "Open Space" upon completion of the project. An earthen drainage swale, ± 0.85 acre will be constructed using onsite native soils in the north portion of the area designated as open space to collect excess storm water, allowing the water to percolate through the soil profile. In addition, it is expected that the local Fire District's conditions of approval will require that the area be maintained in a fire safe manner. These brush clearing requirements, along with tree thinning as recommended above, will not only provide overall health benefits to the woodland, but also will greatly improve fire safety for the larger nearby community. These provisions will reduce the likelihood that any future wildfire will cause a fire hazard to the community or cause lasting damage to the high-canopy-coverage oak woodlands.

IMPACT ASSESSMENT

The removal of the two landmark oak trees and the construction of the detention pond within the open space area will require mitigation. Instead of planting additional black oak trees, especially on the site of a mobilehome community, a more practical mitigation measure would be to thin and clear the understory of the area considered a Landmark Oak Grove, which will be designated as Open Space within the project. This will not only lower the fire risk, but will also

provide overall a more healthy oak woodland environment. After the initial management of the oak woodlands, ongoing maintenance should be required on an as needed basis for continued fuels management, including ongoing selective cutting of some woody vegetation, in particular certain of the smaller tree saplings (but not all, to ensure long-term sustainability of the woodland from recruitment of new trees), and reduction of fine-caliber ground fuel loads.

The detention swale will impact about 0.85 acres of mixed conifer interspersed with some black oak. Once the swale is completed, the swale embankment will be re-seeded and/or planted with native shrubs, grasses and forbs that already exist on site or within the Sierra Nevada Foothills; refer to Appendix A for a site map of the mitigation area and Appendix B for a complete list of recommended native vegetation for reseeding/replanting of the area designated as "Open Space".

DISCUSSION AND MITIGATION

The project design has been adjusted to minimize direct or indirect impacts on the landmark oak grove, but the project will result in construction within the limits of the two-landmark oak trees. In accordance with Nevada County Zoning Ordinance requirements, if it is impossible for the project design to avoid landmark oak groves or trees, or if avoidance would make it impossible to achieve a more important environmental protection goal or requirement, then the project may be approved and constructed if a Management Plan is prepared, approved and implemented.

In this case, the project design has been altered to cluster development in the central part of the site, thus impacting the two landmark oak trees, rather than spreading it out and extending into the south facing slope of the site, an area that has the potential of becoming a high value oak woodlands with care and maintenance. The mitigation measures recommended herein provide mitigation for both direct and indirect impacts on the landmark oak grove habitat, and they will reduce those impacts to a less-than-significant level.

Mitigation measures recommended herein will reduce both direct and indirect impacts on the landmark oak grove (designated as Open Space) habitat to less than significant. This will be accomplished by opening-up the canopy, removing the weaker scraggly trees, reducing lower-story fuels, and removing most of the understory, which is almost exclusively composed of Scotch broom. These simple measures will help to transform the oak woodland from low quality to a higher value woodland habitat.

Overall Health and Fire Safety within the Landmark Oak Grove

Implementation of the following habitat management actions will minimize the likelihood that wildfire will completely destroy the protected oak grove and preclude rapid natural regeneration. The purpose of active management (fuel reduction) is to reduce

of oaks. Reducing the number of oaks would result in a three-fold benefit:

- Promote overall healthier environment for remaining oaks; lessen the competition for limited resources and provide more sunlight.
- Thinning smaller, less vigorous trees reduces the risk of disease and the spread of mistletoe (*Phoradendron villosum*).
- Reducing the fuel load and opening up the canopy would decrease the risk of fires.

BEST MANAGEMENT PRACTICES FOR OAK PRESERVATION

Information on building around oaks and oaks in the home garden can be found in the Integrated Hardwood Range Management Program's (IHRMP) leaflet, Living Among the Oaks. Additional information on disturbance around oaks and protecting trees from construction impacts can be found in the UC Cooperative Extension's (UCCE) handout, Disturbance Around Oaks (Frost, 2001) and the California Department of Forestry's (CDF) Tree Notes, Protecting Trees from Construction Impacts (Sanborn, 1989). Information on the care of oak trees is also available through the California Oak Foundation at:

http://www.californiaoaks.org/ExtAssets/oakcaresec.pdf)

The following are general guidelines or best management practices for tree protection during construction activities, taken from some of the above sources.

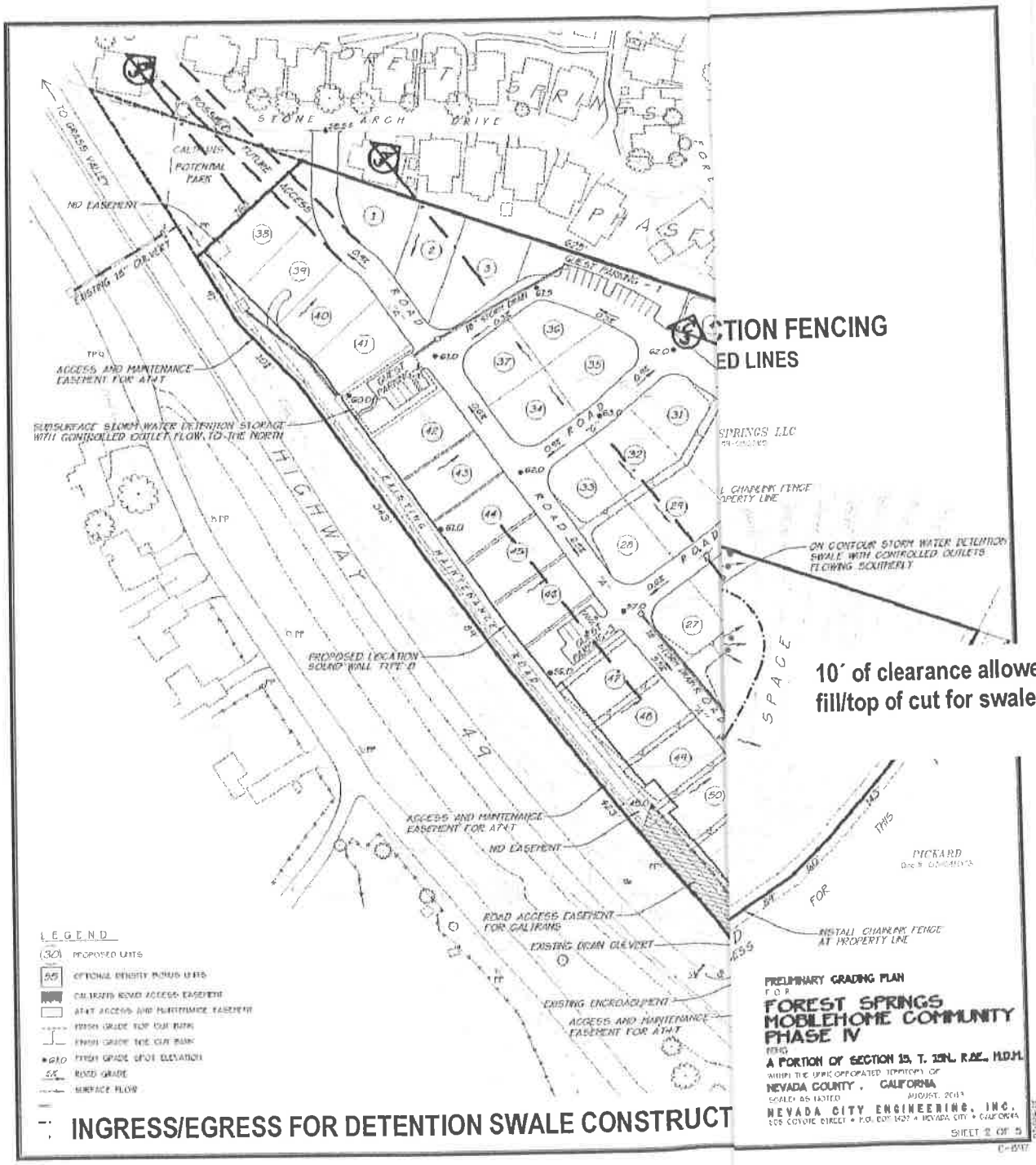
- The Open Space/Landmark Oak grove to be preserved within the south slope parcel, and any other oaks adjacent to the construction areas, should be protected with high-visibility fencing placed at least one foot outside the dripline prior to commencement of construction.
- For the construction of the detention swale, an ingress/egress route should be designated for travel by heavy construction equipment to and from the site.
- If possible, do not disturb the Protected Root Zone (PRZ) of trees to be preserved. The PRZ is defined by its "critical root radius." It is more accurate than the dripline for determining the PRZ of trees growing in forests or that have narrow growth habits. To calculate critical root radius, measure the tree's diameter at breast height (dbh) which is 4.5 feet above the ground. Measure in inches. For each inch, allow for 1 to 1.5 feet of critical root radius.
- Install high visibility fencing around the PRZ of any tree or cluster of trees with overlapping canopy that are identified on an approved grading plan as needing protection.
- The fencing should be four-feet high and bright orange with steel t-posts spaced 8 feet apart.
- Do not grade, cut, fill or trench within the PRZ.

- Do not store oil, gasoline, chemicals, other construction materials, or equipment within the PRZ.
- Do not store soil within the PRZ.
- Do not allow concrete, plaster, or paint washout within the PRZ.
- Do not irrigate within the PRZ or allow irrigation to filter into the PRZ.
- Plant only drought tolerant species within the PRZ.

The following are general guidelines for protecting oak trees in gardens and yards.

- Avoid summer irrigation.
- Disturb the zone within six feet of the trunk as little as possible. The base of the tree should be kept dry.
- Limit plantings beneath oak trees to drought-tolerant species that do not require summer irrigation.
- Landscape beneath oak trees with non-living plant materials such as wood chips.

APPENDIX A. FOREST SPRINGS SITE PLAN FOR THE I
FENCING DURING GRADING AND TIMBER HARVESTIN



APPENDIX B. PLANT SELECTION[1] FOR REPLANTING WITHIN THE DESIGNATED "OPEN SPACE" OF FOREST SPRINGS MOBILE HOME PARK

SIERRA NEVADA FOOTHILLS

GRASS/ANNUAL

Scientific Name	Synonym[2]	Common Name	Origin	Tolerance	Propagation	Comments
Vulpia microstachys	*Festuca*	six weeks grass	Native	Dry to moist	seed	fast growing cover crop - USE GRASS SEED SPARINGLY

GRASS/PERENNIAL

Achnatherum occidentalis	*Stipa o.*	needlegrass	native	dry	no seed treatment; seeds, containers	dry sites, sagebrush scrub, coniferous forest, alpine- USE GRASS SEED SPARINGLY
Elymus trachycaulus ssp. trachycaulus	*Agropyron subsecundus*	big squirreltail	native	dry to moist	no seed treatment; seeds, containers	dry to moist, open areas, forest, woodland- USE GRASS SEED SPARINGLY
Festuca idahoensis		Idaho fescue	native	dry to moist	no seed treatment, seeds, containers	dry open or shady places- USE GRASS SEED SPARINGLY
Fescue rubra		red fescus	native	dry	no seed treatment, seeds, containers	varieties available, beware of less adaptive non-natives; sand dunes, grassland, subalpine forest, loosely tufted groundcover- USE GRASS SEED SPARINGLY
Hordeum brachyantherum var. *californicum*	*H.californicum*	California barley	native	dry to moist	no seed treatment, seeds, containers	meadows, pasture, streambanks, forms clumps; one variety is very short (<8 inches tall), tolerates alkaline and infertile soil- USE GRASS SEED SPARINGLY
Koeleria macrantha		Junegrass	native	dry to moist	no seed treatment, seeds, containers	open sites, clay to rocky soils, shrubland, woodland, coniferous forest, alpine- USE GRASS SEED SPARINGLY
Melica californica		California melic	native	dry	no seed treatment, seeds, containers	with short rhizomes, requires good drainage and full sun; tolerates serpentine- USE GRASS SEED SPARINGLY
Melica torreyana		Torrey's melic	native	dry	no seed treatment ,seeds, containers	chaparral, coniferous forest; part shade- USE GRASS SEED SPARINGLY
Nassella pulchra	*Stipa p.*	purple needlegrass	native	dry	no seed treatment, seeds, containers	bunchgrass; adapted to clay soils, tolerant of summer drought and heat, tolerant of serpentine, tolerant of poor soils- USE GRASS SEED SPARINGLY
Poa secunda ssp. *secunda*	*P. sandbergii, P. scabrella*	bluegrass	native	Dry	no seed treatment; seeds	many areas, including plains, dry woods, rocky slopes, foothills, grassy slopes, ridge-tops, open timber; grows well in rich clay loam but also thrives in shallow, rocky, or sandy soils; sun-part shade; grows on neutral, alkaline, and saline soils; forage- USE GRASS SEED SPARINGLY

HERBS, ANNUAL

Scientific Name		Elevation	Common Name	Origin	Tolerance	Propagation	Comments
Eschscholzia californica		0-2000	California poppy	native	dry to moist	no seed treatment, seed	Grass open areas, disturbance related
Lotus micranthus		< 1300	lotus	native	dry to moist	no seed treatment, seed	widespread in open or disturbed areas; good colonizer, nitrogen-fixer
Trifolium	*wildenovii*	< 1700	tomcat clover	native	dry to moist	seed	spring moist, heavy soils; good colonizer

HERBS, PERENNIAL

Achillea	*millefolium*	< 3500	yarrow	native	dry to wet	no seed treatment; seeds or container	ubiquitous, highly variable species with many ecotypes; good stabilizer, invades on disturbed sites
Artemisia	*ludoviciana*	< 3500	silver wormwood	native	dry		dry, sandy to rocky soils

Epilobium	*angustifolium* ssp. *circumvagum*	< 3300	fireweed	native	dry to moist	no seed treatment; seeds, containers	

HERBS, PERENNIAL (cont)

Scientific Name	Elevation	Common Name	Origin	Tolerance	Propagation	Comments
Linum lewisii	400 – 3400	blue flax	native	dry	no seed treatment, seeds	dry open ridges and slopes; requires full sun
Lupinus albicaulis	500-3000	sickle-keeled lupine	native	dry	fresh seeds – no treatment, stored seeds – treatment; seeds, containers	dry slopes and openings, requires full sun; good colonizer, nitrogen-fixer
Monardella vilosa	< 1300	coyote mint	native	dry	no seed treatment; vegetatively from rooted side shoots; seeds, containers	dry, rocky or gravelly places in oak woodland, chaparral, and montane forest; full sun to part-shade
Penstemon heterophyllus	50-1600	foothill penstemon	native	dry	no seed treatment (treatment may increase viability); seed, containers	grassland, chaparral, and forest openings; tolerates poor, rocky soils
Xerophyllum tenax	< 2300	beargrass	native	dry to moist	seed requires treatment; rhizome cuttings; containers	requires good drainage, often on steep slopes with shallow soils; tolerates serpentine and gabbro soils, prefers sun, moderately shade-tolerant

SHRUB, SUBSHRUB

Ceanothus prostrates		mahala mat	native	dry	seed requires treatment; containers	prostrate and mat-forming-good ground cover; open flats, coniferous forest; highly variable; requires good drainage, nitrogen-fixer
Epilobium canum	*Zauschneria californica* < 3000	California fuchsia	native	dry	no seed treatment; seeds, containers	dry slopes and ridges; different varieties; requires full sun and good drainage; spreads from underground stem; provides showy groundcover and is a good stabilizer
Ericameria linearifolia	*Haplopappus l.* < 2000	narrowleaf goldenbush	native	dry	no seed treatment; seeds, containers	dry slopes, valleys
Eriogonum Umbellatum	200-3700	sulfur-flowered buckwheat	native	dry	no seed treatment (treatment increases viability); seeds, containers	many varieties; dry open, often rocky places; some varieties tolerate serpentine; is a good stabilizer, provides good groundcover
Eriophyllum Lanatum	< 4000	wooly sunflower	native	dry to moist	no seed treatment; seeds, containers	many varieties in many habitats
Mimulus Aurantiacus	*Diplacus, Mimulus longiflorus* < 1600	sticky monkeyflower	native	dry	no seed treatment; seeds, containers	consists of many different varieties; requires good drainage; requires full sun near coast, yet tolerates some shade inland
Salvia Sonomensis	< 2000	creeping sage	native	dry	seed requires treatment; divisions; cuttings; containers	chaparral, oak woodland, and yellow pine forest; prostrate, mat-forming; requires good drainage, fully sun, dry sites; provides a good groundcover; fire resistant if mowed and lightly irrigated; tolerates clay and serpentine soils

SHRUB

Ceanothus cuneatus	< 1800	Buckbrush	Native	Dry	Seed requires treatment; containers	Many varieties, variable, prostrate to subshrub to shrub; some serpentine tolerance, requires good drainage; widespread, nitrogen-fixer
Ceanothus integerrinus	200-2100	Deer brush	Native	Dry	Seed requires treatment; containers	Dry slopes, ridges; highly variable; disturbed roadsides, nitrogen-fixer
Cercis occidentalis	100-1500	Redbud	Native	Dry	Seed requires treatment; containers	Requires full sun and good drainage; is a good stabilizer, seeds require dormancy treatment; nitrogen-fixer; occurs in many habitats
Cerocarpus Betuloides	< 2500	Mountain mahogany	Native	Dry	No seed treatment; containers	Chaparral, pine/oak woodland, coniferous forest;

						many varieties
Dendromecon Rigida	< 1800	Bush poppy	Native	Dry	Seed requires treatment; rooted stem cuttings, containers	Dry slopes and washes, recent burns; requires good drainage
Heteromeles Arbutifolia	< 1300	toyon, Christmas berry	Native	Dry to moist	Fresh seeds-no treatment, stored seeds-treatment; seeds containers	Chaparral, oak woodland, mixed-evergreen forest; requires full sun and good drainage

SHRUB (cont)

Scientific Name	**Elevation**	**Common Name**	**Origin**	**Tolerance**	**Propagation**	**Comments**
Quercus Berberidifolia	*Q.dumosa* misapplied 300-1500	Scrub oak	Native	Dry to moist	Seed requires treatment if stored; acorns, containers	Dry slopes in chaparral; requires good drainage and full sun; some ecotypes acid-tolerant
Rhamnus ilicifolia	*R.crocea* ssp. ilicifolia < 2000	Hollyleaf redberry	Native	Dry	Fresh seeds require no treatment; containers	Chaparral, montane forests, good on dry banks

[1]Source: *Rehabilitation of Disturbed Lands in California: A Manual for Decision Making* by Newton and Claassen, 2003. Special Publication 123.
[2]Plant species occur at compatible elevations, water regime, and climate to the Forest Springs project site.

ADDENDUM

This Addendum addresses certain concerns raised by Nevada County Planner Kim Hunter regarding the impact of the planned construction and operation of a detention swale on current and future landmark oak resources at the site.

CONSTRUCTION OF THE DETENTION SWALE

Construction of the detention swale with outlet flows will require the removal of 25 black oaks within the Landmark Oak Grove (LMOG). None of these oaks are, by definition, landmark oaks (i.e. 36 inch diameter at base height - DBH); two of the oaks are 22 and 26 inches respectively, and the others range from 8 to 14 inches diameter. There is one Landmark oak, a black oak, situated within the western portion of the grove. This 40 inch DBH oak will not be impacted during the construction of the detention swale. Further, the outlet flows and other potential discharge systems will be designed and placed well to the east of this oak.

As discussed in the Management Plan, mitigation for the lost functions and values of oak trees within the LMOG and the one Landmark oak, black oak, 36 inch DBH, within the proposed mobilehome community will reduce both the direct and indirect impacts to this habitat to less than significant. This will be accomplished as discussed in the Management Plan and as supplemented by the avoidance measures and post-construction mitigation measures described in this Addendum.

Impact Avoidance Measures

The following mitigation measures will be implemented during construction of the swale in order to avoid potential direct harm to the preserved Landmark Oak Grove and to the single Landmark Oak situated within the LMOG during construction of the detention swale. These measures will also minimize indirect impacts to the preserved oaks following construction. Additional best management practices for oak preservation are included with the original management plan.

- Establish the landmark oak grove and the landmark oak as Environmentally Sensitive Areas (ESAs) during all phases of construction. The ESA boundaries shall be established at the drip line of the oak grove.
- Plans and specifications shall clearly state all the protection procedures for the oak grove that will be preserved on the project site. These specifications should also require contractors to stay within designated work areas, and shall include a provision for penalties if oak trees are damaged.
- No vehicles, construction equipment or facilities, or materials should be parked or located within the LMOG.
- Soil surface removal greater than one foot shall not occur within the driplines of the LMOG trees to be retained. No cuts or trenching shall occur outside of the designated construction area for the detention swale.

- Soils from the excavation for the detention swale will be removed immediately from the area and not stored within the LMOG.
- No irrigation or ornamental plantings requiring irrigation shall be installed within the LMOG or the perimeter area of the detention swale.

Protection During and After Construction of the Landmark Oak Grove

The following are general guidelines or best management practices for tree protection during construction activities, taken from some of the sources cited below.

- The Open Space/Landmark Oak grove to be preserved within the south slope parcel, and any other oaks adjacent to the construction areas, should be protected with high-visibility fencing placed at least one foot outside the dripline prior to commencement of construction.
- For the construction of the detention swale, an ingress/egress route should be designated for travel by heavy construction equipment moving to and from the site.
- If possible, do not disturb the Protected Root Zone (PRZ) of trees to be preserved. The PRZ is defined by its "critical root radius," and it is a more accurate measure than the drip line for determining the adequate protection area for trees growing in forests or those with narrow growth habits. To calculate critical root radius, measure the tree's diameter at breast height (DBH), which is 4.5 feet above the ground. Measure in inches, and for each inch, allow for 1 to 1.5 feet of critical root radius.
- Install high visibility fencing around the PRZ of any tree or cluster of trees with overlapping canopy that are identified on an approved grading plan as needing protection.
- The fencing should be four-feet high and bright orange with steel t-posts spaced 8 feet apart.
- Do not grade, cut, fill or trench within the PRZ.

Post-Construction Drainage Through the Detention Swale

As discussed in Addendum #1 - Preliminary Drainage Report, the earthen detention swale will be constructed within the Landmark Oak Grove (LMOG). It is anticipated that the swale and outlet flows will mimic the overland flow regime that naturally occurs on the site at this time. The construction of the detention swale is expected to convey storm-water off-site, and should not impound water for more than 24 to 36 hours of a storm event. It is anticipated that through these modifications, the detention swale will be mimicking the pre-development drainage patterns to the greatest extent practical.

Post-Construction Study and Mitigation Actions

It is expected that if the constructed detention drainage system is going to adversely affect the LMOG, die-off and/or deterioration will start to occur within a 5-year time frame. For this reason, mitigation measures should include a 5-year plan for inspection by an arborist/biologist of the preserved trees, including trees subject to encroachment within the drip

line, for construction-related damage or other associated impacts. Trees subject to desiccation as a result of construction activities will be monitored closely. If a tree's health and/or structure have been adversely impacted by construction and the tree cannot be restored to its pre-construction condition, mitigation measures will be implemented for loss of the tree under the guidance of the arborist/biologist.

To ensure that the LMOG will not be adversely impacted by drainage conditions, such as water retention within the landscape or excess volumes of runoff from impervious surfaces of the mobilehome park causing scouring within the grove, the following mitigation measures will be implemented to protect the LMOG resources:

- prior to the final configuration of the project Improvement plans, appropriate protective details will be determined during the final design phase and will be documented within the Final Drainage Report for the project. The project biologist shall review and approve these final documents, in writing, before the required county plan review and approval.
- a 5-year study of the impact of both the drainage and potential construction impacts on the LMOG will be conducted by an arborist/biologist assessing the overall health of the LMOG. This study will include quantitative monitoring of the effects of the detention swale's impacts on the LMOG's biological integrity and diversity, survival, and overall continued health. In addition, it will seek to ascertain the nature and strength of evidence of any decline in the oak populations, or any changes such as deterioration of the oaks located where water conveys across the landscape. The study will also assess the regeneration/recruitment of oaks within the LMOG.
- The 5-year monitoring should take place at the end of each growing season, prior to the period of senescence of the oaks. A report and point-set photographs (or videography) should be included with each year's findings and sent to Nevada County Planning in a timely manner. If the trees are adversely affected by the project then off-site mitigation as determined by the qualified biologist would be required.

RECRUITMENT OF BLACK OAK*

These mitigation measures are recommended in consideration of the following concerns and characteristics of California black oaks (*Quercus Kelloggii*).

Regeneration Processes

California black oak reproduces by sprouting from the root crown and establishing from acorns. Sprouting accounts for most reproduction, while seedling establishment helps maintain existing stands and allows the species to expand into new areas. However, because sprouting depends upon fire or some other top-killing disturbance, it is less important than seedling establishment on undisturbed sites. Even on disturbed sites, seedlings sometimes outnumber sprouts.

Vegetative Regeneration

California black oak sprout from the root crown or bole after fire, logging, frost, or other top-killing events. Edwards and McDonald state that most California black oak stands originate from sprouts. Sprouting is the California black oak's primary method of reproduction after top-killing events like fire. Even seedlings sprout after top-kill, and sprouting ability is retained until trees are "very old and moribund." Old California black oaks may not sprout if perennating buds are covered by thick bark. Trees originating from root crown sprouts are often multistemmed. The number of sprouts/bole tends to decrease over time; pole-sized clonal clumps generally contain 1 or 2, or occasionally up to 4, sprouts.

Seedling and Sprout Growth

California black oak's shoot and horizontal root development are slow for the first 6 to 7 years, with most initial growth concentrated in vertical roots. On favorable sites, California black oak seedlings are 2 to 4 inches in height, and have a 9-inch taproot within 28 days after emerging. Lateral roots are slower to develop than taproots. First-year seedlings are typically 2 to 6 inches tall, and their taproots may extend 3 feet below ground. Conifer seedlings grow faster than and outshade California black oak seedlings, but California black oak seedlings often grow through chaparral shrubs. California black oak seedlings on open sites grow faster than seedlings beneath the canopy. California black oaks respond to release after logging, fire, or other top-killing events open the canopy.

Until about age 25, California black oak saplings rapidly gain height growth but have thin stems. After this period, trees on open sites gain larger diameter to height ratios. Notably, California black oak may establish seedlings in large numbers on some sites, but have only a few trees graduate into the sapling class.

*Resources:

Fryer, Janet L. 2007. Quercus kelloggii. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2014, May 15].

Kuhn, Bill and Brent Johnson. 2008. Status and Trends of Black Oak (*Quercus kelloggii*) Populations and Recruitment in Yosemite Valley (a.k.a. Preserving Yosemite's Oaks) Final Report to The Yosemite Fund.

Costella Environmental Consulting
Tina Costella, M.S.
Tax ID Number 26-4120920
Caltrans DBE/SWBE #37798

Consulting Environmental Botanist/Biologist

P.O. Box 215
Nevada City, CA 95959
E-mail tcostella@metrailer.com

Phone 530-265-6969
Cell 530-263-7617
Fax 530-265-0601

December 1, 2014

Brian Foss, Planning Director
County of Nevada - Community Development Agency
950 Maidu Avenue
Nevada, CA 95959

Re: Forest Springs Mobilehome Park Phase 4 - Oak Tree Replanting

Dear Brian,

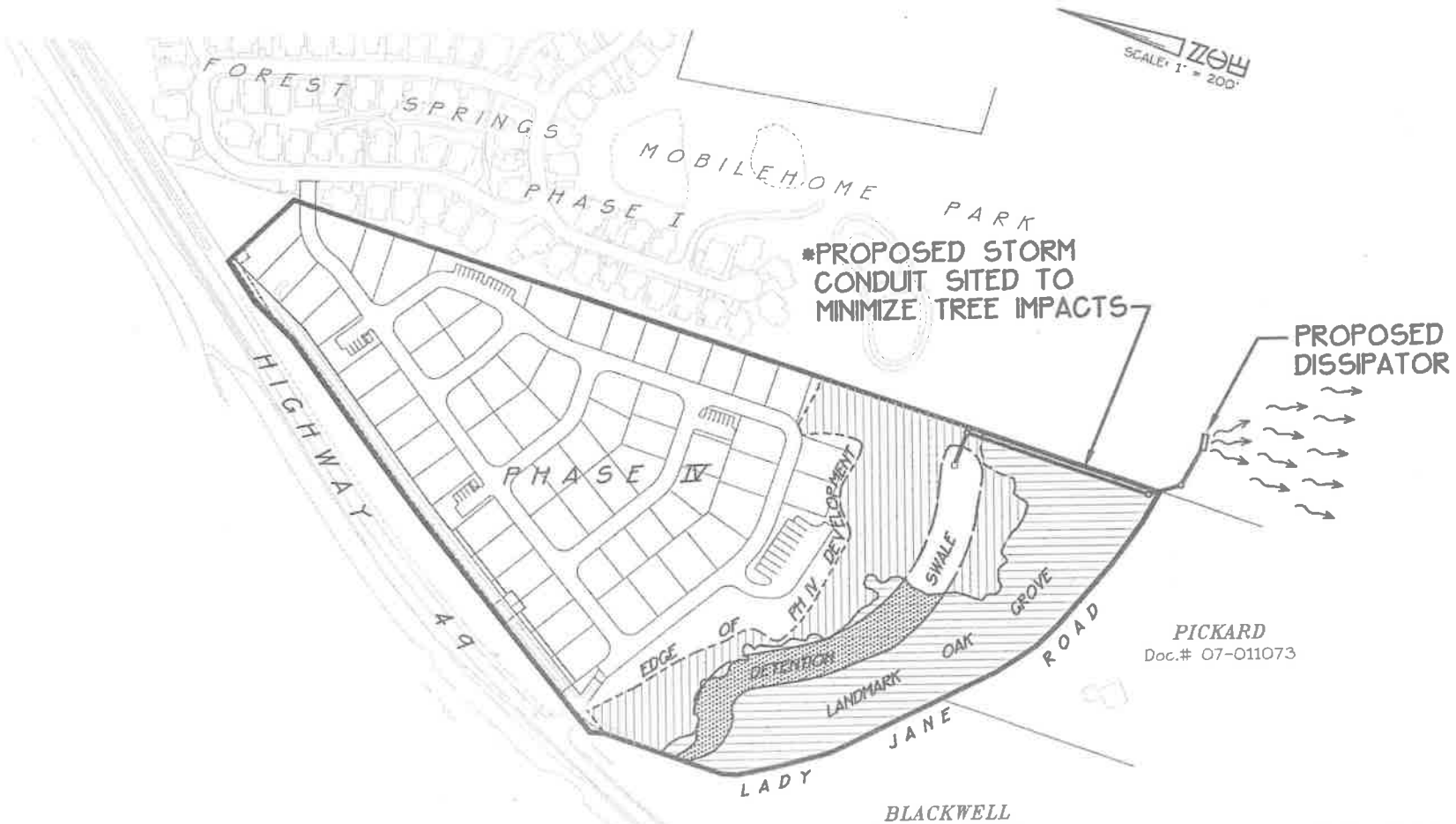
Attached is a map showing the location of the approximately 5 acre Landmark Oak Grove within the area designated as Open Space for Forest Springs Mobilehome Park Phase 4.

An additional survey conducted this fall shows that 25 oaks will most likely be removed to construct the detention swale, all within the open space area and the Landmark Oak Grove. The required replanting at a 3:1 ratio for these oaks, plus the one Landmark Oak tree within this area, will require that 78 new black oak trees be planted. Replanting could be done within openings in the existing tree canopy within the designated Open Space acreage, keeping in mind that spacing would require each tree be located at least 15 feet outside of the dripline of existing oak trees. Prior to replanting, a qualified biologist or arborist shall flag the replanting sites. Potential replanting sites have been marked on the attached map to demonstrate that adequate space exists, however, flagging at the time of the actual planting should be the final deciding factor.

If there is not sufficient space within the open space area at the Forest Springs site to complete the entire replanting, another option would be to protect existing oak saplings that are already established on a site under the auspices of the Bear Yuba Land Trust. The Land Trust is shortly acquiring land in the south county that has black oak and other species of oaks on 35 acres of land. Providing permanent protection of this land, as well as further permanent protection of the young oak seedlings at the Forest Springs site, would satisfy Nevada County oak protection policy and result in befitting projects for all sites involved.

Please contact me if you have any further questions.
Yours truly,

Tina Costella, M.S.



LEGEND

- LANDMARK OAK GROVE IMPACT AREA (~1 AC.)
- LANDMARK OAK GROVE (~5 AC.)
- OAK REPLACEMENT REPLANTING AREA (~3 AC.)

OAK GROVE MITIGATION EXHIBIT

FOREST SPRINGS MOBILEHOME COMMUNITY PHASE IV

NEVADA COUNTY . CALIFORNIA
SCALE: 1"=200' NOVEMBER. 2014

NEVADA CITY ENGINEERING, INC.
505 COYOTE STREET • P.O. BOX 1437 • NEVADA CITY • CALIFORNIA

07-026-01

Tree Inventory

Project: Forest Springs Mobilehome Park Phase 4 - Detention Swale Location
Date: 11/14/14
Surveyors: Tina Costella, Costella Environmental Consulting and Janeane Martin, Nevada City Engineering

Count	Tag #	Species Common *Scientific Name*	Diameter at Breast Height (inches)	Vigor 1=Poor 3=Average 5=Good	Comments
1	67	Black Oak *Quercus Kelloggii*	9	2	Crown loss
2	68	Black Oak *Quercus Kelloggii*	10	2	Crown loss
3	69	Black Oak *Quercus Kelloggii*	12	2	Crown loss
4	70	Black Oak *Quercus Kelloggii*	11	2	Crown loss
5	71	Black Oak *Quercus Kelloggii*	13	2	Crown loss
6	71	Black Oak *Quercus Kelloggii*	5/10.5	2	Dbl trunk, Crown loss
7	71	Black Oak *Quercus Kelloggii*	12	2	Crown loss
8	72	Black Oak *Quercus Kelloggii*	23	1	Crown loss and basal decay
9	73	Black Oak *Quercus Kelloggii*	12.5/9	3	Dbl trunk
10	74	Black Oak *Quercus Kelloggii*	10.5/8	2	Dbl trunk, 1" distance from mature *Pinus ponderosa*
11	75	Black Oak *Quercus Kelloggii*	8.5	1	Basal cavity
12	75	Black Oak *Quercus Kelloggii*	16	1	5% lean, crowded into *Pinus sabiniana*
13	75	Black Oak *Quercus Kelloggii*	10	1	crowded into *Pinus sabiniana*
14	75	Black Oak *Quercus Kelloggii*	17	1	crowded into *Pinus sabiniana*
15	76	Black Oak *Quercus Kelloggii*	17.5	2	crowded into *Pinus sabiniana*
16	76	Black Oak *Quercus Kelloggii*	11.5	2	5% lean

Count	Tag #	Species Common *Scientific Name*	Diameter at Breast Height (inches)	Vigor 1=Poor 3=Average 5=Good	Comments
17	77	Black Oak *Quercus Kelloggii*	11.5/8.5/11	2	Trpl trunk, crown loss
18	77	Black Oak *Quercus Kelloggii*	6	2	Crown loss
19	77	Black Oak *Quercus Kelloggii*	8.5	2	Crown loss
20	77	Black Oak *Quercus Kelloggii*	17/18	3	Dbl trunk
21	77	Black Oak *Quercus Kelloggii*	16/7	2	Dbl trunk, 5% lean
22	78	Black Oak *Quercus Kelloggii*	9	1	Crown loss
23	78	Black Oak *Quercus Kelloggii*	9.5	1	Crown loss
24	78	Black Oak *Quercus Kelloggii*	10/13	2	Dbl trunk
25	79	Black Oak *Quercus Kelloggii*	5.5/10.5/8	2	Trpl trunk, Crown loss