*Staub Forestry &*
*Environmental Consulting*

STAUB

March 17, 2010

Mr. Luis Osorio
Monterey County Resource Management Agency
168 West Alisal Street, 2nd Floor
Salinas, CA 93901

**Supplemental Forester's Report for Ferrini Ranch Alternative Option as Requested in County Letter Dated 12/16/09**

Dear Mr. Osorio,

The letter from Monterey County dated December 16, 2009 asks the forester to provide updated estimates for tree removals associated with design revisions for specific project components that are referred to here as part of the Alternate Site Plan 1 (A1) for the proposed subdivision of Ferrini Ranch. To estimate tree removals associated with these A1 sites, I followed the same field-based methodology of physically tallying trees within development sites as shown on Site Maps including aerial photography for the revised project components. Site Maps were the designs shown on the A1 plans prepared for submittal in March 2010 by Whitson Engineers. Field tallies and evaluations were completed during three site visits in February 2010. Current tree removal estimates are provided for:

Parcel E, 42 affordable units.
Toro Park Access Road with preliminary grading estimate.
Cross Country Course Realignment on Aerial Photo per Whitson Engineers.
River Road Widening and Access Road with preliminary grading estimate.
San Benancio Road, Revised Lot 1a.
Realigned Segments of Residential Roads for A1.

**Findings**

Oaks and madrones are the tree species designated in the Toro Area Plan for protection under Monterey County's tree protection ordinance (21.64.260). As noted in the FMP, tree cover on the property is comprised almost exclusively of coast live oak (*Quercus agrifolia*) and no other protected species were identified or tallied as removal trees under the A1. Tree removals for these project sites were estimated at the maximum foreseeable level considered approvable under applicable County regulations and review and are comparable to the "high estimate" scenario used in the project FMP.

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*Dylan Windt, Forestry and GIS Technician*

**Tree Removals for Alternate Site Plan 1 Sites**

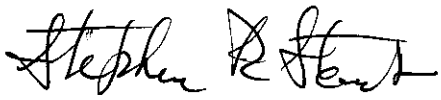
| Tree Removals | Project Area | Notes |
|---|---|---|
| 6 | Parcel E | 2 buckeyes might also be removed |
| 22 | Toro Park Access | Mostly 6" to 11" diameter in sloped area |
| 5 | Cross Country Course | Recommend 6' maximum width on steep slopes |
| 12 | River Road to Parcel D | Up to 7 buckeyes might also be removed |
| 7 | San Benancio Lot 1a | Sycamores occur within buildable area |
| 175 | Realigned Roads | New route of main road from lot 62 to lot 74 |
| | | has far less impact than VTM road from 54 to 67 |
| 227 | Total | |

Development of these sites is estimated to remove approximately 46 fewer trees than development under the 2005 VTM plans. The Alternate Site Plan 1 design for 42 affordable units reduces estimated removals of oaks for Parcel E from 15 to 6 and for buckeyes from 4 to 1 or 2. All A1 sites listed above result in less tree removal except the Toro Park Access and Cross Country Course sites where estimated tree removals are slightly higher than those used in the 2005 FMP. However, site review suggests that no tree removal may be necessary for a reconfigured cross country course if alignments are specifically adjusted in the field to minimize impacts to trees and course width is limited to 5 or 6 feet where it crosses steep slopes near or under trees.

To conclude, my review of these A1 sites found that they reduced estimated tree removals by 46 trees, a reduction of 17% for the sites reviewed. As analyzed, therefore, tree removal under the alternative option falls within and below the high estimate in the 2005 FMP that was used to establish the upper baseline for project review.

Please let me know if I can provide any further clarification or assistance.

Sincerely,



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February 5, 2007

Mr. Luis Osorio
Monterey County Resource Management Agency
168 West Alisal Street, 2nd Floor
Salinas, CA 93901

**RE: Response to PMC Peer Review of Ferrini Ranch FMP**

Dear Mr. Osorio,

I have the following comments on the points covered in the Peer Review letter on the Ferrini Ranch FMP taken by number from that document. However, it is worth noting at the outset that the reviewer appears to have missed the methodology section on the bottom of page 4 of the FMP which indicates that all areas proposed for road, driveway and home construction were reviewed in the field at a reconnaissance level in order to estimate tree removal associated with the project. In the absence of final site and grading plans, removals were estimated at low and high levels for project components based on our past experience with other projects subject to County requirements to minimize tree removal.

1) The FMP duly notes that only a very few madrones were observed on the entire property and its absence in any removal estimate is the result of the fact that none of protected tree size were found within areas proposed for construction. Madrone is indeed a species subject to the County's ordinance within the Toro and some other planning areas. No madrone removals are anticipated pending possible revision if site and grading plans change, though even then it is unlikely given their great scarcity on the site.

2) As noted above, tree removal estimates were based on physical inspection and tree tallies of all proposed construction sites shown on the VTM. Therefore I believe it is entirely inappropriate to follow the methodology for estimating tree removal proposed by PMC. First, presuming removal of all trees on each lot is entirely unrealistic and flies in the face of my own and County staff's experience applying the County's tree protection ordinance. Second, it would either have to estimate tree numbers based on average tree densities sampled on the property, which would have a high margin of error unless extremely extensive stratified sampling produced estimates with high reliability – a highly unlikely occurrence – or it would do what has already been done, that is, individually tally the trees to be removed within the sites of proposed construction. Certainly the reliability of the estimates will improve as final grading plans are prepared and trees are individually mapped, but the FMP's estimates of total tree population and

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tree removals are sufficient for scoping potential project impacts on the property's trees at this time.

3) Again the reviewer states incorrectly that not all trees that may affected by the project were surveyed. The whole point of our methodology was to visit all proposed sites where tree removal and grading would occur to review and tally trees individually. There are a number of good arboricultural suggestions listed under this item, but it is important to understand that most of them are most appropriately applied as site and grading plans are being developed for each lot, each of which will require a site specific amendment to the general FMP with removal tallies and prescriptions for protection and remedial care based on individually mapped trees.

With respect to the specific revised language suggested, all revisions but one are matters of detail rather than prescriptive intent. The one suggestion made for Measure 1 that is of significant concern is the implied absolute prohibition of encroachment that exceeds 20% of the dripline area. While limiting encroachment to a maximum of 20% is highly desirable and a good means of avoiding adverse impacts, many trees where encroachment has exceeded 20% by a factor of two or three times have been retained while maintaining good health and longevity. Establishing an absolute 20% encroachment limit which would require removal if exceeded would actually increase the number of trees removed, many of which would have likely been able to survive in reasonable health if a qualified tree professional judged that there was a reasonable chance of success. This is not an argument for routinely allowing encroachment of more than 20% nor for not forcing architects and engineers to alter designs to maximize tree retention and protection. It is just that imposing such a hard limit unduly limits our ability to retain some valuable trees. However, I do agree that a higher standard of mitigative care is warranted where encroachment within driplines does occur. Most are already prescribed and additional ones, that might include periodic watering or covering and regular wetting of areas of exposed cut roots, should be prescribed when individual affected trees are shown on detailed grading plans.

Measure 8a was specifically included to coordinate the protection efforts of tree professionals with Monterey County staff and should remain as written.

The mapping suggested in the next to last paragraph on page 3 will occur in later in the review and planning process for the project. Also in that paragraph, leaving the language as "tree(s)" rather than oaks is more inclusive and highlights the desirability of protecting all the native trees on the site rather than only those specifically listed for ordinance protection in the Toro Planning Area.

Please let me know if I can provide any further clarification or assistance.

Sincerely,

Stephen R. Staub
Registered Professional Forester, #1911
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PMC

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December 5, 2006

Luis Osorio
**MONTEREY COUNTY**
**RESOURCE MANAGEMENT AGENCY**
168 W. Alisal Street, 2nd Floor
Salinas, CA 93901

**RE: FERRINI RANCH (PLN040758)**
**PEER REVIEW OF FOREST MANAGEMENT PLAN**

Dear Mr. Osorio:

Per our scope of work for the Ferrini Ranch Subdivision EIR, PMC has reviewed the Forest Management Plan (FMP) for the Ferrini Ranch Subdivision that was prepared in September 2006 by Staub Forestry and Environmental Consulting for the project applicant. PMC requests clarification/changes on the FMP as follows:

1) The FMP does not fully address Section 21.64.260.C.1 of the *Monterey County Zoning Ordinance*, which states that "no oak or madrone tree six inches or more in diameter two feet above ground level shall be removed" within the *Toro Area Plan* planning area. The Forest Management Plan addresses oak trees, but does not provide any analysis regarding madrones, other than the fact that they appear on the project site.

2) The introduction states that particular attention was paid to trees that would be affected by construction of roads and common driveways. In a typical subdivision project, the majority of trees are impacted by building construction. Since no building envelopes have been identified for the proposed subdivision, PMC recommends that the FMP be revised to estimate the tree removal associated with the building construction based on the maximum site coverage allowed per the *Monterey County Zoning Ordinance*.

3) The Forest Management Plan did not survey all trees that may be affected by the proposed project. Instead, sample plots were studied and information was extrapolated for the remaining area. Therefore, all impact calculations are estimates, and are not exact. Without surveys of each tree in the area of impact, it cannot be determined if mitigation is adequate or appropriate. The health of individual trees is especially important where trees will be retained directly adjacent to improvements. In these areas, healthy trees should be retained, but unhealthy trees that may pose a hazard to human safety should be specified for removal.

Throughout the document we recommend revising the language as follows:

Under the "Tree Replacement" section on page 6 the following modifications are recommended:

> "Replacement trees ~~should~~ *shall* be of the same species as removal trees and ~~should~~ *shall* be of local native stock." This will help eliminate introduction of foreign pathogens and will ensure trees that are adapted to local climate.

Measure 1, under the "Tree Care During Construction" section on page 6, the following language shall be added:

> "Where encroachment within the TPZ is absolutely necessary, additional mitigation will be required as recommended by the monitoring tree professional, and total encroachment shall not exceed more than 20 percent of the total dripline area. In addition, protective fencing shall remain a minimum of 3 feet from the trunk of all protected trees at all times."

Measures 2 and 3, under the "Tree Care During Construction" section on page 6, are inconsistent. Any fill placed within the driplines of trees, even as little as 2-inches", could significantly impact trees. Therefore, the first sentence of Measure 3 should be modified to state the following:

> "No soil may be removed from within the dripline of any tree and any fill placed within protected tree driplines or TPZs must be reviewed by a qualified forester, certified arborist, or other qualified tree professional"

Measure 4, under the "Tree Care During Construction" section on page 7, is unnecessary if Measure 1 is properly enforced.

Measure 5, under the "Tree Care During Construction" section on page 7, should add the following:

> "All prescribed pruning shall be conducted or supervised by a qualified forester or certified arborist."

Measure 6, under the "Tree Care During Construction" section on page 7, should add the following:

> "All required root pruning shall be conducted or supervised by a qualified forester or certified arborist."

Measure 8a, under the "Tree Care During Construction" section on page 7, should be revised to be "at the discretion" of Monterey County Public Works Department, not dictated by tree professionals.

In addition, it would be helpful if there was a map included with the FMP to further clarify the project location, specific impacts, and avoidance measures. Ideally, the map would be an aerial photograph of the project site with project boundaries and location of tree removal/protection zones. Furthermore, the "Project Description" section sometimes refers specifically to oaks and other times refers to "trees" in the same context. In order to eliminate confusion and to better understand the nature of total impacts, whenever the term "tree(s)" is being used to describe only oaks, the term "oak(s)" should be substituted.

Please do not hesitate to contact me if you have any questions regarding my review of the Forest Management Report for Ferrini Ranch (Staub Forestry and Environmental Consulting 2006) or would like to discuss my recommendations.

Sincerely,

**PACIFIC MUNICIPAL CONSULTANTS**

Rochelle Wicky Amrhein
ISA Certified Arborist
WE-6783A

*Staub Forestry &*
*Environmental Consulting*

# FOREST MANAGEMENT PLAN

**for**

# FERRINI RANCH

**Prepared For**

**Bollenbacher and Kelton**


**Prepared by**

**Staub Forestry and Environmental Consulting**

**Stephen R. Staub**
**Registered Professional Forester, License #1911**
**Certified Arborist #WE-6739A**

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**September, 2006**

*Staub Forestry &*
*Environmental Consulting*

# FOREST MANAGEMENT PLAN

## Ferrini Ranch Proposed Subdivision in Monterey County, California

**APNs 161-011-019, 030, 039, 057, 058, 059 and 078**
**161-031-016 and 017**

**Owner/Applicant:** Bollenbacher & Kelton, Inc.
2716 Ocean Park Blvd., Suite 3006
Santa Monica, CA 90405

## Introduction

This Forest Management Plan is prepared for Bollenbacher & Kelton, Inc. by Stephen R. Staub, Registered Professional Forester #1911 and Cheyenne Borello, Registered Professional Forester #2784. It is to be made a part of an application for a residential subdivision comprised of 146 residential lots, 23 clustered market rate units, and 43 inclusionary units on this approximately 870 acre property, which is located immediately south of Highway 68 on either side of the Toro Regional Park access parcel. The property stretches from River Road on its northeast boundary to San Benancio Road at its southwestern corner. The Forest Management Plan is subject to the requirements of Zoning Ordinance #21.64.260, which applies restrictions for the preservation of oak and other protected trees as required in the Monterey County General Plan, area plans, and master plans. The scope of this plan covers the trees on the entire property with particular emphasis on trees that will be impacted by construction of roads and common driveways.

**Site Description :**

**Table 1: Ferrini Ranch APN's and acreages.**

| Location | Acres | Assessor's Parcel Number |
|---|---|---|
| Western Parcels | 581 | 161-011-057-000<br>161-011-058-000<br>161-011-059-000<br>161-011-078-000<br>161-031-016-000<br>161-031-017-000 |
| Eastern Parcels | 288.89 | 161-011-019-000<br>161-011-030-000<br>161-011-039-000 |
| Total | +/-870 | |

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The proposed subdivision of Ferrini Ranch is delineated on the Draft Vesting Tentative Map dated March 15, 2005 prepared by Whitson Engineers.

Location: The southwestern parcels are located south of Highway 68 from the junction of San Benancio Road and Highway 68 north to the Toro Regional Park entrance. The northeastern parcels are located south and east of Highway 68 from the Toro Regional Park entrance north to River Road. Nearly all residential development is proposed for the southwestern parcels. Primary access for residential use including inclusionary units is proposed off Highway 68. Access for 12 parcels is from San Benancio Road while access to 8 residential parcels and a 34.7 agricultural/industrial zoned parcel is proposed from River Road.

Parcel Size: Approximately 870 acres.

Existing Land Use: Principally cattle grazing and undeveloped.

Slope: Slopes within proposed residential homesite areas are generally less than 25%, although slopes are quite variable and exceed 30% on some sections of residential lots not subject to development. The open space parcels (approximately 600 acres) contain both gentle to moderate grassy benchland and ridgetops and steeper sidehills, where slopes may reach 60%.

Soils: Soils on the property are intergrading sandy loams to loamy sands with variable clay content in the subsoil. The Soil Survey of Monterey County, California (USDA, 1978.) maps the western portion of the property primarily as Arnold series loamy sands and Santa Ynez series fine sandy loam with smaller inclusions of Gorgonio, Badland, Psamments and Fluvents. nearly the entire property as Arnold series loamy sands with a minor incursion mapped as Badlands. The mapped Arnold series is mixed with inclusions of San Andreas and Santa Ynez series fine sandy loams. Top soil layers are generally gray to grayish brown.

Vegetation: Vegetation on the site has been described and mapped in the Preliminary Biological Resource Assessment of the project prepared by Denise Duffy & Associates (August, 2006). Annual grassland and a variable coast live oak woodland with densities ranging from dense to open are the dominant vegetation communities on gentle to moderate slopes plus a limited amount of shrub cover that occurs primarily on moderate and steeper slopes with southwesterly exposures. Most of the shrub cover is coastal scrub. For more detailed descriptions of these vegetation types and characteristic species, see the Duffy report.

Vegetation on most of the property has been significantly influenced by past and current grazing activities. Although vegetative cover has not changed dramatically, inspection of 1970 aerial orthophotography and on-site observations suggest that successional patterns of coastal scrub encroaching on annual grassland and oaks becoming established in both coastal scrub and grassland has led to an increase in the amount of oak cover on the property over the last 30 years.

Forest Condition and Health: Tree cover on the property is almost exclusively coast live oak (*Quercus agrifolia*) with scattered California buckeye (*Aesculus californica*), valley oak

(*Quercus lobata*) and western sycamore (*Platanus racemosa*). The valley oaks and western sycamores occur almost exclusively in the gentle flats near Highway 68 or on the toes of slopes adjoining those valley bottoms. A very few willows (*Salix* sp.), black cottonwoods (*Populus balsamifera*) and madrones (*Arbutus menziesii)* were observed during reconnaissance of the property. The coast live oak occurs as a dense woodland type on steeper north facing slopes, as an open to moderately dense woodland in most other areas, and in a few areas as an open savanna in which individuals and small groups are scattered in grassland. As calculated from Attachment A, Ferrini Vegetation Map of Denise Duffy & Associates' report on Vegetation Mapping of the Ferrini Ranch (August 21, 2006), coast live oak woodland occupies just over 436 acres of which 24 acres are dense and 412 acres are moderate.

Stocking in oak woodland is quite variable, ranging from less than 20 trees per acre in open areas to more than 200 trees per acre in denser woodland. Smaller trees (less than 12 inches in diameter) are by far the most numerous. Higher percentages of larger trees are restricted to relatively infrequent patches where stand history, topography, soil depth and moisture are favorable. Very large trees occur in open areas of good soil with little adjacent tree cover. Oak savanna is transitional to grassland with trees widely spaced and tree cover less than 25%. Canopy cover in oak woodland can range from moderately open to closed or nearly closed. Dense oak woodland here occurs primarily on steeper north facing slopes. It is densest and most continuous on north facing slopes above four more or less east/west trending seasonal drainage areas. In a number of areas, including some sections of coastal scrub, there are numbers of smaller trees (less than 6 inches in diameter) and seedlings, suggesting a slow trend of increasing oak forest cover. Some of the small trees are heavily browsed. Across the property, tree sizes, densities and ages are quite variable, reflecting differences both in local site conditions and in past land use history.

Health of oaks on the property can be rated as fair to good. In general, foliage color is good, but a number of trees have significant internal decay and cavities and some trees have only fair to poor foliage retention. While oak decay and cavities offer useful niche habitats, they also contribute, in combination with other native oak pathogens, to low levels of ongoing tree mortality, which is characteristic of native stands with trees of mixed ages. However, no symptoms of sudden oak death caused by the pathogen *Phytophthora ramorum* were observed during our field reviews. Most confirmed infections of trees by this disease in Monterey County occur in tanoaks by the coast in Big Sur although an infection was confirmed in a coast live oak n Prunedale. The absence of tanoak, which is highly susceptible, and rarity of the primary alternate host species bay laurel in the areas immediately surrounding the project probably have helped to limit the disease's effects in this portion of the County.

## Project Description

The project proposes a 146-lot residential subdivision with nearly 180 acres contained in residential lots ranging in size from 0.28 acres to 73.85 acres with an average lot size of 1.22 acres. Inclusionary housing will consist of 43 units with access from Highway 68 also used by one adjoiing residential lot. 137 lots are located south of the Toro Regional Park entrance with

primary access for 125 lots directly from Highway 68 and 12 lots from San Benancio Road. Remainder Parcels A, B and C will consist of about 600 acres of open space with 34.7 acres of Parcel D zoned as agriculture/industrial. Access for the remaining 8 lots and the ag/industrial parcel will be from River Road. Potential homesites within each lot will be located within a designated building envelope on gentle to moderate terrain, predominantly in grassland areas.

Estimated Native Oak Population and Removals

To characterize stand structure and tree numbers, plot samples ranging from one-tenth to one-half acre in size were taken across the range of forest cover types and amounted to roughly a one percent sample of the forest area. Total tree numbers were extrapolated from the samples through all densities and checked against other data collected from similar stands in the region. Only a small percentage of the total number of trees was actually measured, but the sampling is adequate for purposes of general impact evaluation.

**Table 2**
Estimated Number of Oaks

| Diameter Class | 6-11"* | 12-23" | 24"+ | Total |
|---|---|---|---|---|
| | 15,184 | 12,930 | 1,186 | 29,300 |

*Experience with similar stands suggests that oaks in the 1"-5" class will be somewhat lower to roughly equal to the number in the 6'-11" class.

The estimates of tree numbers above are likely to be conservative, as they are based on per acre tree estimates that are significantly lower than those reported in extensive sampling of central coast oak stands by Cal Poly researchers.

To estimate tree removals, all road locations and building envelope areas shown on the Draft Vesting Tentative Map for Ferrini Ranch dated December 13, 2004 were reviewed in the field following the alignments, tree cover and topography shown on aerial photography of good resolution at a scale of 1"= 200'. Although no field staking was in place and road and lot locations are preliminary, we were able to identify trees and landmarks accurately enough in the field to estimate and tally tree removals for each individual road segment and proposed building area on all lots. To provide a margin of error due to absence of final staking, two tallies of removal trees were kept: a feasible but near minimum removal estimate and a high removal estimate. Tree removal estimates were based on our visual approximation of limits of grading required to construct roads, driveways, and building pads based on our past experience with similar road construction and building projects.

Following this methodology, we summed estimated removals for each project component to characterize potential tree removals for the entire project as shown in the table below. Estimated

removals should be considered relative to total of some than 29,300 total trees now growing on the property as estimated in Table 2 above.

**Table 3**
Estimated Tree Removals by Project Component

| Project Component | Low Estimate | High Estimate |
|---|---|---|
| Roads | 331 | 469 |
| Ag/Industrial + Inclusionary | 0 | 16 |
| Residential | 301 | 436 |
| **Total** | **632** | **921** |

While such estimates are not definitive, they permit a preliminary evaluation of the scope and scale of tree loss potentially associated with the project, which calculates to removal of less than 3.2% of the trees on the property under even the high removal estimate. Based on our review, the principal area of uncertainty with respect to road alignment and tree removal numbers is the road segment from Lots 54/55 to Lots 67/68 where our low and high estimates varied by 80 trees due to uncertainty of alignment and limits of grading.

Approximately 20% to 25% of the trees to be removed are suffering from extensive decay, breakage, and/or low vigor. With careful construction methods and permission to construct a few short sections at somewhat less than standard 20 foot width, it is likely that during development of permanent access for the subdivision, no 24"+ dbh oak tree would have to be removed and that a few other trees in the smaller diameter classes could be retained. Final removal tallies are likely to vary somewhat from these preliminary estimates. However, with even the high estimate of removals coming in at less than 3.2% of total trees with complete or nearly complete retention of valley oaks, western sycamores and 24"+ specimens, t the evaluation of overall impacts to forest resources will remain valid. Not reflected in the tally above are young oaks in the 1"-5" class, which are sporadically numerous. Utilization of the existing road alignment, appropriate design and construction methods, and use of the most open areas for access to currently unroaded areas appears to have minimized tree removals given site conditions.

Condition of Retained Trees

The health and general condition of the retained trees is good and at least comparable to the trees being removed. As noted above decay and low vigor are apparent in a number of the trees to be removed as well as in the stand as a whole. Such features can be beneficial where improvements and public safety are not at risk. The vast majority of trees on the site and effectively all of the largest trees will be retained. The largest blocks of forest on the property, including extensive oaks stands on the undeveloped remainder parcels will be effectively retained. Tree mortality will continue to occur as it does in all unmanaged forests. Native diseases and insects are expected to persist at normal background levels unless the new *Phytophthora* disease complex becomes active in the area, in which case native diseases and insects will increase as a part of that complex. Protection measures for trees during construction are included below as in the section Tree Care During Construction.

Tree Replacement: County regulations require replanting on at least a 1:1 basis for all protected trees (oaks greater than 6" diameter) removed, except where this would result in an overcrowded or unhealthy environment. Because oak tree cover on the property appears to have expanded over the last 30 years and because grassland habitats on the property are likely to be at least as ecologically valuable as the woodland habitats, replanting at only a 1:1 basis is recommended in order to avoid excessive loss of grassland habitats after development. Actual tree removals for each project removals should be tallied as final plans for each phase are approved and implemented and used (rather than preliminary estimates) for calculating the 1:1 tree replanting requirement. Replacement trees should be of the same species as removal trees and should be of local native stock. Required replacement trees should be planted outside areas subject to development and enjoy protected status after planting. Tree replacement for infrastructure tree removals should be done principally on designated open space parcels or easements. Excess volunteer seedlings already existing on the site may be transplanted to provide suitable replacement planting stock of known local origin. If oak replanting stock is not transplanted from on-site sources, it should be grown from local native seed stock in sizes not greater than 5 gallons, with one gallon, D40 Treepot size or smaller being preferred as the tree is likely to adapt to the site better and grow larger over the long term.

Tree Care During Construction

To protect trees during construction activities, the following general measures shall be adhered to:

1) Around each tree or group of trees to be preserved in a construction area, a boundary of protective fencing (6' high chain link or a high visibility plastic fencing supported by wood or metal stakes driven into the ground) shall be erected along the approximate driplines of such protected trees to define a Tree Protection Zone (TPZ) beyond the limits of construction activities. Where guidance of a tree professional is used, encroachment of protective fencing within the dripline of retained trees may occur in order to minimize tree removals. Where construction activities cannot avoid oaks, the following general guidelines should be kept in mind. Oaks will usually survive the loss of up to one-half of their root feeding zone, which is roughly defined as the outer two-thirds of the root radius extending to the dripline. Oaks may even stand the loss of more roots if they are healthy and appropriate remedial measures are implemented. When cutting roots, especially roots greater than three inches in diameter, it is important to consider the potential loss of security and stability of the tree. Trimming may eventually help to compensate for imbalance or loss of part of the root system but should be done only after monitoring to identify affected portions of the tree crown whose removal might concentrate growth in healthier areas.

2) No storage of equipment or construction materials, or parking of vehicles is permitted within the TPZ described in #1 above.

3) No soil may be removed from within the dripline of any tree and no fill of additional soil should exceed two inches (2") within the driplines of trees, unless it is part of approved construction and is reviewed by a qualified forester, certified arborist, or other tree

professional. Oaks are particularly sensitive to increases in soil depth. If part of the feeding zone is buried, it should be considered to be at least partly lost. Under no circumstances should any fill be allowed to rest against the base of any tree. Oaks are especially susceptible because oak root fungus is encouraged. Construction of a permanent well or other retention devices at a distance from the trunk to protect rooting at original grades over substantial areas can permit additional retention of healthy trees.

4) Bark injury to any tree from equipment or materials is not acceptable and is prevented by installing and maintaining TPZs as noted in #1 above.

5) No native tree may be removed or trimmed unless authorized under this Management Plan or County regulation. Extensive pruning will be necessary in some areas to permit construction while protecting retained trees whose limbs extend into the construction area. Before commencement of construction, pruning prescribed by a qualified forester or arborist to protect retained trees from damage during construction should be completed.

6) Roots exposed by excavation should be pruned promptly, covered and kept moist until final landscaping is in place in order to promote callusing, closure and regrowth.

7) All tree work shall be monitored by a qualified forester, certified arborist, or tree professional and work completed by qualified tree service personnel. Prior to removing any oak tree, the tree removal contractor shall contact the Monterey Agricultural Commissioner's office to be determine how woody materials must be handled to comply with current SOD quarantine requirements.

8) Project Specific Recommendations: To enhance tree protection as the project moves from conceptual planning to detailed, site specific grading and construction plans, the following measures are recommended:
   a) In specific instances to protect valuable trees, permit sections of road to be constructed at less than the standard widths as long as minimum safety standards are maintained
   b) Have a qualified tree professional involved in preparation of final plans for roads, utilities and residential facilities to enhance tree retention and retained tree health. For example, several attractive trees on the edge of existing cutbanks can be retained by use of keyed or retained fills or retention structures that reduce cutbank heights and slope lengths. In other instances, doing all widening into a shrub-covered cutbank will minimize impacts to a tree on the fill side. In appropriate circumstances, use of special construction measures in such as use of grade beams, discontinuous footings, retaining walls, cantilevered floors, permeable and semi-permeable surfacing, etc. can reduce tree removals and improve tree health.

**Project Assessment**

Minimum Tree Removal: As noted above in discussion of total oak population and tree removals, use of appropriate design and construction methods, and use of the most open areas for

access to currently unroaded areas has kept tree removals to the minimum (less than 3.2% of total) given the circumstances of this case and setting.

Potential for adverse environmental impacts due to proposed tree removals in the following subject areas:

Soil Erosion: Potential is low to moderate. Slopes where road construction will occur are usually gentle to moderate, although some steeper slopes are crossed by relatively short road segments in several locations. Most road and building sites are located in relatively treeless areas. Erosion control measures will be required and implemented during active construction on roads and homes. Tree planting and other landscaping mitigations will be implemented upon completion of construction activities.

Water Quality: Tree removals are quite limited (less than 3.2% of trees on the property) given project size are generally well removed from significant water resources. Additional discussion of potential impacts to water quality is provided in the Preliminary Biological Resource Assessment prepared by Denise Duffy & Associates.

Ecological Impacts: Low to moderate potential. Less than 3.2% of the estimated tree population on the property is projected to be removed by the project. The largest blocks of continuous forest cover will be effectively preserved. Some fragmentation of forest resources will occur.

Noise Pollution: Not a significant factor after construction activities have been completed. Nearly 97% of trees on the site will be retained including all or nearly all of the largest trees. Retained tree cover and forest growth over time will be substantial and provide a significant sound barrier.

Air Movement: The number of trees proposed for removal will have little or no effect on the movement of air in this vicinity.

Wildlife Habitat: Relatively low impact for this property. Continuous upslope and downslope habitat connectivity remains after development as proposed with very large unimpacted open space habitats retained. Large parcel size and high tree retention provide good mitigation.

**Forest Management Agreement**

The following standard conditions are required by the Monterey County Planning Department in Forest Management Plans:

Definitions

Forest Management Area (FMA). That portion of the subject property which is presently forested and lies beyond the immediate vicinity of the permitted building envelopes within this parcel.

Landmark tree. Any native oak tree more than 24" in diameter.
Significant tree. Any protected tree more than 6" in diameter.
Retained tree. Any significant tree not shown for removal on an approved final site plan.
Diameter (dbh). Thickness of main trunk of tree as measured 4'6" above the average ground surface at base of tree ("diameter at breast height" ).
Dripline. The outer edge of the area beneath the crown of a tree.
Greenbelt. An area around the construction zone which, for purposes of fire protection, is kept free of highly flammable vegetation and is stabilized with green, growing plants.

Management Objectives

1) Minimize erosion (in order to prevent soil loss and siltation).

2) Preserve natural habitat (includes native oak forest, understory vegetation, and associated wildlife on site).

3) Prevent forest fire (i.e., uncontrolled fires.)

4) Preserve scenic forest canopy as located within any Critical Viewshed.

5) Preserve landmark trees.

Management Measures

Tree Removal. Tree removal is subject to the requirements of Zoning Ordinance #21.64.260. No protected tree shall be removed without a Tree Removal Use Permit per the ordinance unless diseased or hazardous, as designated by a qualified forester, or exempt from the provisions of the ordinance. Per Section 21.64.260.F.3, "tree removal for construction of structures, roads and other site improvements included in an approved subdivision, Use Permit, or similar discretionary permit" are exempt.

Application Requirements. Where a Tree Removal Permit is required, trees proposed for removal will be conspicuously marked by flagging or paint. A site plan showing the location of each significant tree to be removed will accompany the application. If a substantial number of trees are requested for removal, they will generally be distributed over a wide area so that the overall unbroken appearance of the forest canopy is not altered.

Waiver of Permit Requirements. It is understood that the Director of the Monterey County Planning Department may waive the requirement to obtain a Tree Removal Permit in the following instances:

1) removal of diseased tree(s) which threaten to spread contagion to nearby healthy trees;
2) removal of dangerous tree(s) which present a clear and imminent threat to human life or property;

3) outside the FMA, removal of tree(s) where needed to allow construction of approved structures or roads.

Landmark Trees. All landmark trees will be protected from damage if not required to be removed under the above instances.

Dead Trees. Because of their great value for wildlife habitat (particularly as nesting sites for birds), large dead trees beyond the greenbelt will normally be left in place. Smaller dead trees will normally be removed in order to reduce fire hazard. Dead trees may be removed at the convenience of the owner, provided such removal is otherwise in conformance with this plan and designated by a qualified forester. Large dead trees may be removed from the greenbelt upon a finding of hazard or sufficient presence of this habitat element by a qualified forester. Dead trees, limbs, and other highly flammable material may be removed if required by Agency fire Officials, or as part of an approved Defensible Space Plan.

Thinning. Non-significant trees, where weak, diseased, or overcrowded, may be thinned to promote the growth of neighboring trees. Subject to the above permit requirements, significant trees may be removed for the same purpose. In a number of places, stands of oaks are overcrowded with smaller trees. In such stands, thinning of trees up to 12" in diameter as recommended by a qualified tree professional is encouraged in order to promote growth of larger trees, increase understory diversity, and reduce fire hazard.

Replacement Trees. Where tree replacement is required, the appropriate replacement trees shall be planted in an area where they are free to grow, generally a clearing or gap between trees (preferably 30 feet or more between trunks), except where existing clearings are to be maintained. Exceptions will be made where a suitable seedling already exists, and in unforested garden and lawn areas. Every effort will be made to secure native seedlings rather than nursery stock of unknown origin. Coast live oak replacement trees should generally not be larger than 5 gallon size with one gallon preferred. Occasional use of larger planting stock, however, is acceptable to provide both visual and age diversity .

Protection of Trees. All significant and replacement trees, other than those approved for removal, shall be retained and maintained in good condition. Trimming, when not injurious to the health of the tree(s), may be performed wherever necessary in the judgment of the owner, particularly to reduce personal safety and fire hazards.
Retained trees which are located close to the construction site shall be protected from inadvertent damage by construction equipment through wrapping of trunks with protective materials, bridging or tunneling under major roots where exposed in the foundation or utility trenches, and other measures appropriate and necessary to protect the well-being of the retained trees (See Tree Care During Construction above).

Fire Prevention. In addition to any measures required by local of California Department of forestry fire authorities, owner will:

a. maintain spark arrester screen atop chimney;
b. maintain spark arresters on gasoline-powered equipment;

c. establish "greenbelt" by keeping vegetation around structure to a distance of 50 feet in a green, growing condition, and or controlling fuel accumulation in drought tolerant landscapes.
d. break up and clear away any dense accumulations of dead or dry underbrush or plant litter, especially near landmark trees and within greenbelt.

Use of Fire (for Clearing, Etc.). Open fires will be set or allowed within the FMA only as a forest management tool under the direction of Department of Forestry authorities, pursuant to local fire ordinances and directives.

Clearing Methods. Outside development areas, brush and other undergrowth, if removed, will be cleared through method(s) which will not materially disturb the ground surface. Hand grubbing, crushing, and mowing will normally be the methods of choice. Use of fire and herbicides will be subject to the limitations listed elsewhere in this Plan.
Areas laid bare by clearing, other than firebreaks, will be sown with a suitable erosion mix utilizing native grass and forb seeds as suitable and appropriate (if nothing else is to be planted in the area). Sowing of cleared areas will be completed prior to the onset of the winter rainy season.

Irrigation. In order to avoid further depletion of groundwater resources, prevent root disease, and otherwise maintain favorable conditions for the native oak forest, the FMA will not be irrigated except within the greenbelt area. Caution will be exercised to avoid overwatering around oak trees within the greenbelt.

Exotic Plants. Care will be taken to eradicate, and to avoid introduction of, the following pest species: a) Pampas grass, b) Genista (Scotch broom, French broom), c) Eucalyptus (large types).

Amendments. It is understood that the Director of the Monterey County Planning Department, in consultation with the California Department of Forestry, may approve amendments to this Plan, provided that such amendments are consistent with the provisions of the County Development Permit.

Compliance. It is further understood that failure to comply with this Plan will be considered failure to comply with the conditions of the County Development Permit.

Transfer of Responsibility. This Plan is intended to create a permanent forest management program for the site. It is understood, therefore, that in the event of change in ownership this Plan shall be as binding on the new owner(s) as it is upon the present owner. To this end, this Plan will be conveyed to the future owner upon sale of the property.

Forest Management Plan Prepared by:

Stephen R. Staub

9/28/06

Stephen R. Staub

Date

Owner's Agreement to Provisions of the Plan:

_____ _____

Bollenbacher & Kelton, Inc. Date
By, Mark Kelton