MORAGA
GEOLOGIC HAZARD
ABATEMENT DISTRICT (GHAD)
PLAN OF CONTROL
RANCHO LAGUNA DEVELOPMENT
MORAGA, CALIFORNIA

Submitted to:
SummerHill Homes
777 S. California Avenue
Palo Alto, California

Prepared by:
ENGEO Incorporated

Project No.
2655.001.000

May 20, 2015
Revised March 1, 2017

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Mr. Kevin Ebrahimi
SummerHill Homes
777 S. California Avenue
Palo Alto, CA 94304

Subject: Rancho Laguna, Subdivision 9330
Moraga, California

PLAN OF CONTROL

Dear Mr. Ebrahimi:

Attached is the proposed Plan of Control for the Rancho Laguna development (Subdivision 9330) within the Moraga Geologic Hazard Abatement District (GHAD). The Plan of Control satisfies portions of Condition of Approval No. 91 – GHAD Formation and additional conditions related to the GHAD.

If you have any questions or would like any additional information, please do not hesitate to contact us.

Sincerely,

ENGEO Incorporated

Eric Harrell, CEG

Paul C. Guerin, GE

eh/pcg/cjn:poc

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1.0 INTRODUCTION

Under the Conditions of Approval, Condition No. 91 for the Rancho Laguna development (Subdivision 9330), the Town of Moraga has required that the Rancho Laguna development be included within a GHAD either by formation or annexation prior to filing of the first final map for the project. To satisfy this requirement, the developer of the Rancho Laguna Development has prepared this Plan of Control to support inclusion of the Rancho Laguna development into the existing Moraga GHAD ("GHAD" or "District").

1.1 PROPERTY IDENTIFICATION, OWNERSHIP AND MAINTENANCE RESPONSIBILITIES

A written description of parcels within the Rancho Laguna development in the existing Moraga GHAD is provided in Exhibit A and shown graphically on Exhibit B. The GHAD area includes Assessor's Parcel Number (APN) 256-040-024-0. Ownership and maintenance responsibilities for the individual parcels within the Rancho Laguna development (Subdivision 9330) are shown on Figures 1A, 1B, and 1C.

2.0 RANCHO LAGUNA PLAN OF CONTROL

2.1 GEOLOGIC HAZARDS

Geologic hazards identified for the site in the ENGEO Geotechnical Exploration report (Reference 1) dated May 30, 2013, or corrective grading plan (Figure 2), include the following items.

- Slope instability
- Creek bank instability
- Seismically induced ground shaking/landsliding
- Swell/settlement related to deep fills
- Compressible soils
- Expansive soils

These geologic hazards are not expected to be eliminated entirely by site grading. Slope instability or potential slope instability is not unique to this project but is of importance for hillside projects throughout the San Francisco Bay Area, including Moraga. Future stability depends on various factors, including any introduction of natural or artificial groundwater, future grading and earthquake ground shaking.

2.1.1 Slope Instability – Rancho Laguna

During mapping for the Rancho Laguna geotechnical exploration, areas of slope instability were identified throughout the planned development area and within the future open space areas. The

corrective grading plan showing the location of each of the mapped landslides is included as Figure 2. The table below identifies each of the labeled landslide areas within the development area and the proposed corrective measures. In addition to the labeled landslides, a number of other landslides are shown on Figure 2 outside of the development area where, due to their location, mitigation measures have not been proposed during mass grading activities. Potential District monitoring or maintenance activities for the specific areas listed in the table below are discussed in Section 2.3.2.

TABLE 2.1.1-1
Mapped Landslides and Proposed Corrective Measures

Landslide Designation	Affected Lots and Area	Type of Feature	Estimated Depth (feet)	Mitigation Method
A	Rheem Boulevard	Deep soil slide	25	Outside proposed development/GHAD – no mitigation planned
B	Fill slope and Rheem Boulevard	Deep soil slide	25	Remove and replace downslope portion of slide
C	Rheem Boulevard	Deep soil slide	30 to 35	Remove and replace downslope portion of slide
D	Rheem Boulevard	Slump/earth flow	15	Outside proposed development/GHAD – no mitigation planned
E	Rheem Boulevard	Deep soil slide	25	Outside proposed development area – no mitigation planned
1	Lots 26 and 27	Slump	15	Remove and replace
2	Lots 3 and 4; roadway	Slump	10	Partial removal at toe within grading limits with subdrain placement in open space portion
3	Lots 5, 6, 11, and roadway	Slump	20	Partial removal at toe within grading limits
4	None	Slump	10	Outside proposed development area– no mitigation planned
5	Lot 11, fill slope and roadway	Slump/earth flow	10	Partial removal at toe within grading limits
6	Creek	Slump	15	Outside proposed development area – no mitigation planned
7	Creek	Slump	10	Outside proposed development area – no mitigation planned

Landslide Designation	Affected Lots and Area	Type of Feature	Estimated Depth (feet)	Mitigation Method
8	Creek	Slump/ deep-seated complex	30	Outside proposed development area– no mitigation planned
9	Creek	Slump	15	Outside proposed development area – no mitigation planned
10	None	Slump	10	Outside proposed development area – no mitigation planned
11	None	Slump	10	Outside proposed development area – no mitigation planned
12	Fill slope	Slump	15	Partial removal at toe within grading limits
13	Lots 16, 17, 18, 19, and 20; Fill slope and "C" Court	Slump	15	Remove and replace within grading limits
14	None	Slump	10	Outside proposed development area – no mitigation planned
15	None	Slump	10	Outside proposed development area – no mitigation planned
16	None	Slump	10	Outside proposed development area – no mitigation planned
17	Lots 18, 19, and 20 backyards	Slump	15	Outside proposed development area improvements – no mitigation planned
18	Lots 8 and 9; 24 and 25 backyards	Slump/ earth flow	10	Partial removal of upslope portion affected by grading limits
19	Detention pond	Slump/ earth flow	10	Partial removal of upslope portion affected by grading limits

A landslide is defined as a mass of rock, soil and other debris that has been displaced downslope by sliding, flowing or falling. Landslides include cohesive block glides and disrupted slumps that have formed by displacement along a planar slip surface or rotation (displacement along a curved slip surface). Undercutting and erosion of hillside slopes can trigger slope failures.

Slope failures are also triggered by increased pore water pressure due to the infiltration of rainwater. The resulting decrease of shear resistance (internal resistance to deformation by

shearing) can cause a slope to move. The level of the groundwater table varies with the amount of rainfall for the area. If rainfall is higher than average during the winter season, the water table may be higher than average on a hillslope and groundwater pressures may become high. Under these conditions, hillside movement can be activated.

Areas of thickened soil cover on the hillslopes are known as colluvium (Qc). Colluvial deposits are typically the result of soil creep and may be in a weak, unconsolidated state, making them susceptible to landsliding if undercut. Colluvial deposits located within open-space areas are natural landforms that do not require mitigation, except where they affect manmade improvements. Potential mitigation and repair measures for District areas near improvements are discussed in Section 3.

2.1.2 Creek Bank Instability

As identified in the Corrective Grading Plan, creek banks along Rheem Creek are subject to erosion and localized slumping. The banks appear to have been oversteepened by erosion and consist of relatively weak materials. As mapped, most of the creek bank is composed of landslide material.

2.1.3 Seismically Induced Ground Shaking and Landsliding

As identified in the Geotechnical Exploration report, an earthquake of moderate to high magnitude generated within the San Francisco Bay Region could cause considerable ground shaking at the site, similar to that which has occurred in the past. Seismic slope stability has been considered in the geotechnical reports completed for the site; however, seismically generated slope failures could occur outside the grading limits within the Rancho Laguna Development.

2.1.4 Swell/Settlement Related to Deep Fills

According to the preliminary grading plans, fills up to about 50 feet thick will be placed in the swale areas. Studies have shown that engineered fills in residential development sites typically experience increases in moisture content after building construction due to increases in irrigation or natural conditions and to alteration of drainage patterns. This process may take about 10 to 15 years after irrigation commences, or even more, before the fill becomes fully wetted. The wetting process can cause settlement or swell (hydrocompression due to wetting) depending on soil type, compaction, moisture content, and the overburden pressures (fill thickness).

2.1.5 Compressible Soils

As identified in the Geotechnical Exploration report, settlement of soft soils may be significant if not properly mitigated. Differential movement under structures is a primary geotechnical concern. Settlement at the site could be generated from: (1) consolidation of the alluvial and colluvial deposits in the swale areas where fills will be placed, (2) compression of the deep fills due to their own weight, and (3) compression of soils beneath foundation systems due to building

loads. As recommended, with the exception of the existing East Bay Municipal Utilities District (EBMUD) fill, compressible fill, landslide, alluvial, and colluvial soil materials will be removed within the area of development during corrective grading.

As planned, the EBMUD fill area will be monitored to determine when the majority of settlement has occurred and home construction can begin. According to preliminary grading plan, fill up to about 40 feet will be planned at lots along Rheem Boulevard. Based on the analyses completed, the settlement due to additional fill load at lots adjacent to Rheem Boulevard will be about 3 to 6 inches.

2.1.6 Expansive Soils

Near-surface soils, in addition to the ash bed, claystone, and siltstone at the site, could exhibit a high potential for expansion. These potentially expansive soils could impact the planned site development. Expansive soils shrink and swell as a result of moisture change. This can cause heaving and cracking of slabs-on-grade, pavements and structures founded on shallow foundations. The potential for expansive soils has been identified in previous reports for the property. Shrink and swell of expansive soils on slopes is a portion of the mechanism of creep movement, which can result in shallow slope instability.

2.2 SLOPE STABILITY CONSIDERATIONS DURING MASS GRADING

As recommended in the Geotechnical Exploration report for the Rancho Laguna development, existing non-documented artificial fills within the graded area will be removed prior to engineered fill placement with the exception of the EBMUD fill. In addition, unsuitable materials, which could include colluvium and other unsuitable material, will be overexcavated to firm undisturbed materials below the unsuitable material as determined by the project Geotechnical Engineer or Engineering Geologist (ENGEO) at the time of grading. Subdrains will be installed to collect subsurface waters. The configuration of the subdrainage system will be tailored to the subsurface conditions at the time of grading. The planned location and elevation of subdrains and outlets are shown on the Geotechnical Corrective Grading Plan (Figure 2). Each subexcavation area will be reconstructed to final grade by keying and benching into stable materials with compacted, drained engineered fill (Figure 3).

Cuts will be viewed by a geologist during grading to provide mitigation schemes for unsuspected slope conditions, which could decrease the slope stability. Such conditions include unfavorable bedrock attitudes and seepage conditions. Grading reports shall be made available to the GHAD for its use following completion of the project development.

2.3 GHAD-MAINTAINED IMPROVEMENTS AND OPEN SPACE AREAS

Conditions of Approval (COA) Numbers 29, 33, 91, 92, 93, 94, 95, 97, 105, 132, 237, 238, 239, 242(e), and 244 address parcel ownership and GHAD maintenance responsibilities. Text of the

listed Conditions of Approval is included in Exhibit K and, as appropriate, ownership and maintenance responsibilities are identified below.

The District will have authority and responsibility to manage erosion and other geologic hazards within the boundary shown in Exhibit B subject to the exclusions listed in Section 2.5 – Criteria for GHAD Responsibility. The GHAD shall be responsible for monitoring and maintenance of the features listed below located within the GHAD-owned parcels (Parcels A, B, and D of the Vesting Tentative Map (VTM)) shown on the Open Space and Improvement Ownership/Maintenance Plan (Figure 1).

- Slopes
- Reconstructed and unaltered creek channels
- Water quality/detention basin
- Debris benches
- Emergency vehicle access (EVA) and maintenance roads
- Concrete-lined drainage ditches
- Storm drain system improvements
- Developer constructed retaining walls
- Subdrains and subdrain outlets
- Selected Wetland Mitigation Program (WMP) and Open Space Management Plan (OSMP) activities within the deed restricted parcels

The GHAD intends to mitigate, prevent, abate or repair landslide or erosion hazards that could directly affect property within the GHAD boundary, as necessary to implement this Plan of Control. A Pacific Gas and Electric Company (PG&E) easement is located across a portion of Parcel A for towers and roadways (Figure 1). The easement allows PG&E the right to construct and maintain towers and roadways. In addition, two land lease agreements are located on Parcel A with AT&T and Verizon. The GHAD will not be responsible for construction, maintenance and/or replacement of the improvements allowed under these agreements.

As a responsible landowner, the GHAD will also assume open-space management responsibilities for Parcels A, B, and D that are required for the Rancho Laguna project. These responsibilities will include:

- Fuel management for fire suppression
- Fencing
- Gravel surfaced parking area and developed trails including kiosk

Fuel management for fire suppression will be managed in accordance with the Wildfire Hazard Assessment and Plan (Exhibit I). Trail maintenance activities will be undertaken in accordance with the Public Trail System Plan (Exhibit J).

2.3.1 Agency Notice

Long-term management, monitoring, and maintenance of habitat features and values within Parcels A, B, and D ("Open Space Parcels") will be the responsibility of the GHAD. The Open Space Parcels will be subject to a deed restriction for development (Exhibit L). It is anticipated that a third party Natural Lands Manager will have enforcement rights for the deed restriction. After the GHAD has accepted transfer of monitoring, maintenance, and ownership of the Open Space Parcels, funding of responsibilities will be provided through the GHAD assessment. All activities in GHAD-owned open space parcels shall be subject to approval of the GHAD.
The GHAD will comply with the requirements of the Wetland Mitigation Program (WMP) and Open Space Management Plan (OSMP). In addition, the GHAD will comply with the requirements of the 401 Water Quality Certification program and will obtain necessary State and federal permits (e.g. San Francisco Bay Regional Water Quality Control Board, California Department of Fish and Wildlife, and/or the U.S. Army Corps of Engineers) before performing any maintenance that affects the preserved stream channel beds and banks. This includes preserved stream channels within the development area as well as activities on parcels under a deed restriction area unless the activities were previously authorized in the 401 Water Quality Certification.

The Project Biologist as described in the WMP will be responsible for conducting all biological monitoring, as well as preparing all annual reports that will be submitted to the GHAD (Land Manager), Army Corps of Engineers (ACOE) and Regional Water Quality Control Board (RWQCB). The Project Biologist and Land Manager will exist in perpetuity pursuant to the terms of the deed restriction and the OSMP.

2.3.2 General Landslide Mitigation

The techniques the District may employ to prevent, mitigate or abate landsliding or adverse erosion damage might include, but are not necessarily limited to:

- Removal of the unstable earth mass.
- Stabilization (either partial or total) of the landslide by removal and replacement with compacted drained fill.
- Construction of structures to retain or divert landslide material or sediment.
- Construction of erosion-control devices such as gabions, rip rap, geotextiles or lined ditches.
- Placement of drained engineered buttress fill.
- Placement of subsurface drainage devices (e.g., underdrains or horizontal drains).

- Slope correction (e.g., gradient change, biotechnical stabilization, and slope trimming or contouring).

- Construction of additional surface ditches and/or detention basins, silt fences, sediment traps.

- Placement of backfill in erosion channels.

Potential landslide and erosion hazards can often best be mitigated by controlling soil saturation and water runoff and by maintaining the surface and subsurface drainage system. Maintenance shall be provided for lined surface drainage ditches and drainage terraces.

2.4 BIOTECHNICAL RECOMMENDATIONS FOR PREVENTION AND MITIGATION OF EXISTING OR POTENTIAL EROSION HAZARDS

Fill slopes within the boundaries of the District are expected to be erodible as will cut slopes in bedrock; therefore, the maintenance of vegetative cover is especially important. Vegetation provides a layer of protection on soil and exposed rock. It absorbs the impact of raindrops, reduces the velocity of runoff and retards erosion.

In many instances, adequate erosion protection for slopes can be accomplished with carefully selected and placed biological elements (plants) without the use of structures (e.g., brush layering and willow waddling).

In other areas, biotechnical slope protection may involve the use of mechanical elements or structures in combination with biological elements to provide erosion control and help prevent small-scale slope failures. Locally, walls, welded-wire walls, gabion walls, rock walls, riprap and reinforced earth walls used in combination with carefully selected and planted vegetation can provide high-quality slope protection. The vegetation may be planted on the slope above a low retaining structure or toe wall, or the interstices of the structure can be planted.

2.5 CRITERIA FOR GHAD RESPONSIBILITY

To establish an appropriate GHAD assessment level for the Rancho Laguna portion of the Moraga GHAD, it is important to clearly define the limits of the GHAD's responsibilities. The GHAD will accept responsibility for property as described in Exhibit A. However, the intent of this Plan of Control is not to extend the GHAD's responsibilities to every potential situation of slope instability; as such, the following are exclusions from GHAD responsibility.

2.5.1 Isolated or Remote Slope Instability

The GHAD shall not have responsibility to monitor, abate, mitigate or control slope instability that does not involve damage to, or pose a significant threat to damage, onsite improvements or flood control capacity. As used herein, the term "site improvements" means buildings, roads,

sidewalks, utilities, retaining walls, improved trails, swimming pools, geologic stabilization features and drainage features or similar improvements.

2.5.2 Single Property

The GHAD will not prevent, mitigate, abate or control geologic hazards which are limited in area to a single residential parcel of property unless the geologic hazard has damaged, or poses a significant threat of damage to site improvements located on other property within the GHAD boundaries.

2.5.3 Geologic Hazards Resulting From Negligence of Property Owner

The GHAD may, in the GHAD manager's sole discretion, decline to prevent, mitigate, abate or control geologic hazards which occur or result from any negligence of a homeowner and/or the homeowner's contractors, agents or employees in developing, investigating, grading, constructing, maintaining or performing or not performing any post-development work on the subject property.

2.5.4 Property Not Accepted

The GHAD shall not have responsibility to repair damage that is situated on a parcel of real property, which the GHAD has not accepted in accordance with Exhibit E. The GHAD, however, may monitor, abate, mitigate or control slope instability on a parcel of real property, which the GHAD has not accepted in accordance with Exhibit E, provided that the GHAD responsibility on such parcel shall be limited to the extent necessary to address damage or a significant threat to damage site improvements on a GHAD-accepted parcel.

2.5.5 Geologic Hazard Which Requires Expenditure in Amount Exceeding the Value of the Threatened or Damaged Improvement

The GHAD may elect not to prevent, mitigate, abate or control a geologic hazard where, in the GHAD manager's sole discretion, the anticipated expenditure required to be funded by the GHAD to prevent, mitigate, abate or control the geologic hazard will exceed the value of the structure(s) and site improvement(s) threatened with damage or loss.

2.5.6 GHAD Funding or Reimbursement for Damaged or Destroyed Structures or Site Improvements

In the event a residence or any other private structure, site improvement or landscape feature is damaged or destroyed as a result of a geologic hazard, the District may fund or reimburse the property owner for the expenses necessary to repair or replace the damaged or destroyed structure, site improvement or landscaping. Unless otherwise authorized by the Board of Directors, the total dollar amount of the District funding or reimbursement paid to all property owners whose property is damaged by a geologic hazard may not exceed ten percent (10%) of

the total costs incurred by the District in actually mitigating, abating or controlling the geologic hazard that causes the damage[1]. In the event the geologic hazard damages or destroys a structure, site improvement or landscaping which violates any provisions of the Town Building Code or Town Code at the time of its installation or improvement, the District may decline to provide any funding, or reimbursement to the property owner for repair or replacement of the damaged structure, improvement or landscaping.

2.5.7 No Reimbursement of Expenses Incurred by Property Owners

The GHAD will not be obligated to reimburse a property owner for expenses incurred for the prevention, mitigation, abatement, or control of a geologic hazard absent a written agreement between the property owner and the GHAD to that effect, which agreement has been executed prior to the property owner incurring said expenses, and following an investigation conducted by the GHAD.

2.6 PRIORITY FOR DISTRICT-FUNDED REPAIRS

Emergency response and scheduled monitoring, maintenance or repair expenditures are to be prioritized by the GHAD Manager, utilizing its discretion, based upon available funds, a prudent reserve and the approved operating budget.

Should available funds not be sufficient to undertake all of the identified remedial and preventive stabilization measures, the expenditures shall be prioritized as follows in descending order of priority:

A. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage to residences, critical lifeline utilities or emergency vehicle access corridors.

B. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage to water quality basin improvements, wetlands, riparian features, vegetated swale, restored and unaltered creek channels including annual funding so that the facilities are maintained in accordance with the requirements of the WMP (Exhibit G).

C. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage to private recreation facilities (e.g., pools, spas, etc.).

[1] For example, if a landslide causes $10,000 in structural damage to each one of four neighboring homes for a total of $40,000 in structural damage and it costs the District $100,000 to design and install a new retaining wall to abate the slide, the District may only reimburse each property owner $2,500 of their $10,000 in structural damage.

D. The prevention, mitigation, abatement or control of geologic hazards that have either damaged or pose a significant threat of damage limited to loss of landscaping or other similar non-essential amenities.

E. The prevention, mitigation, abatement or control of geologic hazards existing entirely on open-space property and which have neither damaged nor pose a significant threat of damage to any site improvements.

If sufficient funds are not available to undertake the listed activities, the GHAD may investigate obtaining funding as allowed in Section 26505(e) of the Public Resources Code through the issuance of bonds, notes, or debentures such as a line of credit.

2.7 MAINTENANCE AND MONITORING SCHEDULE

Geologic features and District-maintained facilities should be inspected on a regular basis. Budget permitting, inspections should generally be scheduled to occur two times per year in normal years and three or more times per year in years with heavy rainfall events. A heavy rainfall event is defined as greater than 2 inches of rainfall in a 24-hour period. The inspections should be scheduled to take place in the fall, prior to the first significant rainfall; mid-winter as necessary during heavy rainfall years; and in spring at the end of the rainy season.

- An Engineer and/or Geologist should carry out a geologic reconnaissance of the site slopes for indications of erosion or slope failures. Open space slope area monitoring would include observation of debris benches and trails. The removal of accumulated debris from the benches should be undertaken in a manner that maintains the capacity of the bench to protect site improvements.

- Monitoring of the creek banks will be performed on a regular basis to identify areas of possible instability or future erosion. Creek bank erosion that does not directly threaten site improvements including flood control capacity, as provided in Section 2.5.1, will not be repaired, and the creeks will be allowed to mature naturally. All necessary permits will be obtained before mitigation work proceeds.

- Monitoring of the unpaved trail system should include observing the trail for excess vegetation growth, eroded areas or areas of instability. It is anticipated that mowing of the trails would occur annually in late spring and that recontouring of portions of the trail may be necessary approximately every 3 to 5 years.

- A District Engineer and/or Geologist should inspect the surface of concrete-lined drainage ditches within the District boundaries on a regular schedule. Repairs and maintenance should be performed as needed. Excess silt or sediment in ditches should be removed and cracked or broken ditches should be patched or repaired as required before the beginning of the next rainy season.

- Subsurface drain outlets and horizontal drain outlets, if any, should be inspected on a regular schedule. Water flowing from these outlets should be measured and recorded during each inspection.

- If installed, piezometers used to measure groundwater levels, or other instruments such as inclinometers, tiltmeters, and/or settlement-monitoring devices, should be monitored on a regular schedule. In the event of anomalous readings, the monitoring frequency should be increased.

- Inlets, outfalls or trash racks, if used, must be kept free of debris, and spillways must be maintained. Attention should be given to plantings or other obstructions, which may interfere with access by power equipment.

- The water-quality/detention basins and associated improvements shall be monitored and maintained in accordance with an approved operations and maintenance manual.

- An Engineer and/or Geologist should carry out an inspection of the developer-constructed retaining walls to verify their condition and performance.

- Inspection of fuel management zones on GHAD owned parcels shall be accomplished in accordance with a fuel management program approved by the Moraga-Orinda Fire District.

The District should review its inspection schedule annually and assess the effectiveness of its preventive maintenance program on a regular basis. District staff should prepare an annual report to the Board of Directors with recommendations for maintenance and/or repair projects. Consultants, as necessary, may be retained to undertake the needed studies. The District Engineer and/or Engineering Geologist retained by the District shall prepare an annual inspection report for presentation to the District Board of Directors.

3.0 GLOSSARY

Engineer's Report – The document that establishes the individual property owners' GHAD assessment based on the projected expenses (budget) of the GHAD.

Geological Hazard Abatement District (GHAD) Manager – An entity employing a licensed Geotechnical Engineer who will oversee the operations of the GHAD including preparation of GHAD budgets. The GHAD Manager is hired by and reports to the GHAD Board of Directors.

Project Biologist – The Project Biologist is responsible for conducting all biological monitoring as well as preparing annual reports that will be submitted to the Land Manager, Conservation Easement Manager, third-party beneficiaries and Regulatory Agencies (Resources Management Plan). The Project Biologist will be employed through the GHAD.

Land Manager – The Land Manager shall implement the long-term management plan and manage and monitor Parcels A, B, and D in perpetuity to preserve its habitat and conservation values in accordance with the Deed Restriction, WMP, and the Open Space Management Plan. The Land Manager function will be fulfilled through the GHAD.

Regulatory Agencies – Includes the San Francisco Bay Regional Water Quality Control Board, United States Army Corp of Engineers, and California Department of Fish and Wildlife.

4.0 OWNERSHIP AND MANAGEMENT

Ownership, funding sources and maintenance responsibilities shall be as shown on the following table and Figures 1A through 1C.

TABLE 4.0-1
RANCHO LAGUNA RESIDENTIAL DEVELOPMENT/MORAGA GHAD
Long-Term Ownership and Management Matrix

Facility/Function	Maintenance Entity	Funding	Tentative Acceptance Date or Minimum Initial Monitoring Term	Ownership
1. Development Area				
a. Single-Family Residences				
i. General Lot Conditions	Private	Private	Not applicable	Private
ii. Backyard with GHAD Access Agreement (Vegetation Management)	GHAD	Assessment	3 Years	Private
iii. Easement for GHAD Storm Drainage Improvements	GHAD	Assessment	3 Years	Private
b. Private Streets	HOA	HOA	Not applicable	HOA
c. Storm Drain System	HOA	HOA	Not applicable	HOA
d. Water				
i. Main Pipeline	EBMUD	EBMUD	Not applicable	EBMUD
ii. Laterals	Private	Private	Not applicable	Private
e. Sanitary Sewer				
i. Main Pipeline	CCCSD or HOA	CCCSD or HOA	Not applicable	CCCSD or HOA
ii. Laterals	Private	Private	Not applicable	Private

Facility/Function	Maintenance Entity	Funding	Tentative Acceptance Date or Minimum Initial Monitoring Term	Ownership
2. GHAD-Owned Open Space Areas with a Deed Restriction (Parcels A, B, and D)				
Wetland Mitigation Program (Pre Final Success Criteria Achievement)				
a. Irrigated Landscaping	Developer/ HOA	Private Funding/HOA	Not Applicable	Developer/ GHAD
b. Site Monitoring	Developer	Private Funding	5 Years	Developer
c. Weed and Exotic Plant Control	Developer	Private Funding	5 Years	Developer
d. Supplemental Irrigation	Developer	Private Funding	5 Years	Developer
e. Protective Devices	Developer	Private Funding	5 Years	Developer
f. Plant Replacement	Developer	Private Funding	5 Years	Developer
g. Signage	Developer	Private Funding	5 Years	Developer
h. Flow Conveyance and Erosion Control	Developer	Private Funding	5 Years	Developer
Plan of Control Defined Activities (3-Year Minimum Initial Monitoring Period)				
a. Invasive Species	Developer	Private Funding	3 Years	Developer
b. Detention Basin	Developer	Private Funding	3 Years	Developer
c. Storm Drain System	Developer	Private Funding	3 Years	Developer
d. Vegetation Management for Fire Suppression	Developer	Private Funding	3 Years	Developer
e. Slopes and Surface Drainage Improvements	Developer	Private Funding	3 Years	Developer
f. Subdrains	Developer	Private Funding	3 Years	Developer
g. Fire/Emergency Vehicle Access Roads	Developer	Private Funding	3 Years	Developer
h. Gates and Fencing	Developer	Private Funding	3 Years	Developer
i. Pedestrian Trail and Bridge	Developer	Private Funding	3 Years	Developer
j. Pacific Gas and Electric Company (PG&E)				
i. Towers	PG&E	PG&E	Not Applicable	Developer
ii. Roads	PG&E	PG&E	Not Applicable	Developer
k. Land Lease Agreements				
i. AT&T	AT&T	AT&T	Not Applicable	Developer
ii. Verizon	Verizon	Verizon	Not Applicable	Developer

Facility/Function	Maintenance Entity	Funding	Tentative Acceptance Date or Minimum Initial Monitoring Term	Ownership
Wetland Mitigation Program (Post Final Success Criteria Achievement)				
a. Site Monitoring	GHAD	Assessment	Perpetual	GHAD
b. Weed Control	GHAD	Assessment	Perpetual	GHAD
c. Plant Replacement	GHAD	Assessment	Perpetual	GHAD
d. Flow Conveyance and Erosion Control	GHAD	Assessment	Perpetual	GHAD
e. Minimize Harmful Intrusions	GHAD	Assessment	Perpetual	GHAD
Plan of Control Defined Activities (Post Initial Monitoring Period)				
a. Invasive Species	GHAD	Assessment	Perpetual	GHAD
b. Detention Basin	GHAD	Assessment	Perpetual	GHAD
c. Storm Drain System	GHAD	Assessment	Perpetual	GHAD
d. Vegetation Management for Fire Suppression	GHAD	Assessment	Perpetual	GHAD
e. Slopes and Surface Drainage Improvements	GHAD	Assessment	Perpetual	GHAD
f. Subdrains	GHAD	Assessment	Perpetual	GHAD
g. Fire/Emergency Vehicle Access Roads	GHAD	Assessment	Perpetual	GHAD
h. Gates and Fencing	GHAD	Assessment	Perpetual	GHAD
i. Pedestrian Trail and Bridge	GHAD	Assessment	Perpetual	GHAD
j. Pacific Gas and Electric Company (PG&E)				
i. Towers	PG&E	PG&E	Not Applicable	GHAD
ii. Roads	PG&E	PG&E	Not Applicable	GHAD
l. Land Lease Agreements				
i. AT&T	AT&T	AT&T	Not Applicable	GHAD
ii. Verizon	Verizon	Verizon	Not Applicable	GHAD

5.0 RIGHT-OF-ENTRY

District officers, employees, consultants, contractors, agents, and representatives shall have the right to enter upon all lands within the District boundary, as shown on Exhibit B, for the purpose of performing the activities described in the Rancho Laguna GHAD Plan of Control. Should the

District need to access parcels owned by the Homeowner's Association or private residential lots to fulfill its duties under the Plan of Control, the District shall provide the affected landowner and/or resident with 72 hours advanced notice unless, in the reasonable judgment of the GHAD Manager, an emergency situation exists which makes immediate access necessary to protect the public health and safety, in which case no advanced notice is required, but the District shall inform the landowner and/or resident as soon as reasonably possible.

The owner or owners of property within the Rancho Laguna development shall record a Declaration of Restrictive Covenants, Right of Entry and Disclosures Regarding Geologic Hazard Abatement District ("Declaration") after recordation of the Parcel Map, in the form attached as Appendix F. The Declaration creates covenants that run with the land and will be binding upon all future owners of property within the Rancho Laguna development, their successors and assigns.

REFERENCES

1. ENGEO, Geotechnical Exploration, Rancho Laguna, Rheem Boulevard, Moraga, California, Project Number 2655.001.000, May 30, 2013.

2. ENGEO, Corrective Grading Plan, Rancho Laguna, Rheem Boulevard, Moraga, California, Project Number 2655.001.000, Revised April 2015.

3. ENGEO, Supplemental Geotechnical Exploration for Sewer Pipeline, Rancho Laguna, Rheem Boulevard, Moraga, California, Project Number 2655.001.000, May 17, 2013.

4. P/A Design Resources, General Development Plan/Vesting Tentative Map (VTM), Rancho Laguna, Subdivision 9330, Moraga, California; Project Number 12009-10, February 19, 2014.

5. P/A Design Resources, Grading Plans, Rancho Laguna II, Subdivision 9330, Moraga, California; Project Number 12009-20, May 20, 2015.

6. P/A Design Resources, Improvement Plans, Rancho Laguna II, Subdivision 9330, Moraga, California; Project Number 12009-20, May 20, 2015.

7. P/A Design Resources, Subdivision 9330 Off-Tract Improvement Rheem Boulevard Grading Plans, Moraga, California; Project Number 12009-20, May 20, 2015.

8. P/A Design Resources, Subdivision 9330 Off-Tract Improvement Rheem Boulevard Improvement Plans, Moraga, California; Project Number 12009-20, May 20, 2015.

9. Zentner and Zentner, Wetlands Mitigation Plan, Rancho Laguna, Moraga, California; Project Number 980 SSH, June 2014.

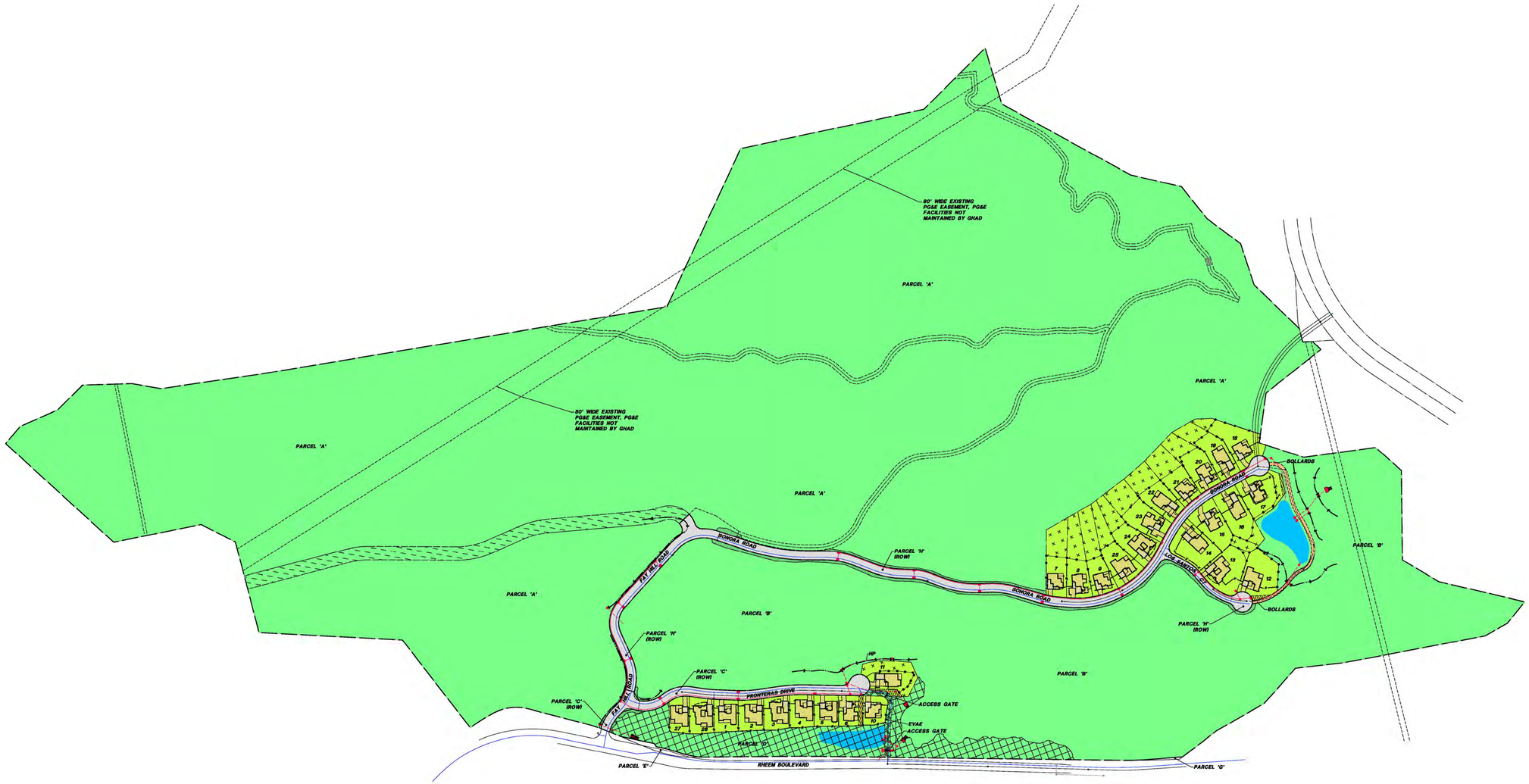
10. Moraga Town of, Resolution No. 05-2014, Planning Commission Conditions of Approval, Rancho Laguna Subdivision, Moraga, California, April 21, 2014.

11. Wildland Resources Management, Wildfire Hazard Assessment and Plan, Rancho Laguna, SummerHill Homes, Moraga, California, April 15, 2015.

FIGURES

Figures 1A through 1C - Open Space and Improvements Ownership/Maintenance Plan
Figures 2 and 2A – Corrective Grading Plan
Figure 3 – Corrective Grading Plan Details
Figure 4 –Regional Geologic Map

FIGURES



UTILTIES LEGEND			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
	STORM DRAIN SYSTEM	HOA	HOA
	STORM DRAIN SYSTEM	GHAD	GHAD
	SEWER SYSTEM	CCCSD	CCCSD
	SEWER SYSTEM	HOA	HOA
	WATER SYSTEM	EBMUD	EBMUD
	CONCRETE DRAINAGE CHANNEL	GHAD	GHAD

LOT LEGEND (1 THROUGH 27)			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
X	SOLID GOOD NEIGHBOR WOOD FENCE	HOMEOWNER	HOMEOWNER
	OPEN WIRE FENCE	HOMEOWNER	HOMEOWNER
	SINGLE FAMILY DETACHED HOMES AND DRIVEWAYS	HOMEOWNER	HOMEOWNER
	PRIVATE YARDS	HOMEOWNER	HOMEOWNER
	GHAD ACCESS AGREEMENT OVER PRIVATE BACK YARD	HOMEOWNER	GHAD
	DRAINAGE EASEMENT PRIVATE ACCESS AND GHAD UTILITIES	HOMEOWNER	GHAD

PARCEL LEGEND (A, B, C, D, E, G & H)				
SYMBOL	DESCRIPTION	PARCEL	OWNED	MAINTAINED
	PRIVATE STREET RIGHT OF WAY WITH PUBLIC ACCESS AND UTILITIES	'C' & 'H'	HOA	HOA
	EVAE (EMERGENCY VEHICLE ACCESS EASEMENT)	'D'	GHAD	HOA
	PERMANENT OPEN SPACE WITH DEED RESTRICTION	'A', 'B' & 'D'	GHAD	GHAD
	WETLAND DEED RESTRICTED AREA OVER PERMANENT OPEN SPACE	'B' & 'D'	GHAD	GHAD
	ENHANCED LANDSCAPED/IRRIGATED AREA OF THE PERMANENT OPEN SPACE	'A', 'B' & 'D'	GHAD	HOA
	EXISTING EBMUD ACCESS ROAD EASEMENT	'A'	GHAD	EBMUD
	WATER QUALITY/DETENTION BASIN	'B' & 'D'	GHAD	GHAD
	EASEMENT FOR PUBLIC ACCESS AND PRIVATE UTILITIES	'B'	GHAD	GHAD
	PROJECT BOUNDARY LINE & FENCING	'A', 'B' & 'D'	GHAD	GHAD

NOTES: PARCEL 'F' IS NOT USED. PARCELS 'E AND 'G' ARE DEDICATED TO THE TOWN OF MORAGA FOR RHEEM BOULEVARD RIGHT OF WAY.

N

0 FEET 200
0 METERS 100

BASE MAP SOURCE: P/A DESIGN RESOURCES, INC.

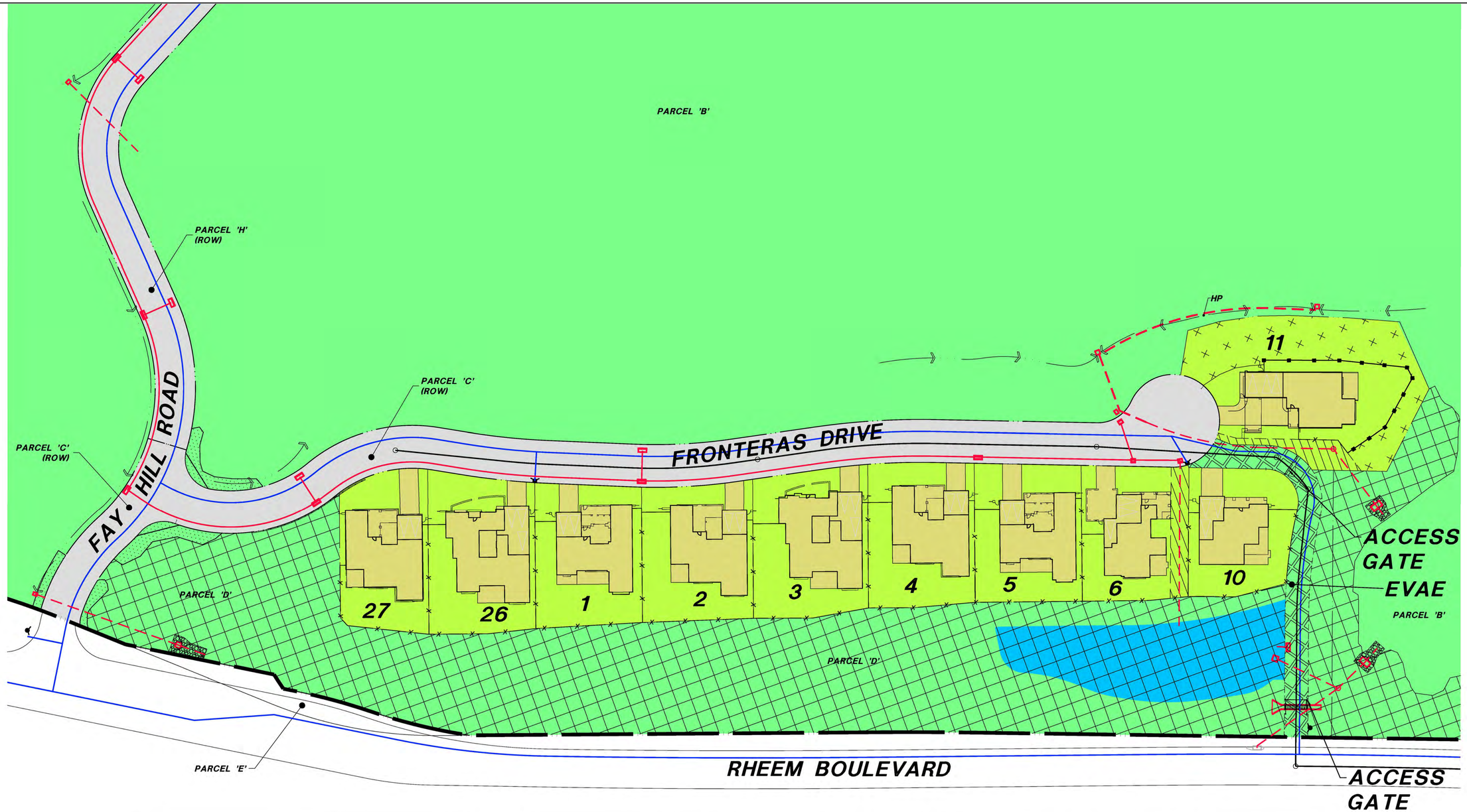
ENGEO Expect Excellence

OPEN SPACE AND IMPROVEMENTS OWNERSHIP/MAINTENANCE PLAN
RANCHO LAGUNA
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000
SCALE: AS SHOWN
DRAWN BY: SRP
CHECKED BY: PCG

FIGURE NO 1A

ORIGINAL FIGURE PRINTED IN COLOR



UTILTIES LEGEND			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
	STORM DRAIN SYSTEM	HOA	HOA
	STORM DRAIN SYSTEM	GHAD	GHAD
	SEWER SYSTEM	CCCSD	CCCSD
	SEWER SYSTEM	HOA	HOA
	WATER SYSTEM	EBMUD	EBMUD
	CONCRETE DRAINAGE CHANNEL	GHAD	GHAD

LOT LEGEND (1 THROUGH 27)			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
X	SOLID GOOD NEIGHBOR WOOD FENCE	HOMEOWNER	HOMEOWNER
	OPEN WIRE FENCE	HOMEOWNER	HOMEOWNER
	SINGLE FAMILY DETACHED HOMES AND DRIVEWAYS	HOMEOWNER	HOMEOWNER
	PRIVATE YARDS	HOMEOWNER	HOMEOWNER
	GHAD ACCESS AGREEMENT OVER PRIVATE BACK YARD	HOMEOWNER	GHAD
	DRAINAGE EASEMENT PRIVATE ACCESS AND GHAD UTILITIES	HOMEOWNER	GHAD

PARCEL LEGEND (A, B, C, D, E, G & H)				
SYMBOL	DESCRIPTION	PARCEL	OWNED	MAINTAINED
	PRIVATE STREET RIGHT OF WAY WITH PUBLIC ACCESS AND UTILITIES	'C' & 'H'	HOA	HOA
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	WETLAND DEED RESTRICTED AREA OVER PERMANENT OPEN SPACE	'B' & 'D'	GHAD	GHAD
	ENHANCED LANDSCAPED/IRRIGATED AREA OF THE PERMANENT OPEN SPACE	'A', 'B' & 'D'	GHAD	HOA
	EXISTING EBMUD ACCESS ROAD EASEMENT	'A'	GHAD	EBMUD
	WATER QUALITY/DETENTION BASIN	'B' & 'D'	GHAD	GHAD
	EASEMENT FOR PUBLIC ACCESS AND PRIVATE UTILITIES	'B'	GHAD	GHAD
	PROJECT BOUNDARY LINE & FENCING	'A', 'B' & 'D'	GHAD	GHAD

NOTES: PARCEL 'F' IS NOT USED. PARCELS 'E AND 'G' ARE DEDICATED TO THE TOWN OF MORAGA FOR RHEEM BOULEVARD RIGHT OF WAY.

N

0 FEET 40
0 METERS 20

BASE MAP SOURCE: P/A DESIGN RESOURCES, INC.

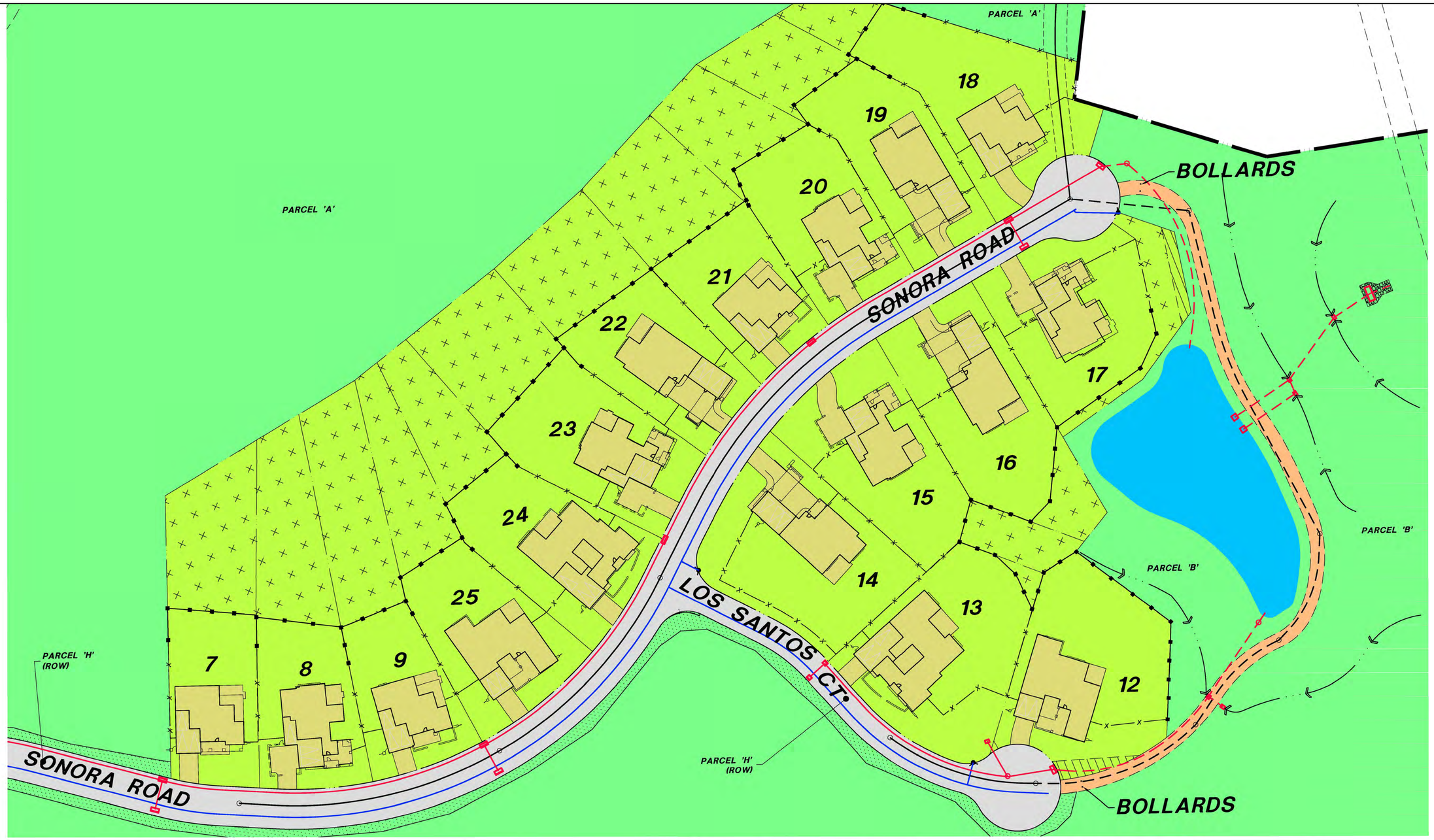
ENGEO Expect Excellence

OPEN SPACE AND IMPROVEMENTS OWNERSHIP/MAINTENANCE PLAN
RANCHO LAGUNA
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000
SCALE: AS SHOWN
DRAWN BY: SRP
CHECKED BY: PCG

FIGURE NO 1B

ORIGINAL FIGURE PRINTED IN COLOR



UTILTIES LEGEND			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
———	STORM DRAIN SYSTEM	HOA	HOA
- - - -	STORM DRAIN SYSTEM	GHAD	GHAD
———	SEWER SYSTEM	CCCSD	CCCSD
- - - -	SEWER SYSTEM	HOA	HOA
———	WATER SYSTEM	EBMUD	EBMUD
⟶ ··· ⟶	CONCRETE DRAINAGE CHANNEL	GHAD	GHAD

LOT LEGEND (1 THROUGH 27)			
SYMBOL	DESCRIPTION	OWNED	MAINTAINED
——x——	SOLID GOOD NEIGHBOR WOOD FENCE	HOMEOWNER	HOMEOWNER
- - - -	OPEN WIRE FENCE	HOMEOWNER	HOMEOWNER
	SINGLE FAMILY DETACHED HOMES AND DRIVEWAYS	HOMEOWNER	HOMEOWNER
	PRIVATE YARDS	HOMEOWNER	HOMEOWNER
	GHAD ACCESS AGREEMENT OVER PRIVATE BACK YARD	HOMEOWNER	GHAD
	DRAINAGE EASEMENT PRIVATE ACCESS AND GHAD UTILITIES	HOMEOWNER	GHAD

PARCEL LEGEND (A, B, C, D, E, G & H)				
SYMBOL	DESCRIPTION	PARCEL	OWNED	MAINTAINED
	PRIVATE STREET RIGHT OF WAY WITH PUBLIC ACCESS AND UTILITIES	'C' & 'H'	HOA	HOA
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	WETLAND DEED RESTRICTED AREA OVER PERMANENT OPEN SPACE	'B' & 'D'	GHAD	GHAD
	ENHANCED LANDSCAPED/IRRIGATED AREA OF THE PERMANENT OPEN SPACE	'A', 'B' & 'D'	GHAD	HOA
	EXISTING EBMUD ACCESS ROAD EASEMENT	'A'	GHAD	EBMUD
	WATER QUALITY/DETENTION BASIN	'B' & 'D'	GHAD	GHAD
	EASEMENT FOR PUBLIC ACCESS AND PRIVATE UTILITIES	'B'	GHAD	GHAD
———	PROJECT BOUNDARY LINE & FENCING	'A', 'B' & 'D'	GHAD	GHAD

N

0 FEET 40
0 METERS 20

BASE MAP SOURCE: P/A DESIGN RESOURCES, INC.

ENGEO Expect Excellence

OPEN SPACE AND IMPROVEMENTS OWNERSHIP/MAINTENANCE PLAN
RANCHO LAGUNA
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000 | FIGURE NO: 1C
SCALE: AS SHOWN
DRAWN BY: SRP | CHECKED BY: PCG

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\2655\001\Corrective2015\2655001000 GHAD Geologic Map 22515-Updated.dwg Plot Date:5-22-15 dborde

MATCHLINE (SEE SHEET 2)

Tmll(cs)
Tmll(ss)
Qc
Qaf
Qal
Tps
Tus
Not Mapped

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9 TP-10 TP-11 TP-12 TP-13 TP-14 TP-15 TP-16 TP-17 TP-18 TP-19 TP-20 TP-21 TP-22 TP-23 TP-24 TP-25 TP-26 TP-27 TP-28 TP-29 TP-30 TP-31 TP-32 TP-33 TP-34 TP-35 TP-36 TP-37 TP-38 TP-39 TP-40 TP-41

2-TP1 2-TP2 2-TP3 2-TP4 2-TP5 2-TP6 2-TP7 2-TP8 2-TP9 2-TP10 2-TP11 2-TP12 2-TP13 2-TP14 2-TP15 2-TP16 2-TP17 2-TP18 2-TP19 2-TP20 2-TP21 2-TP22 2-TP23 2-TP24 2-TP25 2-TP26 2-TP27 2-TP28

2-B1 2-B2 2-B3 2-B4 2-B5 2-B6 2-B7 2-B8 2-B9 B5 B6 B7 B8 B9 B10 1-B1 1-B3 B-3-05 B-3-55

GP-1 GP-2 GP-3

K-1 K-2A K-2B K-3 K-4 K-4A K-4B

S-1 S-2A S-2B S-2C

C3 C4

A A' B B' C C' C'' C''' D D' E

LINED WITH IMPERMEABLE MEMBRANE

APPROXIMATE LIMIT OF KEYWAY FRONT CUT

LOWER RHEEM VALLEY STABILIZATION AND ROAD REPAIR AREA

'B' COURT

EXTENSIVE DRIVE

EL 686

EL 662

N

0 FEET 100

0 METERS 50

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

- **Qaf** — ARTIFICIAL FILL
- **Qc** — COLLUVIUM
- **Qal** — ALLUVIUM
- **Tmll(ss)** — MULLHOLLAND FORMATION, LOWER MEMBER-PREDOMINANTLY SANDSTONE AND SILTSTONE
- **Tmll(cs)** — MULLHOLLAND FORMATION, LOWER MEMBER-PREDOMINANTLY CLAYSTONE
- **Tus** — UNNAMED SEDIMENTARY AND VOLCANIC ROCKS
- GEOLOGIC CONTACT, DOTTED WHERE CONCEALED
- LANDSLIDE
- RECENTLY ACTIVE LANDSLIDE
- (19) — LANDSLIDE DESIGNATION
- BEDDING ATTITUDE
- SLIDE PLANE ATTITUDE
- SEEPAGE
- FLOWING SPRING
- 2-TP-28 — TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2013)
- TP-41 — TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2002)
- TP-4 — TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (CAL ENGINEERING & GEOLOGY, 1988)
- 2-B9 — BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2013)
- 1-B3 — BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2012)
- B-3-05 — BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2005)
- B10 — BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 1998)
- BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 1983)
- GP-6 — GEOPROBE (ENGEO, 2012)
- K-8 — PROPOSED KEYWAY
- PROPOSED SUBDRAIN
- S-7 — SUBDRAIN DISCHARGE
- CUT SLOPE TO BE MAPPED DURING GRADING TO DETERMINE IF SLOPE REBUILD IS NEEDED
- C4 — REMOVE SLIDE DEBRIS, EXISTING FILL AND COLLUVIUM/ALLUVIUM
- RECOMMENDED GEOGRID REINFORCED FILL
- C — CUT LOT, OVEREXCAVATE 2' MINIMUM
- T — TRANSITION LOT, OVEREXCAVATE CUT PORTION 3' MINIMUM
- EXISTING HIGH VOLTAGE POWER POLE
- D D' — LOCATION OF CROSS SECTION

BASE MAP SOURCE: P/A DESIGN ASSOCIATES, 2015

ENGEO Expect Excellence

GEOLOGIC MAP AND CORRECTIVE GRADING PLAN
RANCHO LAGUNA - GHAD
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000
SCALE: AS SHOWN
DRAWN BY: LL
CHECKED BY: EH

FIGURE NO. 2

ORIGINAL FIGURE PRINTED IN COLOR

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

Qaf	ARTIFICIAL FILL
Qc	COLLUVIUM
Qal	ALLUVIUM
Tmll(ss)	MULLHOLLAND FORMATION, LOWER MEMBER-PREDOMINANTLY SANDSTONE AND SILTSTONE
Tmll(cs)	MULLHOLLAND FORMATION, LOWER MEMBER-PREDOMINANTLY CLAYSTONE
Tus	UNNAMED SEDIMENTARY AND VOLCANIC ROCKS
— — —	GEOLOGIC CONTACT, DOTTED WHERE CONCEALED
	LANDSLIDE
	RECENTLY ACTIVE LANDSLIDE
19	LANDSLIDE DESIGNATION
	BEDDING ATTITUDE
	SLIDE PLANE ATTITUDE
	SEEPAGE
	FLOWING SPRING
2-TP-28	TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2013)
TP-41	TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2002)
TP-4	TEST PIT SHOWING DEPTH TO BEDROCK IN FEET (CAL ENGINEERING & GEOLOGY, 1988)
2-B9	BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2013)
1-B3	BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2012)
B-3-05	BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 2005)
B10	BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 1998)
	BORING SHOWING DEPTH TO BEDROCK IN FEET (ENGEO, 1983)
GP-6	GEOPROBE (ENGEO, 2012)
K-8	PROPOSED KEYWAY
	PROPOSED SUBDRAIN
S-7	SUBDRAIN DISCHARGE
	CUT SLOPE TO BE MAPPED DURING GRADING TO DETERMINE IF SLOPE REBUILD IS NEEDED
C4	REMOVE SLIDE DEBRIS, EXISTING FILL AND COLLUVIUM/ALLUVIUM
	RECOMMENDED GEOGRID REINFORCED FILL
C	CUT LOT, OVEREXCAVATE 2' MINIMUM
T	TRANSITION LOT, OVEREXCAVATE CUT PORTION 3' MINIMUM
	EXISTING HIGH VOLTAGE POWER POLE
D D'	LOCATION OF CROSS SECTION

UPPER RHEEM VALLEY STABILIZATION AREA

LINED WITH IMPERMEABLE MEMBRANE

MATCHLINE (SEE SHEET 1)

LINED WITH IMPERMEABLE MEMBRANE

LINED WITH IMPERMEABLE MEMBRANE

RHEEM BOULEVARD

0 HALF 100 METERS 0 50

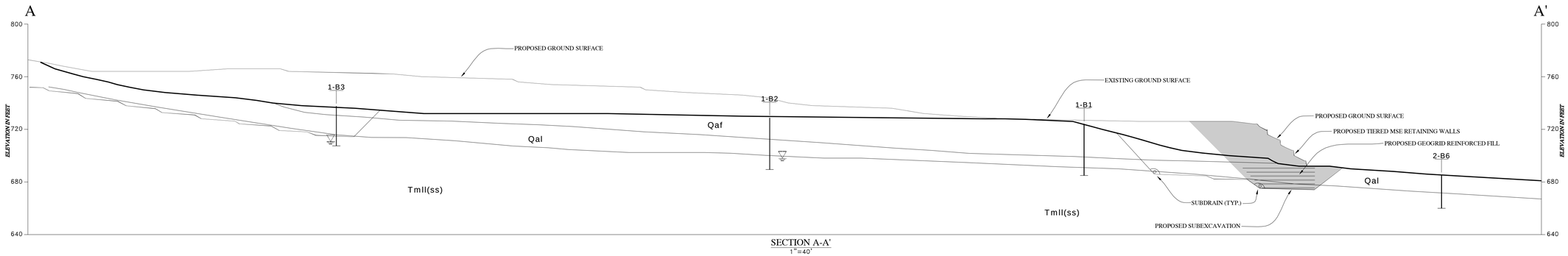
BASE MAP SOURCE: P/A DESIGN ASSOCIATES, 2015

ENGEO Expect Excellence

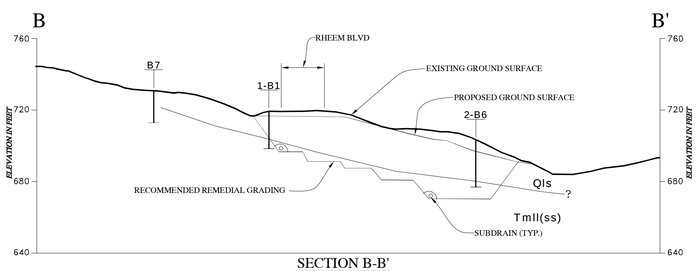
GEOLOGIC MAP AND CORRECTIVE GRADING PLAN
RANCHO LAGUNA - GHAD
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000 | FIGURE NO.: 2A
SCALE: AS SHOWN
DRAWN BY: LL | CHECKED BY: EH

ORIGINAL FIGURE PRINTED IN COLOR



SECTION A-A'
1"=40'



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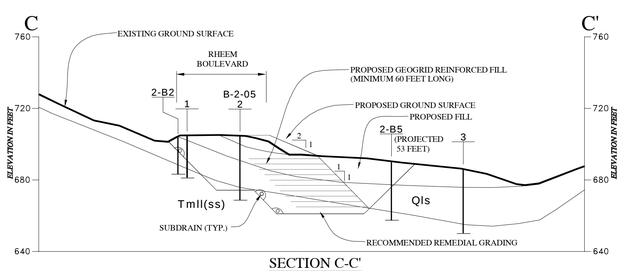
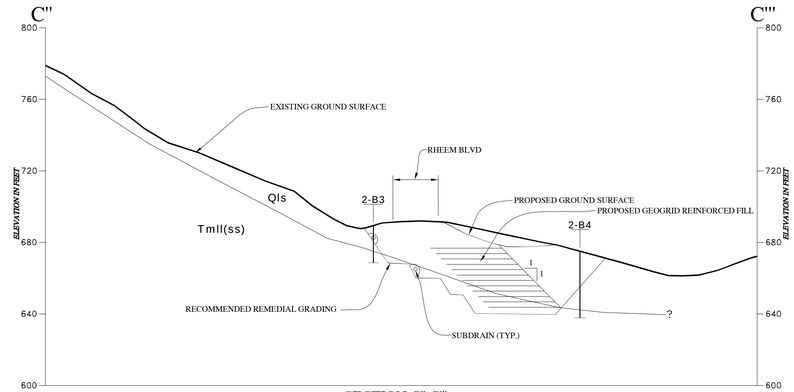
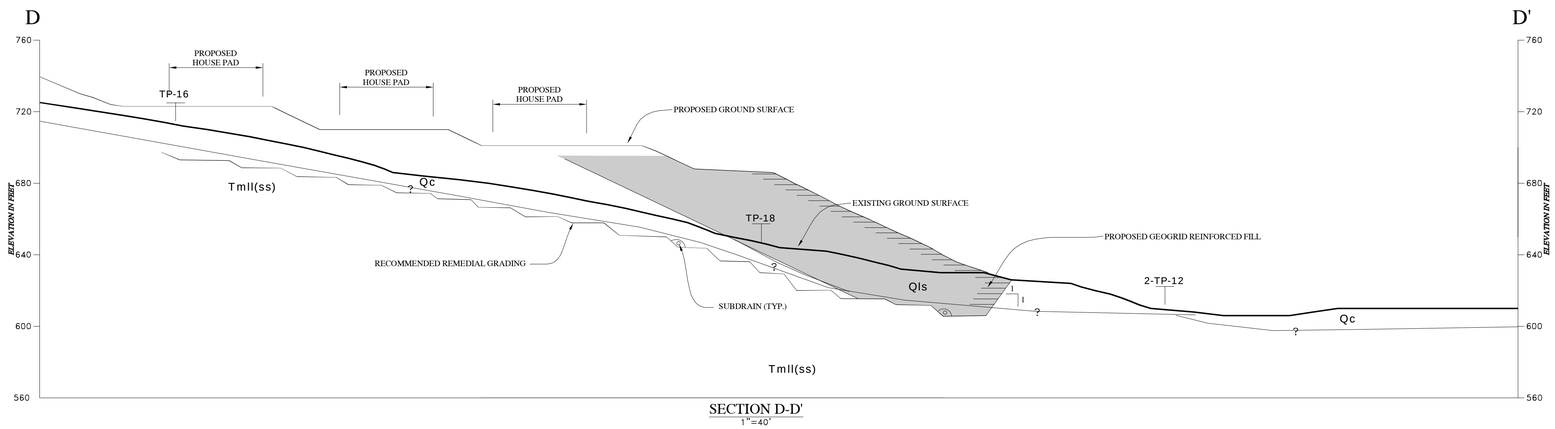


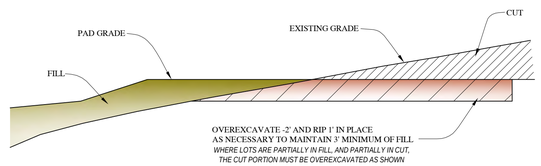
SECTION C-C'
1"=40'



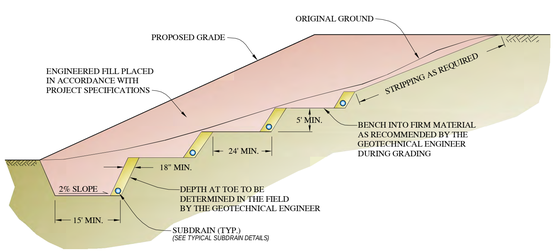
SECTION C''-C'''
1"=40'



SECTION D-D'
1"=40'



TYPICAL CUT FILL TRANSITION LOT DETAIL
NO SCALE



TYPICAL KEYWAY DETAIL
NO SCALE

*FILTER MEDIUM

ALTERNATIVE A

CLASS 2 PERMEABLE MATERIAL

MATERIAL SHALL CONSIST OF CLEAN, COARSE SAND AND GRAVEL OR CRUSHED STONE, CONFORMING TO THE FOLLOWING GRADING REQUIREMENTS:

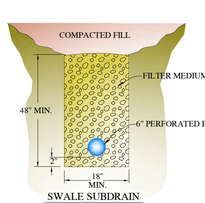
SIEVE SIZE	% PASSING SIEVE
1"	100
3/4"	90-100
3/8"	40-100
#4	25-40
#8	18-33
#30	5-15
#50	0-7
#200	0-3

ALTERNATIVE B

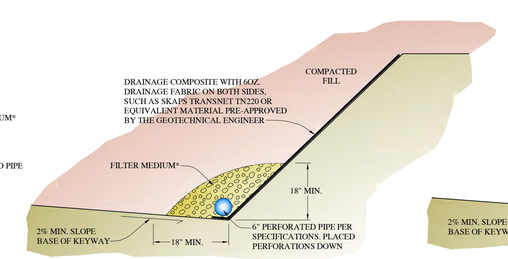
CLEAN CRUSHED ROCK OR GRAVEL WRAPPED IN FILTER FABRIC

ALL FILTER FABRIC SHALL MEET THE FOLLOWING MINIMUM AVERAGE ROLL VALUES UNLESS OTHERWISE SPECIFIED BY ENGEO:

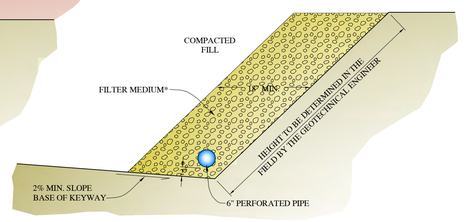
GRAB STRENGTH (ASTM D-4632)	180 lbs
MASS PER UNIT AREA (ASTM D-4751)	6 oz/yd^2
APPARENT OPENING SIZE (ASTM D-4751)	70-100 U.S. STD. SIEVE
FLOW RATE (ASTM D-4491)	80 gal/min/ft
PUNCTURE STRENGTH (ASTM D-4833)	80 lbs



SWALE SUBDRAIN



KEYWAY SUBDRAIN - OPTION 1



KEYWAY SUBDRAIN - OPTION 2

NOTES:

1. *ALL PIPE JOINTS SHALL BE GLUED*
2. *ALL PERFORATED PIPE PLACED PERFORATIONS DOWN*
3. *1% FALL (MINIMUM) ON ALL TRENCHES AND DRAIN LINES*

TYPICAL SUBDRAIN DETAILS
NO SCALE

EXPLANATION

ALL LOCATIONS ARE APPROXIMATE

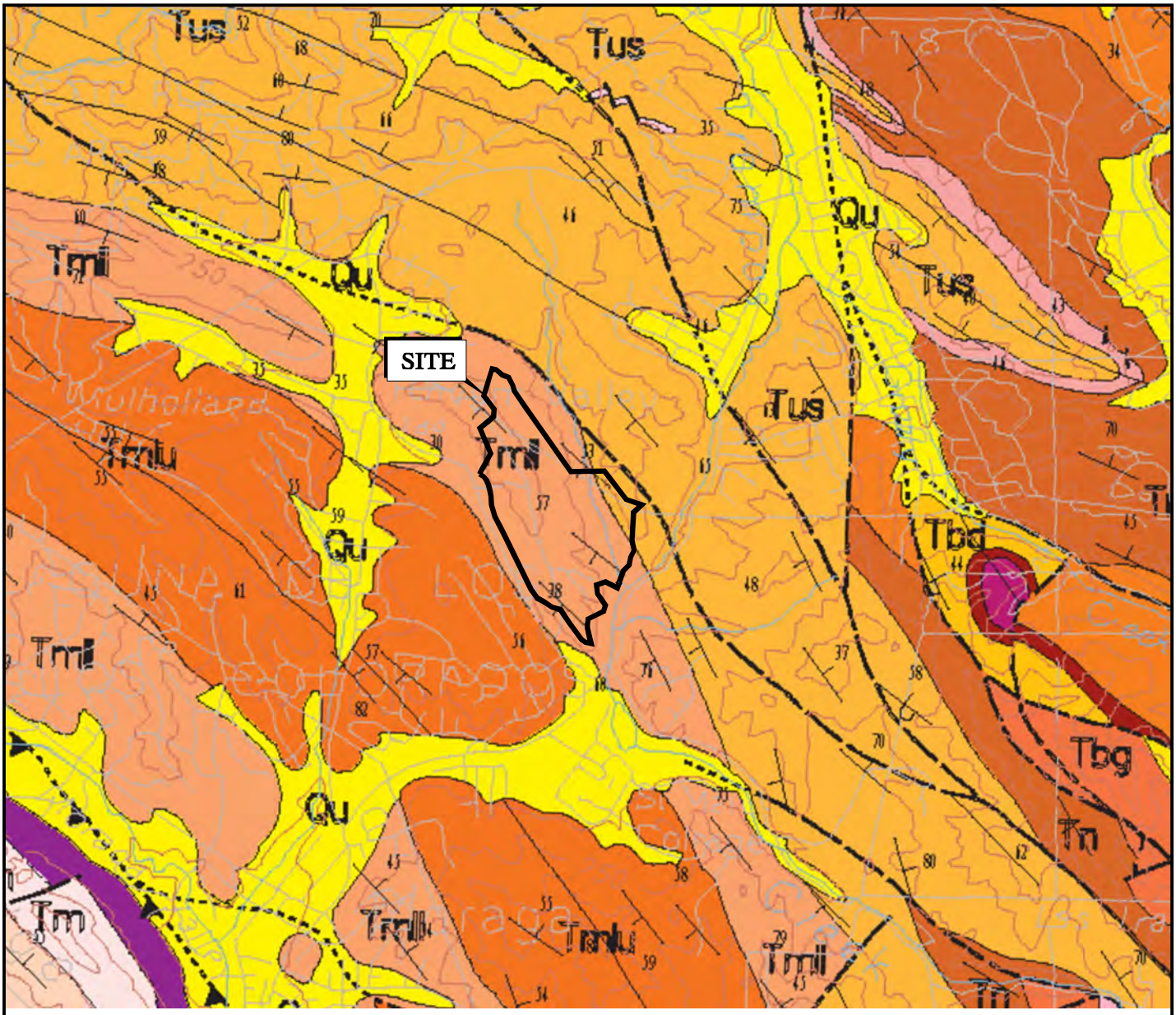
Qaf	ARTIFICIAL FILL
Qls	LANDSLIDE
Qal	ALLUVIUM
Tmll(ss)	MULLHOLLAND FORMATION
2-B6	BORING
	GROUNDWATER ENCOUNTERED
	SELECT FILL ZONE (PREDOMINATELY SANDSTONE DERIVED)

ENGEO Expect Excellence

CORRECTIVE GRADING PLAN DETAILS
RANCHO LAGUNA
MORAGA, CALIFORNIA

PROJECT NO.: 2655.001.000 | FIGURE NO.: 3
SCALE: AS SHOWN
DRAWN BY: LL | CHECKED BY: PCG

ORIGINAL FIGURE PRINTED IN COLOR



EXPLANATION

GEOLOGIC CONTACT-DASHED WHERE GRADATIONAL OR APPROXIMATELY LOCATED

FAULT-DASHED WHERE INFERRED, DOTTED WHERE CONCEALED, QUERIED WHERE EXISTENCE IS DOUBTFUL. SAWTEETH ARE ON UPPER PLATE OF LOW ANGLE THRUST FAULT.

STRIKE AND DIP OF STRATA

INCLINED

OVERTURNED

Qu	UNDIVIDED QUATERNARY DEPOSITS
Tst	SIESTA FORMATION
Tm	MORAGA VOLCANICS
Tmlu	MULHOLLAND FORMATION (UPPER)
Tmll	MULHOLLAND FORMATION (LOWER)
Tus	UNNAMED SEDIMENTARY AND VOLCANIC
Tn	NEROLY FORMATION
Tbr	BRIONES FORMATION (UNDIVIDED)
Tbg	BRIONES FORMATION (G MEMBER)
Tbd	BRIONES FORMATION (D MEMBER)
Tbf	BRIONES FORMATION (F MEMBER)

N

0 FEET 3000

0 METERS 1500

BASE MAP SOURCE: GRAYMER, 1994

ENGEO Expect Excellence

REGIONAL GEOLOGIC MAP

RANCHO LAGUNA

MORGA, CALIFORNIA

PROJECT NO.: 2655.001.000

SCALE: AS SHOWN

DRAWN BY: LL CHECKED BY: PCG

FIGURE NO. 4

G:\Drafting\DRAFTING2_Dwg\2655\001\GHAD 0215\2655001000-4-RegGeoMap-0215.dwg Plot Date: 2-03-15 llee

ORIGINAL FIGURE PRINTED IN COLOR

EXHIBIT A

Legal Description for Subdivision 9330

EXHIBIT A

EXHIBIT 'A'

ALL THE REAL PROPERTY SITUATED IN THE TOWN OF MORAGA, COUNTY OF CONTRA COSTA, AND STATE OF CALIFORNIA; AND BEING ALL OF PARCELS A THRU D AND PARCEL H, AND LOTS 1 THRU 27 AS CREATED BY THAT CERTAIN MAP ENTITLED "SUBDIVISION 9330, RANCHO LAGUNA II" AND FILED ON _____ AND RECORDED IN BOOK_____ OF MAPS AT PAGES _____ THROUGH _____ , OFFICIAL RECORDS OF CONTRA COSTA COUNTY.

PREPARED BY:

_____

MARK E. WOODS *DATED*
R.C.E. 29851

EXHIBIT B

Plat to Accompany Legal Description for Subdivision 9330, Boundary Exhibit

EXHIBIT B

SUBDIVISION 9330
RANCHO LAGUNA II

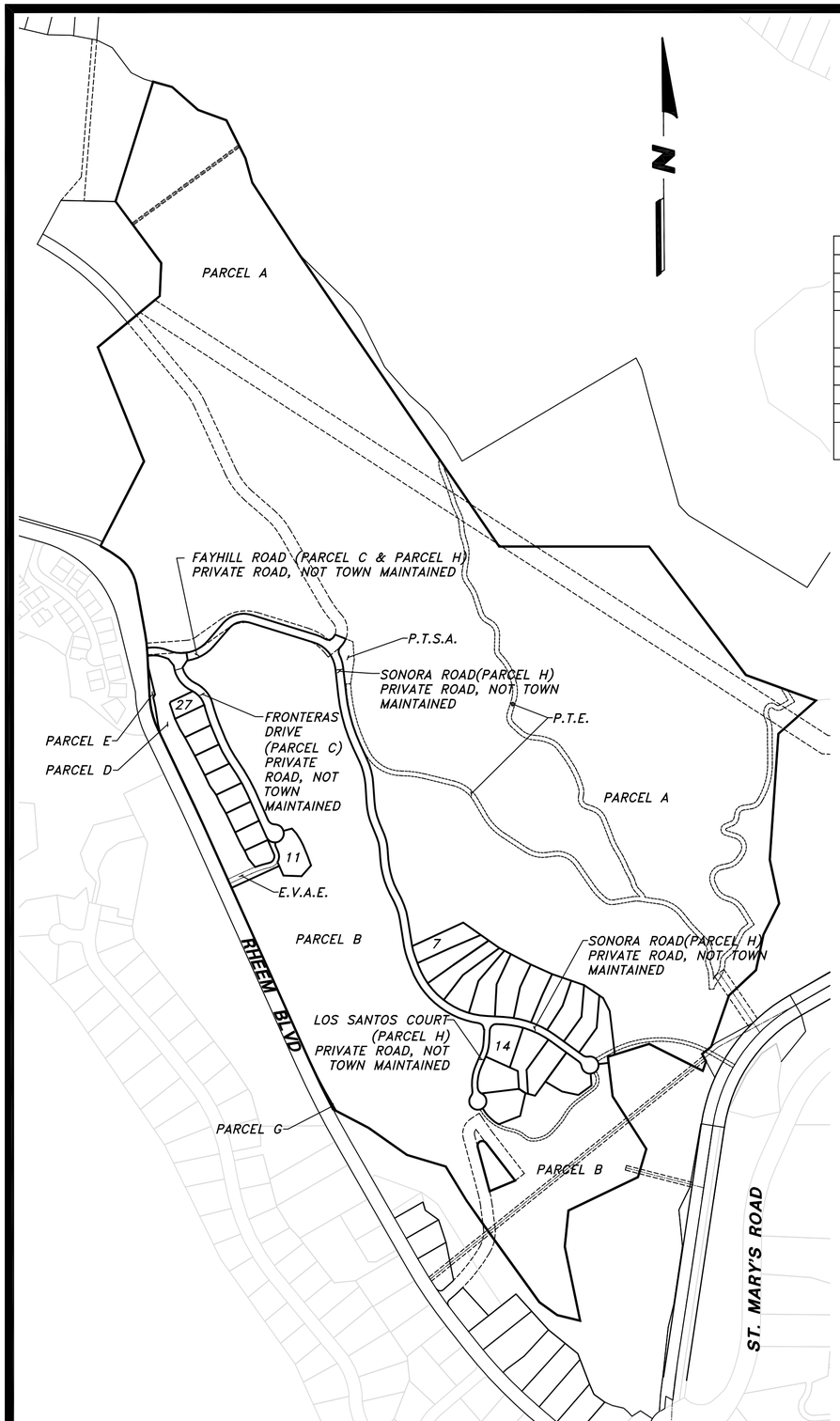
BEING A PORTION OF LOTS 132, 133, 135, 144, 145, 146, 147, 169, 170, 171, 172, 185, 186, 187, 211, 212, MAP OF RANCHO COLORADOS, FILED AUGUST 8, 1916, IN BOOK 15 OF MAPS PAGE 308
TOWN OF MORAGA, COUNTY OF CONTRA COSTA, CALIFORNIA

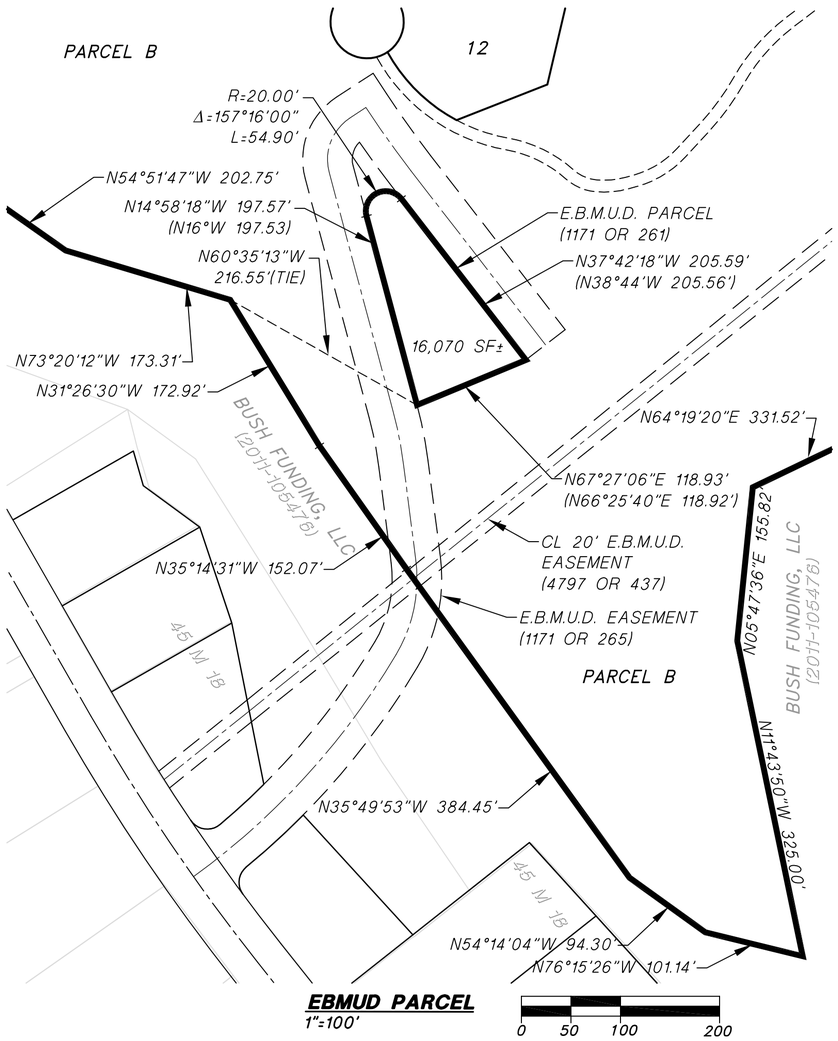
P/A Design Resources, Inc.
Planning ■ Engineering ■ Surveying
3021 Citrus Circle, Suite 150
Walnut Creek, California 94598-2635 TEL (925) 210-9300

SCALE: 1" = 400' **JANUARY, 2015**

0 150 300 600

PARCEL INDEX				
PARCEL	SIZE	SHEET	DEDICATION	CATEGORY
A	5,269,585 S.F.±	12,16-21	G.H.A.D.	C.A.
B	1,701,547 S.F.±	12-19	G.H.A.D.	C.A.
FAYHILL ROAD, (C&H) FRONTERAS DRIVE (C)	41,124 S.F.±	12,13	H.O.A., C.C.C.S.D., E.B.M.U.D., P.U.E., E.V.A.E., P.P.A.E., P.T.E.	C.A. PRIVATE R.O.W.
D	113,337 S.F.±	12	G.H.A.D.	C.A.
E	3,803 S.F.±	12	TOWN OF MORAGA	
F	NOT USED			
G	755 S.F.±	15	TOWN OF MORAGA	
SONORA ROAD, LOS SANTOS COURT (H)	120,265 S.F.±	12,16-19	H.O.A., C.C.C.S.D., E.B.M.U.D., P.U.E., E.V.A.E., P.P.A.E.	C.A. PRIVATE R.O.W.





EBMUD PARCEL
1"=100'

0 50 100 200

LEGEND

◎	SET COUNTY STANDARD STREET MONUMENT STAMPED RCE 29851
◉	FOUND STREET MONUMENT AS NOTED
○	SET 1/2" REBAR AND CAP TAGGED RCE 29851
●	FOUND BRASS DISK PER EBMUD PROPERTY AND RIGHTS OF WAY MAP 4698-G-1
———	RIGHT OF WAY
———	LOT LINE
———	MONUMENT LINE
———	EASEMENT LINE
———	TRACT BOUNDARY
———	RELINQUISHMENT OF ABUTTERS RIGHTS
S.F.	SQUARE FEET
(R)	RADIAL
M-M	MONUMENT TO MONUMENT
(T)	TOTAL
C.A.	COMMON AREA
E.V.A.E.	EMERGENCY VEHICLE ACCESS EASEMENT
P.T.E.	PUBLIC TRAIL EASEMENT
P.T.S.A.	PUBLIC TRAIL STAGING AREA
P.U.E.	PUBLIC UTILITY EASEMENT
P.P.A.E.	PUBLIC PEDESTRIAN ACCESS EASEMENT
P.S.D.E.	PRIVATE STORM DRAIN EASEMENT
P.V.A.E.	PUBLIC VEHICLE ACCESS EASEMENT
G.H.A.D.	GEOLOGIC HAZARD ABATEMENT DISTRICT
G.S.S.D.E.	G.H.A.D. SLOPE AND STORM DRAINAGE EASEMENT
H.O.A.	HOME OWNERS ASSOCIATION
R.O.W.	RIGHT OF WAY
S.D.E.	STORM DRAIN EASEMENT
S.S.E.	SANITARY SEWER EASEMENT (PUBLIC)
C.C.C.S.D.	CENTRAL CONTRA COSTA SANITARY DISTRICT
E.B.M.U.D.	EAST BAY MUNICIPAL UTILITY DISTRICT
(171)	CURVE LABEL
(L209)	LINE LABEL

SEE SHEET 21 FOR CURVE AND LINE TABLES

BASIS OF BEARINGS:

IS BETWEEN FOUND MONUMENTS RH-1 AND RH-11 LOCATED IN RHEEM BOULEVARD AS SHOWN ON COUNTY RIGHT OF WAY RECORD MAP 2844-61. BEARINGS AND DISTANCES SHOWN ARE BASED ON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, NAD 83. MULTIPLY DISTANCES SHOWN BY 1.0000912 TO OBTAIN GROUND DISTANCES.

REFERENCES:

(R-1) COUNTY RIGHT OF WAY RECORD MAP 2844-61(GRID)
(R-2) 113 M 1, TRACT 3562(GRID)
(R-3) EBMUD RIGHT OF WAY MAP 4698-G-1, -2(GRID)
(R-4) EBMUD RIGHT OF WAY MAP 4427-G(GRID)
(R-5) 2002-0360178 (GRANT DEED)(GRID & GROUND)
(R-6) 6010 OR 660 (WESTERN TITLE)(GROUND)
(R-7) 48 PM 28(GROUND)
(R-8) CALTRANS RW RECORD MAP R-127 RESCINDED ROUTE(GRID)
(R-9) 45 M 18 (RHEEM GLEN)(GROUND)
(R-10) 96-5792 (BIGBURY)(GROUND & GRID)
(R-11) 5760 OR 677 (MALONEY)(GROUND)

EXHIBIT C

RANCHO LAGUNA
Authority and Proposed Development

EXHIBIT C

AUTHORITY

The Moraga Town Council formed the Moraga Geologic Hazard Abatement District ("GHAD" or "District") on _____, 2014 with approval of Resolution __-__, under authority of the California Public Resources Code (Division 17, commencing with Section 26500). Included within the District were the Hetfield Estates, Palos Colorados, and Rancho Laguna developments. The Moraga Town Council members act as the Board of Directors of the Moraga GHAD.

Section 26509 of the Public Resources Code requires a Plan of Control, prepared by a State-Certified Engineering Geologist, as a prerequisite to formation of a GHAD. An Engineering Geologist, certified pursuant to Section 7822 of the Business and Professions Code, prepared the original Plan of Control for the Rancho Laguna portion of the Moraga GHAD. The Business and Professions Code requires a Plan of Control to describe in detail geologic hazards, their location, who is affected by them, and most significantly, a plan for the prevention, mitigation, abatement, or control thereof. This Plan of Control applies GHAD operations within the area described in Exhibit A and shown graphically on Exhibit B.

PROPOSED DEVELOPMENT

Grading and improvement plans for the project have been prepared by P/A Design Resources dated November, 2014. The plans indicate that the 178.9-acre property will be developed with approximately 27 single-family residential lots within a development area of approximately 26.3 acres. The lots will be situated in two areas with 10 residential parcels located adjacent to Rheem Boulevard and a second group of 17 residential parcels located in the southern portion of the subdivision.

Based on the grading plans provided by P/A Design Resources Inc., dated November 4, 2014, proposed grading at the project site consists of cuts up to approximately 20 feet deep and fills up to about 50 feet thick to achieve relatively level building pads and interior access roads. A majority of design cut slopes planned are associated with Fay Hill Road and Street 'E' and are as steep as 2:1 (horizontal:vertical) and up to about 30 feet high. Design fills vary in thickness across the site; up to about 29 feet along Rheem Boulevard and 50 feet near Lot 17 where an approximately 100-foot-high 2:1 slope is proposed. The project design includes two water quality/detention basins.

EXHIBIT D

RANCHO LAGUNA
Geology

EXHIBIT D

REGIONAL GEOLOGY AND GEOLOGIC MAPS

The site is located within the Coast Ranges geologic province of California, a series of northwest-trending ridges and valleys. Regional geologic maps were reviewed as part of the Geotechnical Exploration Report for the Rancho Laguna site. A published geologic map of the site vicinity (Graymer, 1994) indicates that the site is underlain by Mulholland formation (Figure 4). The formation consists of two units, a predominately sandstone/siltstone unit and a claystone unit. The Rancho Laguna development is situated on the east limb of the Mulholland syncline, west of the mapped Las Trampas fault. Graymer maps bedrock structure striking to the northwest and dipping to the southwest at inclinations of 30 to 40 degrees.

SITE GEOLOGY

The geologic units mapped on the site include bedrock and surficial deposits consisting of fill, alluvium, colluvium, and landslide. The geologic units described below are adapted from a geotechnical exploration report completed by ENGEO for the site in 2013 and are shown on Figure 2.

GEOLOGIC UNITS

Existing Fill. As described in the Geotechnical Exploration Report, an existing fill was placed in conjunction with the development of the Fay Hill Reservoir site. The fill appears to be derived from a cut in the local bedrock formation, the Mulholland formation. As reported, the fill is up to about 28 feet in thickness. Other artificial fill areas were identified as small fills made for existing ranch roads. The existing fill locations are approximately shown on the Corrective Grading Plan (Figure 2).

Landslides. The onsite landslides have been classified as either recently active or dormant, and are described as soil slumps, earth flows, or deep-seated landslides (Figure 2). Recent landslides were identified based on bare, near-vertical head scarps and fairly obvious toe bulges and lateral margins. Dormant landslides are older landslides that have been modified by erosion. Dormant landslides generally have vegetated scarps and subtle toe or lateral margins.

Surficial landslides involve primarily soil but may include some highly weathered bedrock material. Test pit exploration indicates that the surficial landslides range from about 5 to 20 feet thick. The surficial landslides in the study area appear to include slumps and earthflow type slides. Slumps move relatively slowly as a somewhat coherent mass. With continued movement and saturation, slumps sometimes become earthflows, which are a more rapidly moving viscous-flow type of landslide.

Many of the identified landslide areas are landslide complexes that contain coalescing slide segments. The larger, deep-seated landslides generally have displaced blocks of bedrock in the downslope portions of the landslide area and surficial slumps and earthflow segments in the steeper upslope portions of the landslide area.

Residual Soil. Residual soils develop essentially in place from weathering of the underlying parent material. Residual soils were encountered on ridgelines and the flanks of ridges and were found to range from about 1 to 5 feet thick. The residual soils encountered consist of dark brown silty clay. The residual soils have a moderate to high expansion potential.

Colluvium. Areas of thicker soil cover in swales are shown as colluvium (Qc) on Figure 2. Colluvial soils encountered in test pits consist of fine-grained sediments that have a high plasticity and a high expansion potential. The colluvial deposits encountered were soft to stiff and range up to about 19 feet thick.

Alluvium. Alluvium (Qal) was encountered along the drainage adjacent to Rheem Boulevard. Alluvial soils encountered consisted of unconsolidated stream deposits of silty clay with some sand clay layers. The alluvial deposits range up to at least 15 feet thick in some areas.

Mulholland Formation. Bedrock at the site is mapped by Graymer (1994) as the lower member of the Mulholland formation. Based on the bedrock materials encountered onsite, bedrock was subdivided into two units: (1) a unit consisting predominantly of sandstone and siltstone that is designated Tmll (ss), and (2) a unit that consists predominantly of claystone that is designated Tmll (cs). The sandstone and siltstone vary from very weak to moderately strong, moderately to highly fractured and thinly to thickly bedded. The sandstone and siltstone unit are more resistant to erosion than the claystone and generally underlies the ridgeline portions of the site. The claystone unit is generally extremely weak to weak, closely fractured and thinly bedded. The claystone unit underlies the eastern portion of the site and is generally more prone to slope instability than the sandstone and siltstone units.

Bedrock structure observed in test pit excavations was consistent with the regional mapping. Bedding attitudes were observed dipping to the north, northwest and dipping at inclinations of 28 to 60 degrees to the west.

GROUNDWATER

During the site explorations conducted between 1983 and 2013, groundwater was encountered in several exploratory soil borings. Groundwater levels ranged between 20 and 30 feet below the existing ground surface. In addition, flow was observed in the channel adjacent to Rheem Boulevard. As noted in the Geotechnical Exploration, groundwater conditions are expected to vary depending on factors such as weather conditions, time of year and future irrigation practices.

SEISMIC SOURCES

The site is not located within a State of California Earthquake Fault Zone and no Holocene active faults are known to pass through the project site, according to published geologic maps (Jennings, 2010; Graymer, 2000; Crane, 1988; Dibblee, 2005; and Bortugno, 1991).

Crane (1988) maps a southwest dipping thrust fault in the valley along Rheem Boulevard. Another unnamed fault is mapped a few hundred feet to the northeast of the site (Graymer, 2000 and Crane, 1988). No geomorphic expressions of recent faulting were observed in aerial photographs, during our site reconnaissance or in the test pits.

EXHIBIT E

RANCHO LAGUNA
Funding and Acceptance

EXHIBIT E

FUNDING AND ACCEPTANCE OF RESPONSIBILITY BY THE DISTRICT

An annual assessment shall be levied on all residential parcels within the Rancho Laguna development.

1. Activation of Assessment

The assessment shall be levied by the GHAD on each individual parcel beginning the first fiscal year (July 1 through June 30) following the close of escrow for that parcel.

2. Responsibility for GHAD Activities

The party that, on the date each Final Map is recorded within the GHAD boundaries, owns the developable parcels shown on that Final Map shall have the responsibility to perform all the activities of the GHAD on property within that Final Map. Such responsibility shall automatically transfer to the GHAD at 9:00 a.m. on the day exactly three (3) years after the first residential building permit within the area is issued by the Town of Moraga provided that the items listed under item No. 3 in this section have been completed (Transfer Eligibility Date). This turnover date may be extended at the sole discretion of the project developer provided that the assessments shall continue to be levied during the extension period and that notice of such extension is delivered to the GHAD Manager at least 30 days prior to the turnover date.

3. Process for Transferring Responsibility for GHAD Activities

After the Transfer Eligibility Date for parcel(s), the process for transferring responsibility for performing GHAD activities on such parcel(s) shall be as follows:

(a) The owner or owners of property within the Site shall record a Declaration of Restrictive Covenants, Right of Entry and Disclosures Regarding Geologic Hazard Abatement District (“Declaration”) previously approved by the GHAD.

(b) Up to one year in advance of the Transfer Eligibility Date or in any subsequent year, at its discretion, the developer may apply to the GHAD ("Transfer Application") to transfer the responsibility for performing GHAD Activities for parcel(s) to the District.

(c) Within 45 days of receiving such notice, a representative of the GHAD shall verify that all the facilities for which the GHAD will have maintenance responsibility have been constructed and maintained according to the Town-approved plans and specifications for the individual improvements, and that such facilities are operational and in good working order.

(d) Within 15 days of such inspection, the GHAD will send the developer a list ("Punch list") of all of the items that need to be constructed, repaired or otherwise modified.

(e) The developer may notify the GHAD when it has completed the items identified on the Punch list.

(f) Within 30 days of receipt of such notice, the GHAD shall verify whether all Punch List items have been completed. If such items have been completed, the GHAD shall notify the developer that the District accepts responsibility for performing all future GHAD Activities on the parcel(s).

(g) The GHAD Manager shall confirm that the reserve requirement defined in the approved Engineer's Report has been met.

(h) Ownership of the open space shall be transferred from the owner/developers to the District.

(i) The GHAD must review, approve, and the developer or HOA must record an access and maintenance easement for HOA activities on GHAD owned parcels.

As part of the transfer, the developer of parcel(s) to be transferred will provide the GHAD, for its use, copies of the applicable geotechnical exploration reports, grading plans, corrective grading plans, improvement plans, field-verified geologic maps, as-built subdrain plans or other pertinent documents as requested by the GHAD.

EXHIBIT F

MORAGA GEOLOGIC HAZARD ABATEMENT DISTRICT
Rancho Laguna Development
GHAD Disclosure and Right of Access

EXHIBIT F

5

RECORDED AT THE REQUEST OF AND
WHEN RECORDED RETURN TO

Miller Starr Regalia
1331 N. California Blvd., Fifth Floor
Walnut Creek, CA 94596

CONTRA COSTA Co Recorder Office
JOSEPH CANCIAMILLA, Clerk – Recorder
DOC – 2016 – 0148756 – 00
Check Number
Wednesday, JUL 27, 2016 10 37 06
MOD $5 00 | REC $15 00 | FTC $4 00
DAF $2 70 | REF $0 30 | RED $1 00
ERD $1 00 |
Ttl Pd $29.00 Nbr – 0002657719
lrc / R6 / 1-5

DECLARATION OF RESTRICTIVE COVENANTS,

RIGHT OF ENTRY AND DISCLOSURES REGARDING

GEOLOGIC HAZARD ABATEMENT DISTRICT

DECLARATION OF RESTRICTIVE COVENANTS,

RIGHT OF ENTRY AND DISCLOSURES REGARDING

GEOLOGIC HAZARD ABATEMENT DISTRICT

This DECLARATION OF RESTRICTIVE COVENANTS, RIGHT OF ENTRY AND DISCLOSURES REGARDING GEOLOGIC HAZARD ABATEMENT DISTRICT (the "Declaration") is made this 1st day of July, 2016 (the "Effective Date"), by SUMMERHILL RL LLC, a California limited liability company (the "Declarant"), with reference to the following

RECITALS

A Property The following "Right of Entry and Disclosures" regarding a Geologic Hazard Abatement District shall be recorded against all land within "Subdivision 9330 Rancho Laguna II" as filed on July 9, 2015, in Book 524 of Maps at Pages 22 through 24, Official Records of Contra Costa County in the Town of Moraga, County of Contra Costa, State of California (the "Property")

B The Town of Moraga has approved a subdivision on the Property A condition of approval of the tentative map for Subdivision 9330 was that the Property be included within a Geologic Hazard Abatement District ("GHAD")

C Under the authority of California Public Resources Code section 26500 et seq , the Moraga Town Council, on March 11, 2015, formed and established the Moraga Geologic Hazard District ("Moraga GHAD" or "District") by Council Resolution 31-2015

NOW, THEREFORE, Declarant, as the owner of the Property, for itself, its successors and assigns does hereby declare as follows

1 **Notification and Disclosure of Geologic Hazard Abatement District** The Declarant hereby gives notice and discloses that the Property is a part of the Moraga GHAD, a Geologic Hazard Abatement District, formed pursuant to the laws of the State of California The Board of Directors of the Moraga GHAD are the members of the Moraga Town Council Pursuant to the Plan of Control for the Rancho Laguna Development to Moraga Geologic Hazard Abatement District as it may be amended from time to time (the "Plan of Control"), the Declarant and the Moraga GHAD are afforded certain responsibilities and rights relating to the prevention, mitigation, abatement and control of potential geologic hazards on the Property The powers of the Moraga GHAD include the power to assess lot owners within the Property for purposes set out in the Plan of Control

2 **Property Access, Right of Entry** The Declarant hereby grants the Moraga GHAD, its officials, employees, contractors and agents a non-exclusive, perpetual easement (the "GHAD Easement"), for continuing and perpetual access to and across the Property for the purposes and responsibilities set out in the Plan of Control The GHAD Easement shall become effective upon the conveyance of the various lots within the subdivision by grant deed, including the Deed Statement set out in Item 4 below Until such conveyance and the effectiveness of the GHAD Easement, the Declarant by executing and recording this Declaration, hereby contractually affords the Moraga GHAD an irrevocable right of entry over and upon the Property for the purposes of the GHAD Easement as set out above

3 **Binding on Successors and Assigns** The covenants and provisions of this Declaration shall be binding upon any and all owners of the Property, their successors and assigns

4 **Deed Statement** Any conveyance of all or a portion of the Property shall include in the deed conveying such property interest the following statement

> "This conveyance is made subject to the Declaration of Restrictive Covenants, Right of Entry and Disclosures regarding a Geologic Hazard Abatement District, recorded in the Official Records of Contra Costa County, as Instrument No 2016-0148752 on 7-27, 2016 "

5 **Enforcement** The Moraga GHAD shall have the right but not the obligation to enforce the provisions of this Declaration

6 **Modification or Termination** This Declaration shall not be modified, amended or terminated without the written consent of the Moraga GHAD

Executed as of the Effective Date

DECLARANT:

SUMMERHILL RL LLC,
a California limited liability company

By SummerHill Homes LLC,
a California limited liability company
Its Manager

By _____
Name Katia Kamangar
Title Executive Vice President

By _____
Name Jason Biggs
Title Secretary

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document

State of California)
County of SANTA CLARA)

On July 1, 2016, before me, JUDY LEPULU, a Notary Public, personally appeared KATIA KAMANGAR and JASON BIGGS, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) ~~is~~/are subscribed to the within instrument and acknowledged to me that ~~he~~/~~she~~/they executed the same in ~~his~~/~~her~~/their authorized capacity(ies), and that by ~~his~~/~~her~~/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct

WITNESS my hand and official seal

Signature _____

JUDY LEPULU
Commission # 2053294
Notary Public - California
Santa Clara County
My Comm Expires Jan 22, 2018

SUBORDINATION

The undersigned, the beneficiary under the deed of trust recorded on July 22, 2015, as Document No 2015-0152154-00 in the records of Contra Costa County, California (the "Deed of Trust"), executed by SUMMERHILL RL LLC, a California limited liability company, as Trustor, hereby subordinates the Deed of Trust to the foregoing Bellavista Declaration of Restrictions (CC&Rs) (the "Declaration") so that for all purposes the Declaration shall be deemed executed and recorded prior to the execution and recordation of the Deed of Trust

Dated July 12, 2016

BANK OF AMERICA, N A ,
a national banking association

By _____
Name Hans E. Starks
Its Senior Vice President

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached and not the truthfulness accuracy or validity of that document

State of California)
County of San Francisco)

On 12 July 2016, before me, Ann-Marie Olsson, a Notary Public, personally appeared Hans E. Starks, who proved to me on the basis of satisfactory evidence to ~~be~~ the person(s) whose name(s) ~~is/are~~ subscribed to the within instrument and acknowledged to me that ~~he/she/they~~ executed the same in ~~his/her/their~~ authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct

WITNESS my hand and official seal

Signature _____

ANN-MARIE OLSSON
COMM # 2093161
NOTARY PUBLIC CALIFORNIA
SAN FRANCISCO COUNTY
My Comm Expires Jan 3, 2019

"END OF DOC"

EXHIBIT G

Rancho Laguna Development
Wetland Management Program
June 2014

EXHIBIT G

ZENTNER and ZENTNER
Land Planning and Restoration

Rancho Laguna II

Wetland Mitigation Program

Project No.:
980 SHH

Zentner and Zentner
Oakland, CA

Prepared for:
SummerHill Homes

Date Issued:
June 2014

Revised:
December 2015
February 2016

95 Linden Street Suite 3 Oakland California 94607 510.622.8110

TABLE OF CONTENTS

TABLE OF FIGURES

I. EXECUTIVE SUMMARY

This wetland mitigation plan (WMP) has been prepared on behalf of SummerHill Homes, the Applicant, to address impacts to Section 404 U.S. Army Corps of Engineers (Corps) and Regional Water Quality Control Board (RWQCB) jurisdictional wetlands and waters resulting from the construction of the Rancho Laguna II project in Contra Costa County. This WMP details the mitigation and monitoring program including methods, success criteria, contingencies, and development of a long-term management program for the wetland mitigation areas in accordance with Corps and RWQCB guidance.

A. Existing Conditions

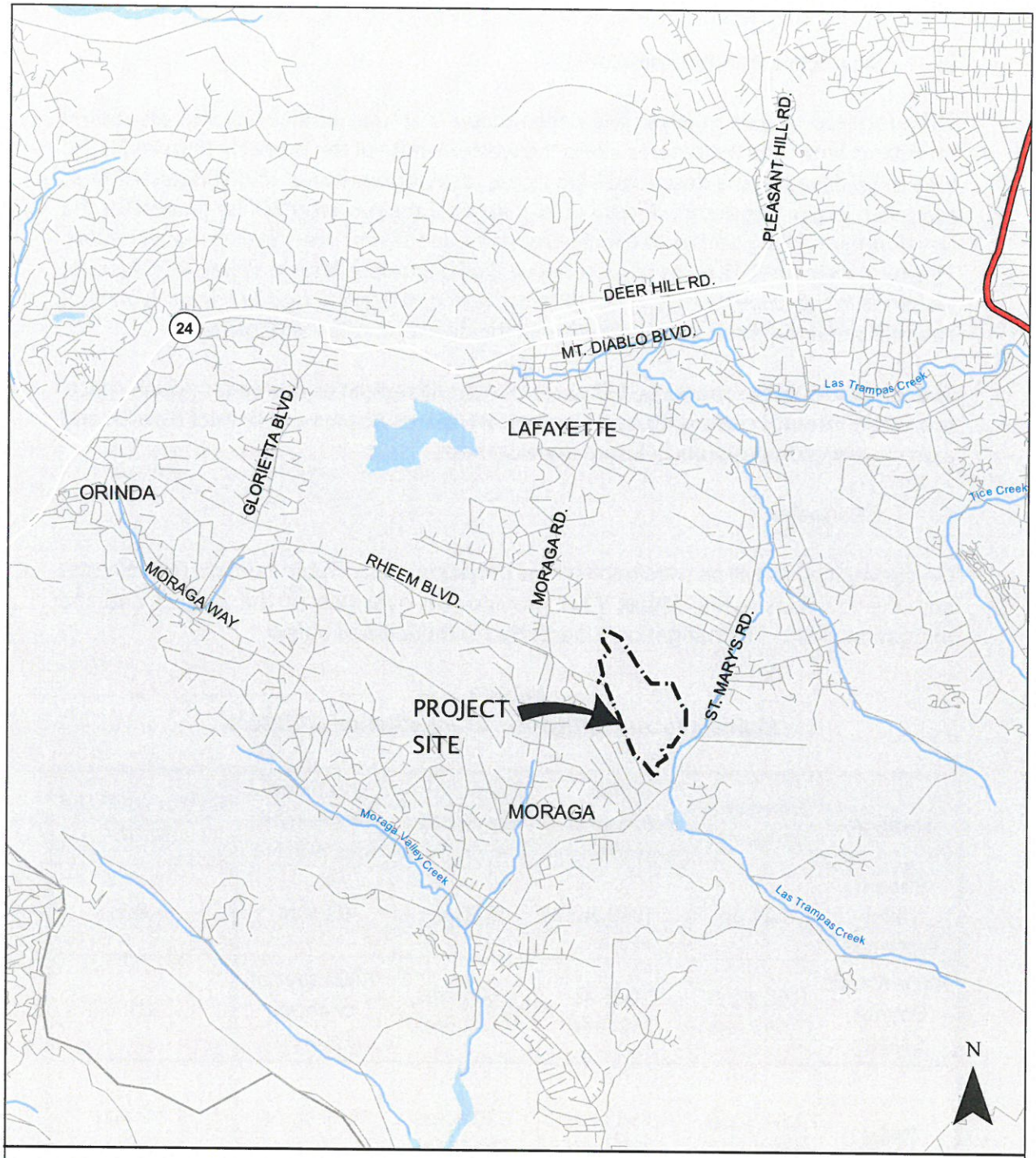
The 179-acre Rancho Laguna property consists of two narrow valleys divided by a ridge (**Figure 1**). The western valley, which includes Rheem Creek, is divided between the upper and lower Rheem valleys. The upper valley of Rheem Creek rests on old fill. That fill and a downstream dam were placed there to attempt to stabilize the adjacent Rheem Boulevard, which is subject to slumping as a result of inadequate stabilization. Wetlands in this part of the valley are recently-developed seasonal wetlands that formed on top of the fill. The lower Rheem Valley includes a relatively natural creek, labelled Rheem Creek for this application, although the flows are supplemented by summer irrigation from adjacent housing and the creek and banks have been heavily grazed. The upper and lower valleys are connected by a crumbling, concrete v-ditch.

The eastern valley includes Coyote Creek, an ephemeral to intermittent stream within a relatively incised and actively eroding channel. Both Creeks drain to Las Trampas Creek.

The entire property is dominated by rolling grasslands. These grasslands are almost exclusively non-native, annual grasses and forbs and large parts of the grasslands are dominated by the invasive artichoke thistle (*Cynara cardunculus*), a large, woody thistle.

Oak woodland is found in patches along the property's eastern border near Saint Mary's Road and spreading up a small valley in a triangular shape near the center of the property. The woodland is dominated by live oak (*Quercus agrifolia)* but also includes moderate amounts of valley oak (*Quercus lobata*), California bay laurel (*Umbellularia californica*) and buckeye (*Aesculus californica*).

The Rancho Laguna property includes 1.21 acres of seasonal wetlands, primarily concentrated along Rheem Valley, and 0.63 acres (7,695 linear feet) of jurisdictional waters, primarily Rheem and Coyote Creeks and their tributaries.



DATE: 02/16/2016, 04:09 pm BY: CJL SOURCE: CaSIL 2009 FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1035 Rancho Laguna const\Adobe\1035 LOCATION MAP 16-02-16	**FIGURE 1** LOCATION MAP RANCHO LAGUNA MORAGA, CALIFORNIA	ZENTNER and ZENTNER *Land Planning and Restoration* 95 Linden Street, Ste. 3, Oakland, CA 94607 Phone: 510.622.8110 Fax: 510.622.8116

B. Development and Impacts

The proposed project involves the construction of 27 residential lots and associated roads and water quality features along the western edge of the property (**Figure 2**). The area to be developed is described here as the "development site" to distinguish it from the much larger "property". A total of 26.3 acres of the property will be graded for the development, filling a total of 0.495 acres of wetlands and other jurisdictional waters. This total includes 0.42 acres of seasonal wetlands in upper Rheem Valley, 0.06 acres of wetlands in the uppermost edge of Rheem Creek and 0.015 acres (282 linear feet; lf) of channel wetlands in the southeast edge of the development site (**Figure 3**).

The remainder of the property, 153 acres (86%), will remain as permanent open space, protected through ownership by a Geological Hazards Abatement District (GHAD) and a deed restriction prohibiting future development.

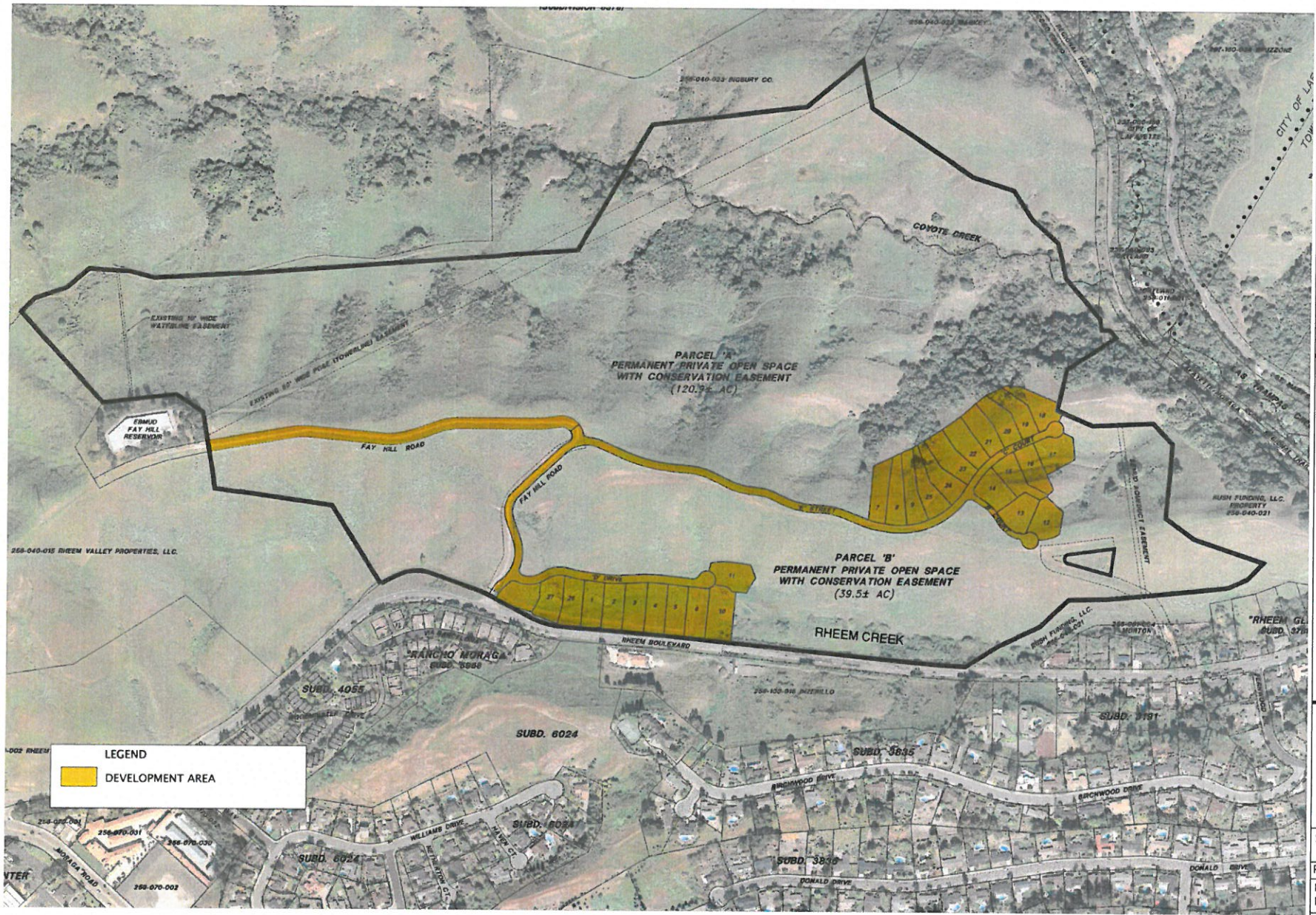
C. Mitigation

On-site mitigation will be used to offset the project impacts. Table 1 details the acreages and the locations, while **Sheet T1.0** provides an overview of the project and the mitigation areas. The mitigation is described in more detail below.

Table 1
Impacts to and Mitigation of Jurisdictional Waters

Habitat	Extent on property	Filled Wetlands and Waters	Preserved Wetlands and Waters	Restored Wetlands and Waters	Restored:Filled Ratio
Rheem Valley Wetlands	1.21 ac	0.48 ac	0.70 ac	0.84 ac	1.8:1
Rheem and Coyote Creeks	0.63 acres (7,695 feet)	0.015 ac (282 feet)	0.60 acres (7,171 feet)	1,021 feet of channel restored[1]	4:1
Total	1.84 acres (7695 feet)	0.495 acres (282 feet)	1.30 acres (7,171 lf)	0.84 acres (1,021 feet)	1.8:1 (ac) 4:1 (ft)

[1] The restored acreage is counted in the Rheem Valley wetlands; this extent represents the length of channel also restored in upper Rheem valley to create the extension of Rheem Creek upstream.



ZENTNER ZENTNER
Land Planning and Restoration
95 Linden Street, Ste. 6, Oakland, CA 94607
Phone: 510.622.8110 Fax: 510.622.8116

FIGURE 2

DEVELOPMENT AREA

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

N

0 200' 400'

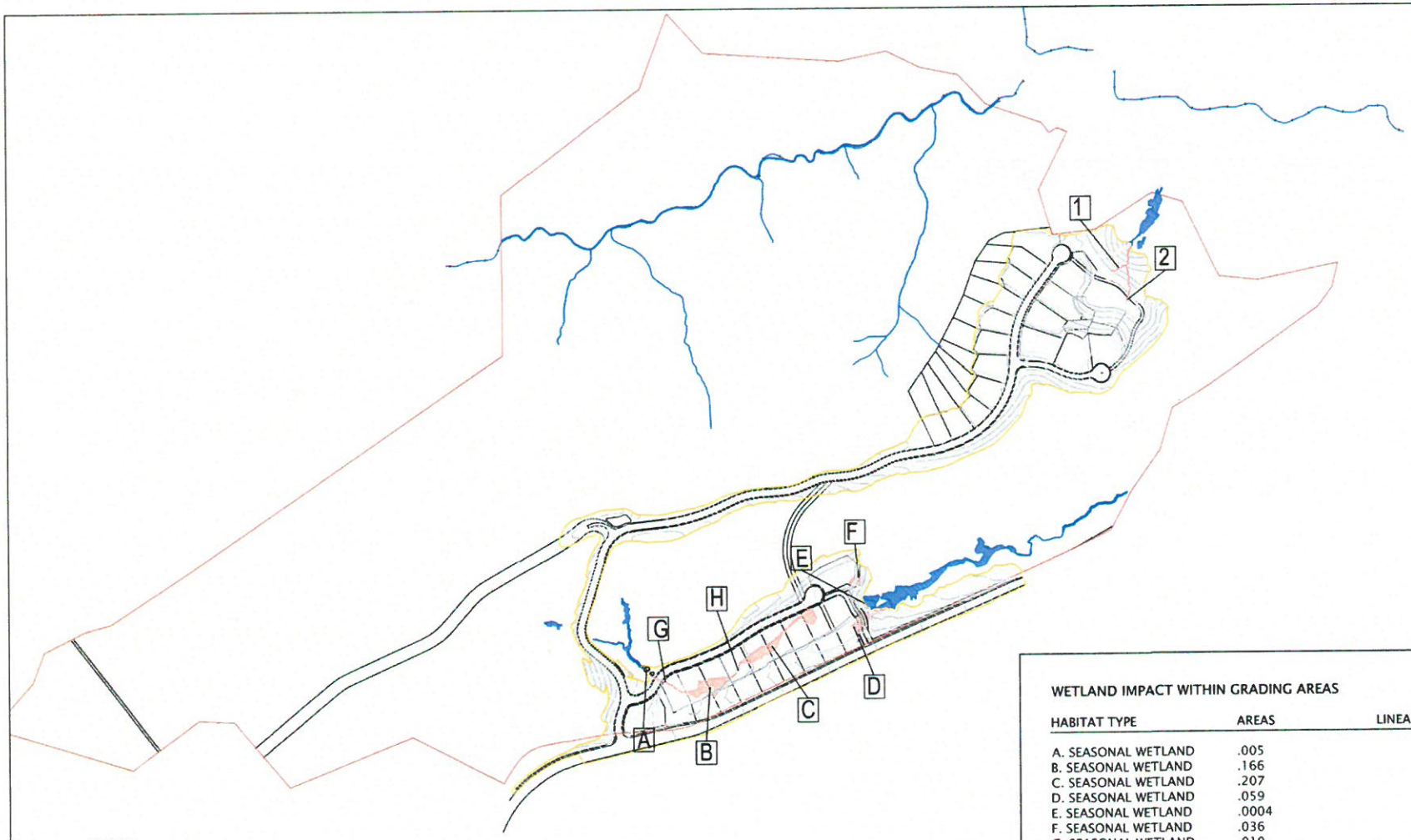
SCALE: 1" = 400'

SOURCE: PA Design

PROJECT NO: 980

FILE: D:PROJ/2014VESTING

DATE: 05.09.2014



LEGEND

- PRESERVED SEASONAL WETLANDS: .70 AC
- FILLED SEASONAL WETLANDS: .48 AC
- PRESERVED CHANNEL: .601AC/7,170.84 LINEAR FT
- FILLED CHANNEL: .015AC/282 LINEAR FT
- GRADING BOUNDARY
- PROPERTY BOUNDARY

WETLAND IMPACT WITHIN GRADING AREAS

HABITAT TYPE	AREAS	LINEAR FT.
A. SEASONAL WETLAND	.005	
B. SEASONAL WETLAND	.166	
C. SEASONAL WETLAND	.207	
D. SEASONAL WETLAND	.059	
E. SEASONAL WETLAND	.0004	
F. SEASONAL WETLAND	.036	
G. SEASONAL WETLAND	.010	
H. SEASONAL WETLAND	.002	
TOTAL SEASONAL WETLANDS:	.48	
1. EPHEMERAL GULLY	.003	66
2. EPHEMERAL GULLY	.012	216
TOTAL OTHER WATERS:	.015	282
TOTAL	ACRES	LINEAR FT.
	.495	282

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FIGURE 3

WETLAND AND OTHER WATERS WITHIN GRADING BOUNDARY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

N

0 200' 400'

SCALE: 1" = 400'

TOPO SOURCE:

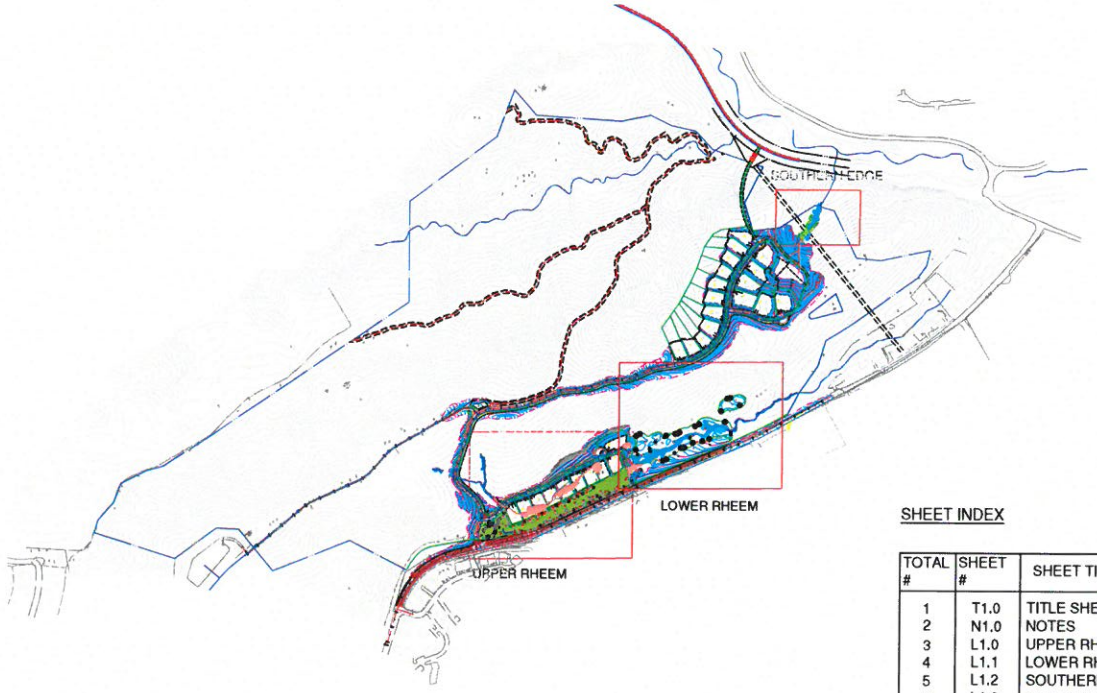
PROJECT NO: 980

FILE: D:PROJ/2014VESTING

DATE: 04.29.2014

RANCHO LAGUNA PROJECT
TOWN OF MORAGA, CALIFORNIA

DATE: November 10, 2015



SHEET INDEX

ZENTNER and ZENTNER
Land Planning and Restoration

MITIGATION PLAN

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

N

SCALE: NTS

PROJECT: 980 RANCHO LAGUNA

DATE: 2015.11.10

SHEET: T1.0
1 OF 9

The mitigation will include the preservation of lower Rheem Creek and Coyote Creek and its tributaries and associated wetlands as well as the restoration of 0.84 acres of wetlands and waters along Rheem Creek.

1. Seasonal wetland fill is concentrated almost entirely within upper Rheem valley, which requires fill to remediate local slope failures and buttress Rheem Boulevard. This fill will be mitigated by, essentially, re-establishing the wetlands about 30 ft west in an area of restored open space running parallel to Rheem Boulevard (**Sheet L1.0**). The restored channel will include seasonal wetlands, a restored channel, and a native-dominated upland buffer.

2. In lower Rheem valley, the existing Rheem Creek corridor will be preserved and enhanced with native tree, shrub and understory plantings and a series of seasonal wetlands restored adjacent to the creek (**Sheet L1.1**).

3. Upper and lower Rheem valleys are now connected only by a crumbling concrete v-ditch. These will now be connected through a series of natural rock step pools with native vegetation (**Sheet D1.1**), providing for an extension of Rheem Creek into the upper Valley and a connected, self-sustaining riparian system.

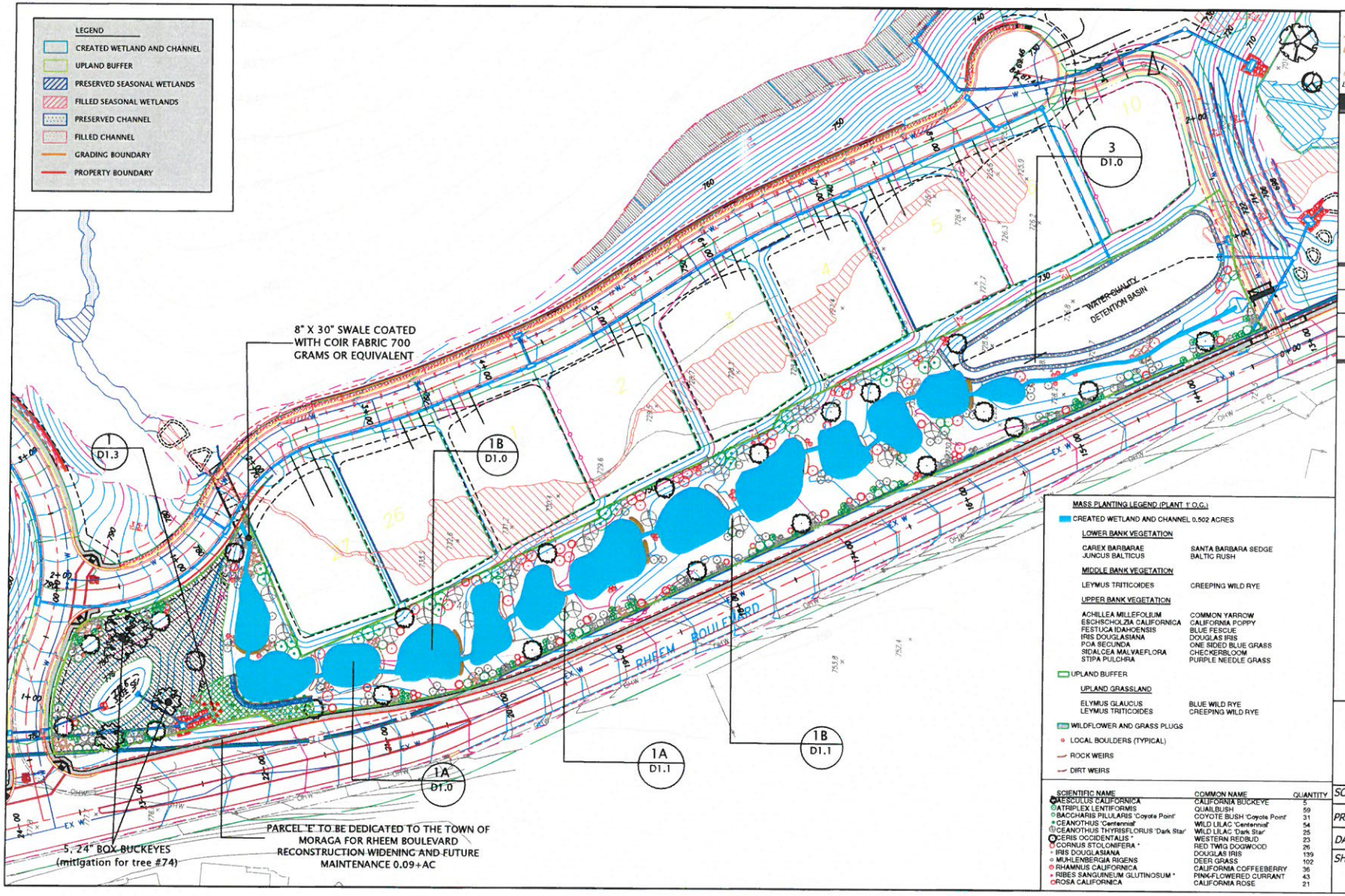
4. At the southeast edge of the development site, an existing eroded gully will be restored and a native-dominated upland buffer placed around the drainage and downslope wetland (**Sheet L1.2**).

5. All of the open space will be permanently preserved and managed for habitat functions and values. Long-term management of the open space, including the mitigation features described below, will also be through the operations of the GHAD that can assure adequate funding of annual management and maintenance.[2]

The Applicant will be responsible for implementing the specific mitigation features described in this report. Once those mitigation features are established, the GHAD will be responsible for their long-term management and maintenance.

---

[2] A GHAD is an independent, state-level public agency that is formed to address geologic hazards at a particular location. GHAD's are authorized by the California Public Resources Code. GHAD's are governed by an elected board, and implement land management activities specified in a site-specific Plan of Control (POC). A GHAD's primary source of funding is annual property tax assessments, which generate sufficient revenues each year to fund implementation of the POC.



ZENTNER and ZENTNER
Land Planning and Restoration

UPPER RHEEM CREEK CONCEPTUAL DETAIL

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

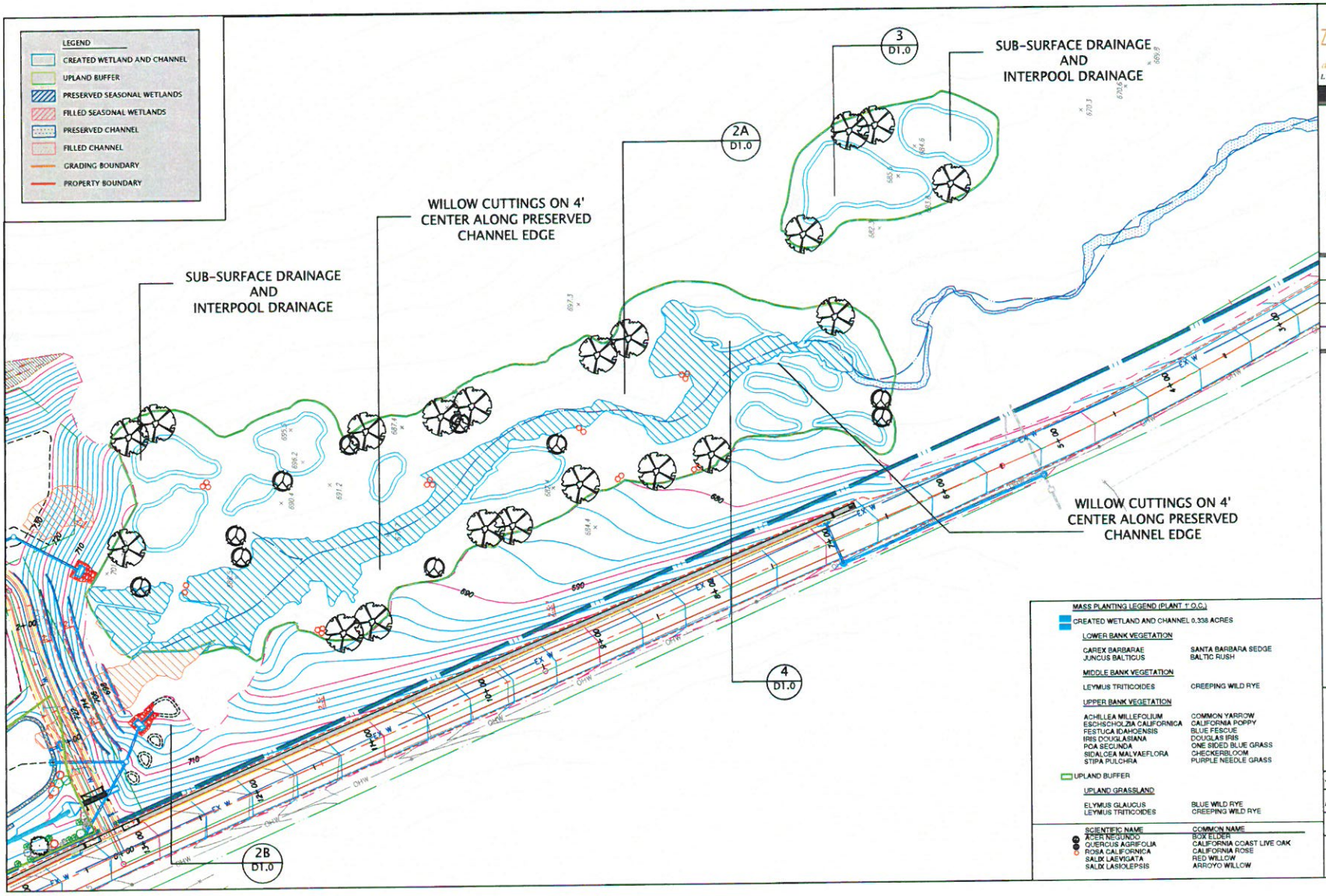
N

SCALE: 1" = 75'

PROJECT: 980 RANCHO LAGUNA

DATE: 2015.11.30

SHEET: L1.0
3 OF 9



ZENTNER and ZENTNER
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LOWER RHEEM CREEK CONCEPTUAL DESIGN

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

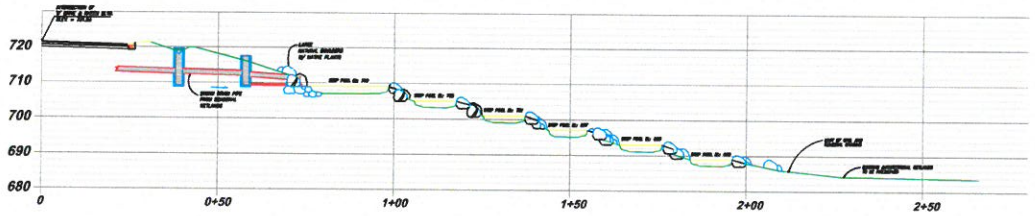
N

SCALE: 1" = 75'

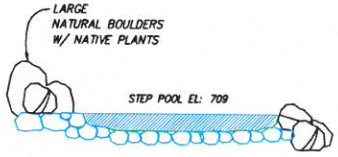
PROJECT: 980 RANCHO LAGUNA

DATE: 2015.11.30

SHEET: L1.1
4 OF 9



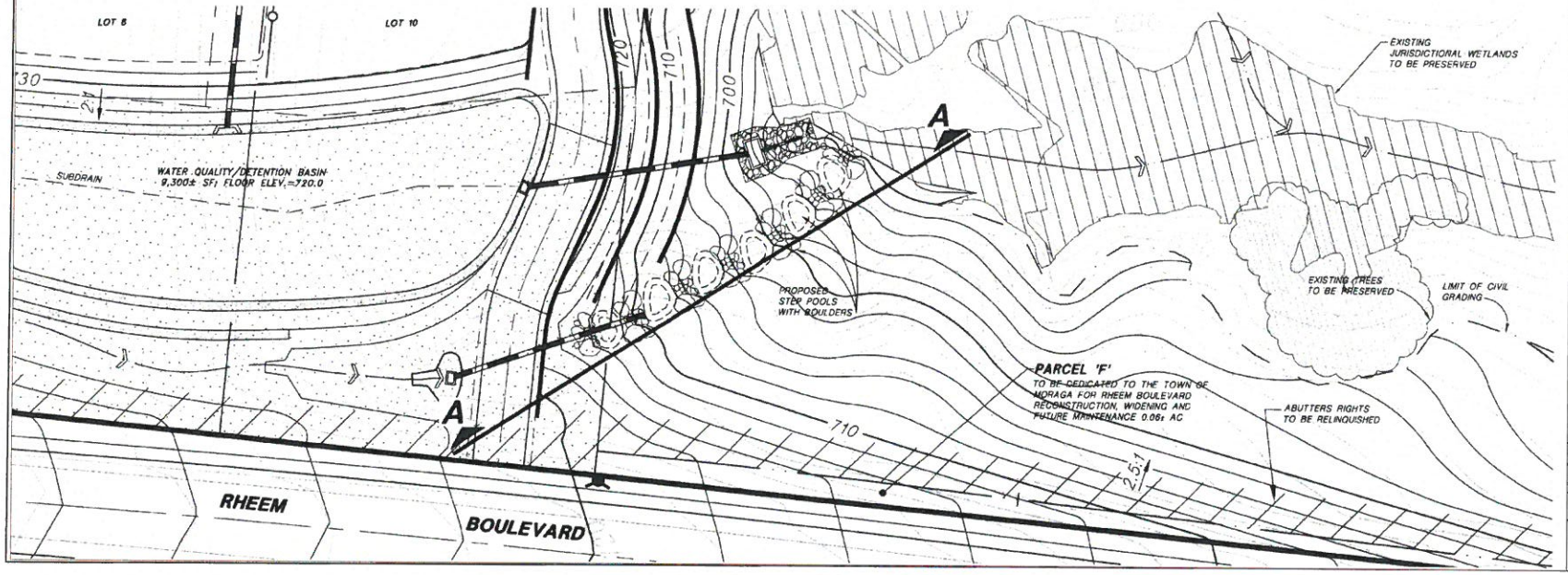
1A SECTION DETAIL
STEP POOLS



1B SECTION ENHANCED DETAIL
TYPICAL STEP POOLS

SECTION A - A

H & V=1"=8'



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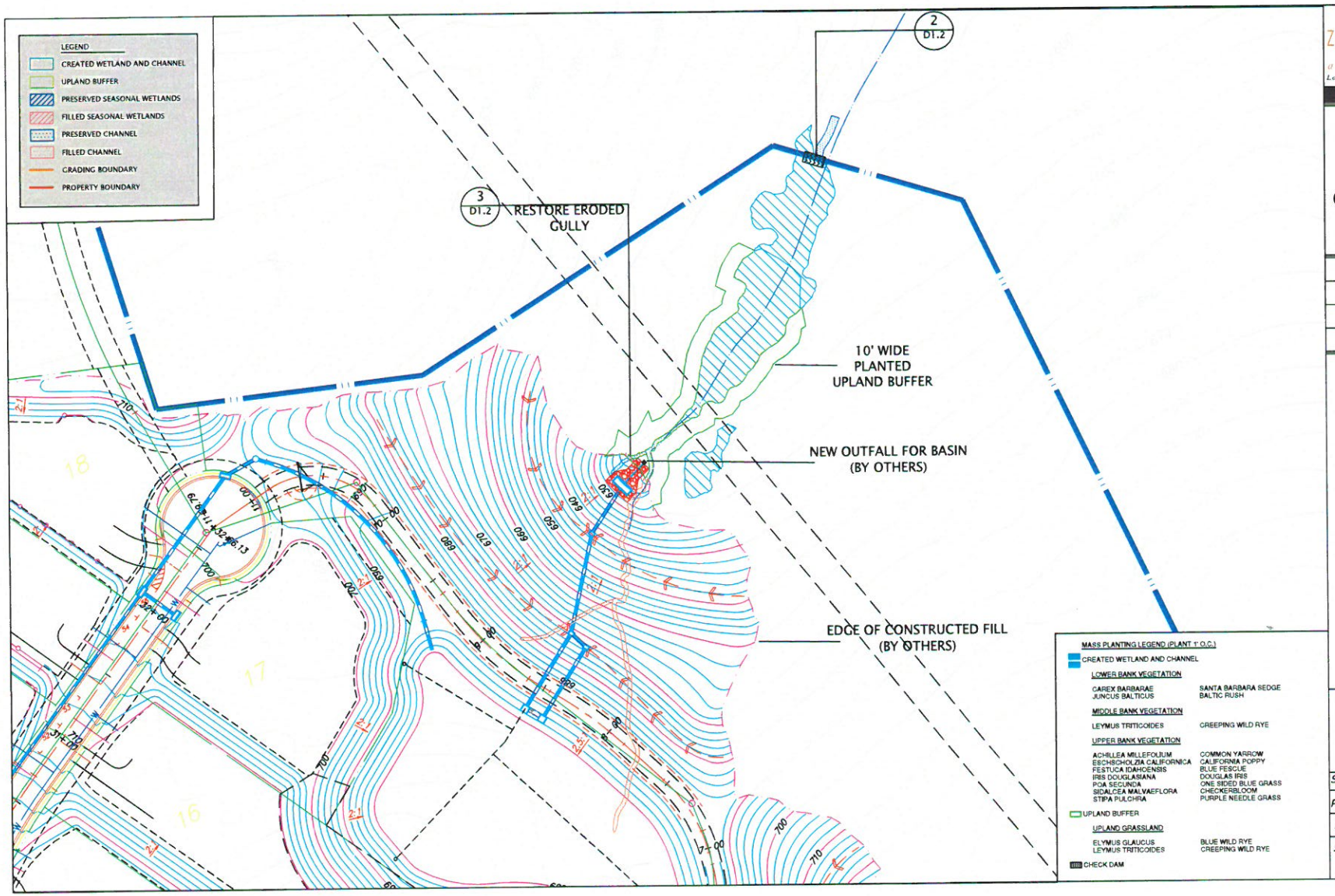
STEP POOL DESIGN

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

SCALE: NTS
PROJECT: 980 RANCHO LAGUNA
DATE: 2015.11.10
SHEET: D1.1
7 OF 9



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SOUTHEAST CORNER WETLAND CONCEPTUAL DESIGN

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

N

SCALE: 1" = 60'

PROJECT: 980 RANCHO LAGUNA

DATE: 2015.11.13

SHEET: L1.2
5 OF 9

II. OBJECTIVES

A. Introduction

The goal of this WMP is to appropriately mitigate for the impacts resulting from the Rancho Laguna II residential project to jurisdictional wetlands and waters. This goal will be achieved through: (1) the preservation of 0.60 acres (7,171 linear feet) of creek in Rheem and Coyote Valleys; and (2) the restoration of 0.84 acres of seasonal wetlands and 1,021 linear feet of channel on upper and lower Rheem valleys.

B. Organization

This WMP is organized in accordance with the Corps most recent guidance on Mitigation Plans as described in the Federal Register Vol. 73, No. 70, dated April 10, 2008, Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. The first sections address objectives, selection of the mitigation area, the methods by which the mitigation site will be protected over the long-term. The next sections address baseline information for the project site, the proposed development and avoidance, the basis for mitigation, the mitigation work plan, and the maintenance plan. The final sections deal with performance standards, monitoring requirements, and long-term management.

C. Impacts and Mitigation

The development will fill 0.495 acres of jurisdictional wetlands and waters, including 0.48 acres of seasonal wetlands and 0.015 acres (282 lf) of channel (see **Figure 2** for details). The proposed on-site mitigation will include the preservation of Rheem and Coyote Creeks noted above and restoration of habitat as described below (see **Sheet T1.0** for a context map of the project and mitigation areas).

1. Seasonal wetland fill is concentrated almost entirely within upper Rheem valley, which requires fill to remediate local slope failures and buttress Rheem Boulevard. This fill will be mitigated by, essentially, re-establishing the wetlands about 30 ft west in an area of restored open space running parallel to Rheem Boulevard (**Sheet L1.0**), creating a new extension for Rheem Creek upstream. The restored channel will include seasonal wetlands, a restored channel, and a native-dominated upland buffer.

2. In lower Rheem valley, the existing Rheem Creek riparian corridor will be preserved and enhanced with native tree, shrub and understory plantings and a series of seasonal wetlands restored adjacent to the creek (**Sheet L1.1**)

3. Upper and lower Rheem valleys are now connected only by a crumbling concrete v-ditch. These reaches will now be connected through a series of natural rock step pools with native vegetation (**Sheet D1.1**) to create a connected riparian system and extend Rheem Creek upstream into upper Rheem Valley.

4. At the southeast edge of the development site, an existing eroded gully will be restored and a native-dominated upland buffer placed around the drainage and downslope wetland (**Sheet L1.2**).

5. All of the open space will be permanently preserved and managed for habitat functions and values. Long-term management of the open space will also be through the operations of the GHAD that can assure adequate funding of annual management and maintenance.

D. Conservation Context

The property contains 179 acres of predominantly grasslands with a few patches of oak woodlands. It is located within an area of mixed residential and open space on the edge of the Town of Moraga. Open space on the project site connects through other open space to larger areas of open lands to the southeast.

The development program calls for developing only about 14% of the property, the remainder will be preserved as open space, including lower Rheem Creek and the entirety of Coyote Creek on the property. This will make a significant addition to preserved open space in the region and permanently protect two riparian corridors.

The wetland and channel restoration program will primarily restore a functioning seasonal wetland and channel in upper Rheem valley just west of their current location and provide a more functional connection between upper and lower Rheem valleys, thereby providing a connected riparian and wetland system.

As well, establishment of the project GHAD provides for an assured funding source for management of these open spaces, including eventual elimination of invasive plants and protection of the riparian systems.

III. MITIGATION SITE SELECTION INFORMATION

A. Introduction

The mitigation program is focused on developing a native, self-sustaining landscape of seasonal and channel wetlands that connect upper and lower Rheem valleys in a highly functional system.

B. Location

The approximately 179-acre site is located in the coastal hills near the Town of Moraga in unincorporated Contra Costa County. The project site is bordered by Rheem Boulevard on its south side and can be reached by traveling south on either Saint Mary's Road or Moraga Road from the City of Lafayette to Rheem Blvd. The project is located near the intersection of Saint Mary's Road and Rheem Blvd. The site is located within the western half of Section 8 and the eastern half of Section 7 of Township 1 South, Range 2 West of the Las Trampas Ridge USGS 7.5-minute quadrangle.

The primary restoration area is along the western edge of the property along upper and lower Rheem valleys. The seasonal wetlands that occur in upper Rheem valley will be filled to reduce slope stability hazards and new wetlands along with riparian trees will be restored on the resulting plain near to their current location. These wetlands will then be connected to lower Rheem Creek, which will be enhanced with additional native plantings and seasonal wetlands, thereby extending Rheem Creek into upper Rheem valley.

C. Watershed Context

The Rancho Laguna property includes two relatively narrow valleys with an intervening ridge on the eastern slope of the Coast Range foothills. The slopes into the valleys are relatively steep with occasional seeps. The western valley (Rheem valley) consists of a drainage with seasonal wetlands occupying the wider flats within the drainage and seasonal seeps perched above the drainage. To the east is another drainage system (Coyote Creek), primarily with eroded, ephemeral channels leading into it, but with some seasonal seeps and wetlands perched above the drainage as well.

The water from these drainages flows southeast of the site and into the adjacent Las Trampas Creek, which flows north. Las Trampas Creek is perennial and eventually joins Walnut Creek at the City limits and then continues north and empties into Suisun Bay just east of Carquinez Strait about 12.5 north of the property.

D. Ownership and Easements

The Rancho Laguna property, which contains both the project and mitigation sites, is owned by the applicant, Rancho Laguna, LLC.

The proposed seasonal wetland and channel mitigation, habitat buffers and other enhancement features, will be protected by dedication of a conservation easement or deed restriction and establishment of a GHAD for long-term management of the property open space (see Chapter IV for more information).

E. Jurisdictional Areas

A Section 404 jurisdictional waters delineation of the Rancho Laguna project site was completed by Zentner and Zentner in September of 2012 (see **Figure 2**). The delineation is awaiting verification by the Corps.

F. Historic and Present Uses

The site appears to have been moderately to heavily grazed ranchland for much of the past 200 years, starting perhaps as early as the late 1700's to early 1800's. A review of historic maps and documents found that there are no historic structures on the site (Sponamore Associates 2006).

G. Long Term Context

The long-term goal of the mitigation program is to create high-quality, self-sustaining seasonal wetlands and restored channels that are dominated by a diversity of appropriate native plants. These habitats will be monitored until the project-specific performance standards are met. Maintenance is assumed for the first 3 years, and described in this plan, and the restored habitats should be relatively self-sufficient after this period. Finally, this landscape will be protected by conservation easements and a deed restriction prohibiting future development (see Chapter IV for more information).

IV. LONG-TERM SITE PROTECTION

The long-term protection of the site wetlands and other open space will be assured by the following:

1. The wetland mitigation areas in lower Rheem Valley, along with the 153 acres of preserved open space which includes Coyote Creek and tributaries, will be owned by the GHAD (a public entity), will be permanently protected by a deed restriction, and will be managed by the GHAD in accordance with a long-term management program (described in more detail below).

The wetland mitigation area in upper Rheem Valley is located within the western portions of the individual parcels along D Drive. The wetland mitigation area on each parcel will be separated from the developed portion by a fence so as to preclude access, will be permanently protected by a restrictive conservation easement held by the GHAD, and will be managed by the GHAD in accordance with a long-term management program (see below for more detail).

Both the deed restriction and conservation easement will be based on the current Corps-standard easement and generally prohibit any activity on or use of the mitigation areas inconsistent with the purpose of the easement.

Specifically, for the wetland mitigation areas, the deed restriction, conservation easement, and long-term management plan will prohibit:

- Unseasonable or supplemental watering except for habitat enhancement activities described in the WMP;
- Use of herbicides, pesticides, biocides, fertilizers, or other agricultural chemicals or weed abatement activities, except weed abatement activities necessary to control or remove invasive, exotic plant species;
- Incompatible fire protection activities except fire prevention activities as described in the Easement;
- Use of off-road vehicles and use of any other motorized vehicles;
- Grazing or other agricultural activity of any kind in the wetlands;
- Recreational activities including, but not limited to, horseback riding, biking, hunting or fishing;
- Residential, commercial, retail, institutional, or industrial uses;

- Any legal or de facto division, subdivision or portioning of the Reserve;

- Construction, reconstruction or placement of any building, road, wireless communication cell towers, or other improvement, or any billboard or sign except those signs specifically allowed;
- Dumping soil, trash, ashes, refuse, waste, bio-solids, garbage or any other material;

- Planting, gardening, or introduction or dispersal of non-native plant or animal species;

- Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand or other material on or below the surface of the mitigation areas;

- Altering the general topography of the mitigation areas, including but not limited to building of roads and flood control work; except as permitted by the Section 404 Permit, or as necessary to implement the WMP;

- Removing, destroying, or cutting of trees, shrubs or other vegetation, except for (1) emergency fire breaks as required by fire safety officials, (2) prevention or treatment of disease, (3) control of invasive species which threaten the integrity of the habitat, or (4) completing the WMP;

- Manipulating, impounding or altering any watercourse, body of water or water circulation in the mitigation areas, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters; and

- Creating, enhancing, and maintaining fuel modification zones in the wetlands (defined as a strip of mowed land or the planting of vegetation possessing low combustibility for purposes of fire suppression).

2. The mitigation areas will meet specific performance standards and will be relatively self-sufficient, as noted above and described in more detail below.

3. The terms of the conservation easement and deed restriction described above will be recorded on the Final Map and will be in the Covenants, Codes, and Restrictions signed by each homeowner.

4. A final long-term management plan is included in the Long-Term Open Space Management Plan (LTOSMP). At the end of the ten-year Establishment Period, the Applicant shall coordinate with the Corps, CDFW and RWQCB to determine if the success standards have been achieved. If the permit conditions have not been met, the

agencies will identify the appropriate remedial measures. The Applicant shall be responsible for completing all remedial measures and achieving sign-off from the agencies.

5. Finally, the easement and long-term plan will be reviewed and approved by the appropriate Federal, State and local agencies prior to implementation.

V. BASELINE INFORMATION

A. General Site Description

The 179-acre Rancho Laguna property consists of two narrow valleys divided by a ridge. The western valley, which includes Rheem Creek, is divided between the upper and lower Rheem valleys. The upper valley of Rheem Creek rests on old fill. That fill and a downstream dam were placed there to attempt to stabilize the adjacent Rheem Boulevard, which is subject to slumping as a result of inadequate stabilization. The wetlands in this part of the valley are recently-developed seasonal wetlands that formed on top of the fill. The lower Rheem Valley includes a relatively natural creek, Rheem Creek, although the flows are supplemented by summer irrigation from adjacent housing and the creek and banks have been heavily grazed. The upper and lower valleys are connected by a crumbling, concrete v-ditch. The eastern valley includes Coyote Creek, an ephemeral to intermittent stream within a relatively incised and actively eroding channel. Both Creeks drain to Las Trampas Creek.

The entire property is dominated by rolling grasslands. These grasslands are almost exclusively non-native, annual grasses and forbs and large parts of the grasslands are dominated by the invasive artichoke thistle (*Cynara cardunculus*), a large, woody thistle. Oak woodland is found in patches along the property's eastern border near Saint Mary's Road and spreading up a small valley in a triangular shape near the center of the property. The woodland is dominated by live oak (*Quercus agrifolia)* but also includes moderate amounts of valley oak (*Quercus lobata*), California bay laurel (*Umbellularia californica*) and buckeye (*Aesculus californica*).

The Rancho Laguna property includes 1.21 acres of seasonal wetlands, primarily concentrated along Rheem Valley, and 0.63 acres (7,695 linear feet) of jurisdictional waters, primarily Rheem and Coyote Creeks and their tributaries.

B. Soils

The soils of the site have been mapped as Millsholm, Los Osos; and, Altimont-Fontana complex by the SCS (1977).

The Millsholm loam soil is described as steep soil on uplands with 30 to 50 percent slopes. These are well-drained soils that formed from shale and fine-grained sandstone. The permeability is moderate. Los Osos clay loam is described as a hilly soil on uplands with 15-30 percent slopes. It is also a well-drained soil underlain by soft, fine-grained sandstone and shale. Permeability is slow. Altamont-Fontana complex is found on foothills in the eastern uplands of Contra Costa County with 30-50 percent slopes on the site. The Altamont soils are usually on north-facing slopes and the lower portion of slopes, while Fontana soils are on ridge tops and on south-facing slopes. These are also well-drained soils.

None of these soils are on the list of hydric soils (NRCS 1986, 2010).

C. Habitats

1. Annual Grassland

Most of the site is annual grassland containing non-native, upland grasses and forbs. The common dominants are provided in Table 2 below

Table 2
Annual Grassland Vegetation

Common Name	Scientific Name
Common Dominants	
soft chess	*Bromus hordeaceus*
Italian ryegrass	*Festuca perennis*
Occasional	
Italian thistle	*Carduus pycnocephalus*
Mediterranean barley	*Hordeum marinum*
rattail fescue	*Vulpia myrous*
rose clover	*Trifolium hirtum*
Ripgut	*Bromus diandrus*

2. Seasonal Wetlands

The seasonal wetlands are found either on the valley floor of the man-made fill in upper Rheem valley or above the various drainages as seasonal seeps. Table 3 below lists the common and occasional dominants of the seasonal wetlands.

Table 3
Seasonal Wetland Vegetation

Common Name	Scientific Name
Common Dominants	
Iris-leaved rush	*Juncus xiphioides*
Mint	*Mentha spicata*
Italian ryegrass	*Festuca perennis*
Baltic rush	*Juncus balticus*
Mediterranean barley	*Hordeum marinum*

Occasional	
Fiddle dock	*Rumex pulcher*
Toad rush	*Juncus bufonius*
Rabbit's foot grass	*Polypogon monspeliensis*

The seasonal wetlands are generally very shallowly ponded to saturated during the winter and early spring. Most of these areas are on flat to only very slightly depressed ground. Surface cracking, water marks, and cattle tracks in the previously wet areas were noted at the wetland delineation sample points indicating these areas are only seasonally inundated. This grades into a channel and wetland complex just downstream of the irrigation/stock-watering pipe at the "headwater" of Rheem Creek in the upper section of lower Rheem Valley. There, a small freshwater marsh is dominated by cattails (*Typha latifolia*) and rabbitsfoot grass (*Polypogon monspeliensis*).

3. Coast Live Oak Woodland

A small amount of coast live oak woodland is found on the north-facing slopes and shaded ravines in the southern portion of the site. This community is dominated by coast live oak (*Quercus agrifolia*), which may occur in pure, dense stands with a closed canopy. The understory is typically non-native annual grassland with species dominance as noted above. Table 4 below lists the common and occasional dominants of the seasonal wetlands.

Table 4
Oak Woodland Vegetation

Common Name	**Scientific Name**
Common Dominants	
coast live oak	*Quercus agrifolia*
California bay	*Umbellularia californica*
valley oak	*Quercus lobata*
big-leaf maple	*Acer macrophyllus*
California black oak	*Quercus kelloggii*
Occasional	
poison oak	*Toxicodendron diversilobum*
soft chess	*Bromus hordeaceus*
Italian ryegrass	*Festuca perennis*

4. Riparian Woodland/Scrub

Riparian woodland/scrub generally includes a variety of trees and shrubs, usually willows, although in this case it is primarily coyote bush (*Baccharis pilularis*). This association forms a relatively dense thicket along Coyote Creek and a more open

association along Rheem Creek. The dominance by coyote bush is undoubtedly a result of the heavy and intense grazing on-site near the streams. However, in spots on Rheem Creek and upstream on Coyote Creek, the coyote bush is joined by dense thickets of willow, including arroyo willow (*Salix lasiolepis*), yellow willow (*S. lucida* var. *lasiandra*), and red willow (*S. laevigata*).

5. Northern Coyote Brush/Diablan Sage Scrub

Diablan sage scrub is an association dominated by low to mid-sized shrubs found on shallow, rocky soils. On-site, it is confined to two to three small patches of California sagebrush (*Artemisia californica*) and associated perennials on the steep north-facing slope where the sandstone bedrock is exposed and partially weathered adjacent to the bike path at the southeast corner of the property.

6. Creeks

Within the Rancho Laguna property, there are two Creeks: Rheem Creek on the west and Coyote Creek on the east.

Rheem Creek can be divided into two portions: (1) the upper portion of Rheem Creek, which resides in its natural channel but contains only a few willows instead of riparian cover, and (2) the lower portion of Rheem Creek, which is incised and surrounded by oak woodland. Both reaches are in lower Rheem valley below the dam that marks the southern end of the buttress fill that attempted to stabilize Rheem Blvd.

In the upper reach of Rheem Creek, the channel begins with outfall from a culvert underneath Rheem Blvd and meanders downstream; in this area the channel has been trampled by cattle and the banks are broken down. There is sufficient hydrology from the culverts, seeps, and natural drainages to support riparian vegetation, but only a few, large willows currently exist and cattle grazing keeps any woody vegetation from establishing.

On the lower reach, tree cover is dominated by valley oaks (*Quercus lobata*), which becomes quite dense, while the understory is almost absent due to grazing. This portion of the creek is also incised by as much as 15 feet, leaving a relatively narrow channel below the tree cover on the terraces above.

On Coyote Creek, native tree cover is much reduced but cover is often dense due to the extent of coyote bush scrub.

7. Ephemeral Gullies

The property also contains a number of ephemeral gullies. These gullies generally contain little vegetation except for sparse cover by non-native annuals. Most of the

gullies are actively eroding including sloughing off from the sides, widening the gullies, and especially, head-cuts from the top, which are lengthening the gullies.

D. Jurisdictional Areas

1. Methods

As defined by the Corps, "wetlands" are areas periodically or permanently saturated by surface or groundwater and typically support vegetation adapted to life in saturated (hydric) soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, promotion of groundwater recharge, and their water filtration and purification functions. "Other waters" include tributaries or drainage ditches which exhibit perennial or ephemeral flow to a navigable waterway, wetland, or other significant water feature. Other waters may not necessarily be wetlands.

Boundaries between jurisdictional areas and uplands were investigated using the routine on-site assessment procedure, Section D, Subsection 2, page 57 of the 1987 "Corps of Engineers Wetlands Delineation Manual" (Environmental Laboratory 1987; hereafter the "Delineation Manual") as modified by the new Interim Arid West Supplement to the Delineation Manual (Environmental Laboratory 2006; hereafter the AWS). Wetlands were distinguished from uplands on this site by the presence of: 1) a predominance of hydrophytic vegetation, 2) evidence of wetland hydrology, and 3) the presence of hydric soils.

"Other waters" (the tributaries and drainage channels) were identified based on the presence of identifiable bed and banks and a notable geomorphic feature at the ordinary high water (OHW) mark.

2. Results

On-site jurisdictional wetlands and waters are shown in **Figure 2**. This delineation was conducted by Zentner and Zentner in September 2012. Section 404 jurisdictional areas include the following:

1. Tributaries and Other Waters (also termed "channels" in this plan): Rheem Creek on the west and Coyote Creek on the east end of the property along with numerous, eroded and ephemeral channels make up the jurisdictional waters on the property. The eroded channels are highly ephemeral while Rheem and Coyote Creeks are intermittent to perennial where there is supplemental runoff from adjacent housing. The areas of jurisdictional waters were largely or completely unvegetated and were delineated to the ordinary high water mark (OHWM).

2. Seasonal wetlands: The seasonal wetlands on-site are either located above the

drainages as seasonal seeps or are within relatively wider and flatter sections of the drainages themselves.

E. Aquatic Functions Analysis

The waters proposed for fill includes 0.48 acres of seasonal wetlands and 0.015 acres of other waters (channels); these are the subject of this functions analysis. The seasonal wetlands to be filled consist primarily of the seasonal wetlands in upper Rheem Valley. The channels to be filled consist primarily of two ephemeral channels/gullies on the southeast edge of the development site. Table 5 provides the functions analysis.

Table 5
Jurisdictional area functions

Function	Seasonal Wetlands	Other Waters/Channels
Dynamic surface water storage	Low: shallow to flat character precludes storage	Low: steep bed with annual or no vegetation
Long-term storage of surface water	Low: absence of impounding forces	Low: no impounding forces
Subsurface storage of water	Moderate: flat rather than pooled, but perennial vegetation results in moderate infiltration	Low: little to no vegetation results in shallow infiltration and quick runoff
Energy dissipation	Moderate: short, perennial vegetation results in moderate dissipation	Low: little to no vegetation results in minor dissipation
Nutrient cycling	Moderate: shallow to flat wetlands with moderate perennial cover	Low: vegetation is necessary to provide some retention and cycling during growing season
Organic carbon export	Low to Moderate: flat rather than pooled with perennial cover	Low: little vegetation provides little carbon
Removal of polluting elements and compounds	Low to Moderate: flat to shallow wetlands but with native cover	Low: little vegetation provides low removal capability
Retention of particulates	Moderate: flat to shallow wetlands with native cover	Low: little vegetation provides low retention capability.
Maintain characteristic plant communities	Moderate: native cover but not diversity	Low: little to no native cover provided

Maintain distribution and abundance of native wildlife	Low: little to no ponding reduces wildlife use	Low: lack of cover reduces wildlife use

Essentially, the seasonal wetlands scored low to moderate, compared to native-dominated or natural seasonal wetlands. The existing seasonal wetlands are of relatively recent origin and provide little to no ponding due to their flat or sloped nature and therefore do not pond for appreciable periods. This reduces pollutant removal and recycling capability and flood storage. The wetlands are generally dominated by native and mainly perennial vegetation and therefore absorbency and infiltration can be moderate under very low rainfall situations. The vegetation is also dominated by usually just one species, iris-leaved rush (*Juncus xiphioides*) and therefore diversity is quite low. These conditions result in relatively low to moderate amounts of carbon export, nutrient cycling, removal of pollutants, retention of particulates, and similar functions. Similarly, the lack of ponding or longer interaction with vegetation precludes these wetlands from more than moderate pollutant and sediment retention or transformation.

The channels are essentially unvegetated or lightly vegetated with annual plants and therefore scored relatively low in all areas, which are generally related to their ability to retain water. These same characteristics make them unsuitable for carbon export and nutrient cycling as well as greatly diminishing the quality of the plant and wildlife habitat communities.

F. Wildlife Usage

Generally, only common, suburban-adapted species have been observed or would be expected to use this site. Raptors likely roost and may nest in the oak woodland patches on the property and forage in the grasslands, while small mammals and birds likely also use the grasslands for foraging. Some common amphibians such as Pacific tree frog (*Hyla regilla*) have been heard in the seasonal wetlands and California ground squirrel (*Spermophilus beechyi)* is found in more disturbed areas. Other common species that may occur on-site include black-tailed jack rabbit (*Lepus californicus*), California mule deer (*Odocoileus hemionus)* brewer's blackbird (*Euphagus cyanocephalus*), western fence lizard (*Sceloporus occidentalis*), American crow (*Corvus brachyrhynchos*), and red-tailed hawk (*Buteo jamaicensis*).

VI. DEVELOPMENT AND AVOIDANCE

A. Brief Summary of the Development Project

The proposed project involves the construction of 27 residential lots and associated roads and water quality features on a small portion of the 179-acre site. A total of 26.34 acres of the site will be graded for the development, impacting a total of 0.495 acres of seasonal wetlands and other waters.

The remainder of the property, approximately 153 acres, will remain as permanent open space. Mitigation for the impacts is proposed on-site.

B. Avoidance

The proposed project has been designed with the following features to avoid and minimize impacts.

1. Overall, more than 85% of the 179-acre property will remain undeveloped and will be placed within a conservation easement or ownership by the GHAD with a deed restriction (see Chapter IV for more information).

2. Development will occur on less than 15% of the property. Within the development area, the housing has been tightly clustered in two nodes to ensure the smallest grading footprint practicable.

3. For the property's wetlands and waters, the entire Coyote Creek watershed has been avoided as well as Rheem Creek.

4. The mitigation and enhancement features will be permanently protected through dedication of the easement or deed restriction and other measures.

VII. BASIS FOR MITIGATION

A. Impacts to Jurisdictional Waters

The Rancho Laguna residential development project will result in the following impacts to jurisdictional wetlands and other waters (**Figure 2**).

The fill of 0.48 acres of seasonal wetland and 0.015 acres (282 linear feet) of channel as a result of grading for the residential lots, roads, and water quality features. The impacts to these jurisdictional wetlands and other waters are presented in Table 6 below.

Table 6
Jurisdictional Waters Impacts

Habitat Types	Filled Section 404/401 Wetlands and Other Waters
Seasonal Wetlands	0.48 acres
Channel	0.015 acres (282 lf)
Total Area	0.495 acres (282 lf ft)

B. Compensation Ratios

The applicant proposes to mitigate for the impacts on-site with the preservation of Coyote and Rheem Creeks and the restoration of 0.84 acres of seasonal wetlands and 1,021 lf of creek channel. This results in a 1.8:1 (restored to lost) ratio by acreage for seasonal wetlands loss and a 4:1 ratio for channels. The wetland mitigation program also includes native grassland and woodland upland buffers around the seasonal wetlands and restored tributary, which are not counted in these ratios.

A conservation easement or deed restriction will be placed over the preserved areas, including the restored and preserved mitigation features on the property (see Chapter IV for more information).

VIII. MITIGATION WORK PLAN

A. Introduction

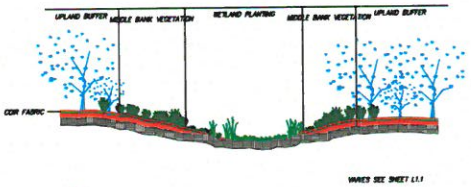
This section reviews the proposed on-site mitigation, the context of which is shown on **Sheet T1.0**. Mitigation work on-site seeks to create a self-sustaining, native landscape and reverse past degradation; it will include the following:

1. The filled portion of upper Rheem valley, which is currently raised above its natural bed by artificial fill, will be recontoured to stabilize the fill. On the resulting plain, a new channel (1,021 lf) will be restored just west of the existing seasonal wetlands and channel. This restored channel will include adjacent seasonal wetlands, riparian vegetation, and native woodland and grassland upland buffers (**Sheet L1.0**).

2. Downstream of this reach, Rheem Creek, which lies at its natural elevation but currently lacks riparian vegetation except for a few willows, will be restored with riparian vegetation and buffered with native grassland and woodland vegetation as well as a series of restored seasonal wetlands (**Sheet L1.1**). These upper and lower sections of Rheem valley, which are currently connected only via a concrete v-ditch, will instead connect through a series of natural rock step pools with native vegetation (**Sheet D1.1**).

Riparian trees and shrubs will be planted around the areas that currently lack native woodland vegetation, while native, rushes and sedges will be planted within the tributaries. The combination of plantings will provide for a more stable channel, decrease erosion, and provide for more habitat and better cover for local wildlife species (**Sheet D1.0**).

3. Seasonal wetlands totaling 0.84 acres will be constructed, primarily within and adjacent to Rheem Creek, which will now extend to the upper limits of the property. Along the upper reach of Rheem Creek, the channel will gently meander through a relatively level area. Low weirs will be placed within the meandering channel to back up and hold water and create seasonal wetlands. **(Sheet D1.2).** Along the lower reach, seasonal wetlands will be created primarily outside of the existing channel and restored riparian zone at areas near seeps and existing natural drainages with relatively level topography. Shallow basins will be graded to hold rainfall and natural runoff throughout the rainy season and into the late spring. These areas are already slightly mesic, though not wetlands, and only minor grading will be required in order to hold water and support native, hydrophytic vegetation. Native grasslands will be planted around the seasonal wetlands as an upland buffer.



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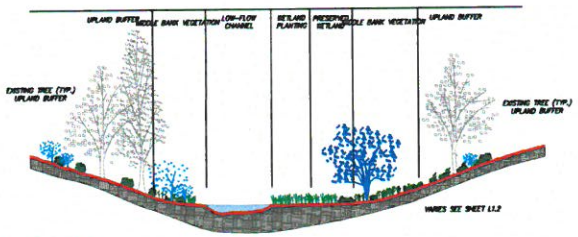

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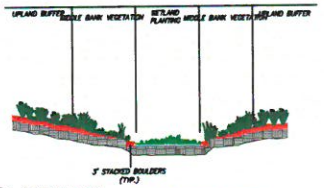
TYPICAL LOWER RHEEM



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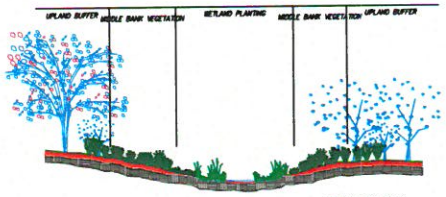
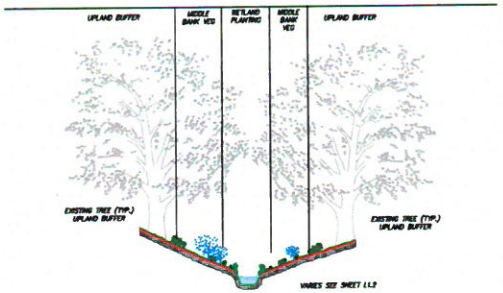
TYPICAL RETENTION WATER QUALITY POND



1B SECTION DETAIL
TYPICAL UPPER RHEEM



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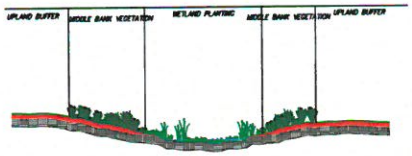


4 SECTION DETAIL
TYPICAL SEASONAL WETLAND

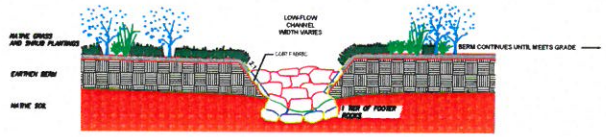
ZENTNER and ZENTNER
Land Planning and Restoration
95 Linden Street, Ste. 3, Oakland, CA 94607
Phone: 510.627.8110 Fax: 510.627.8116

MITIGATION DESIGN DETAILS

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

SCALE: NTS
PROJECT: 980 RANCHO LAGUNA
DATE: 2015.11.10
SHEET: D1.0
6 OF 9



1A SECTION DETAIL
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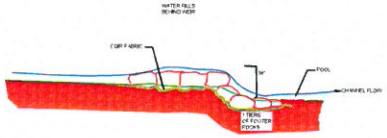
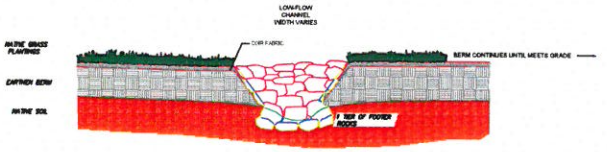
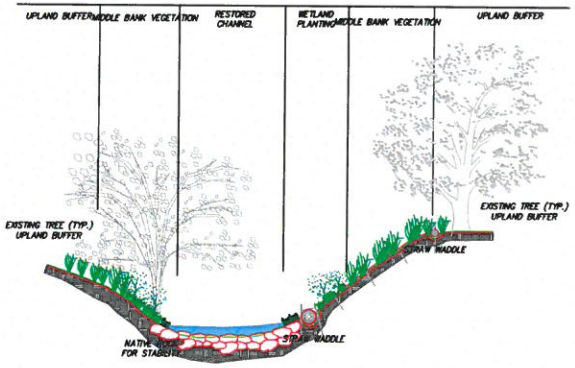


1B SECTION DETAIL
INTER-BASIN ROCK WEIR



2 SECTION DETAIL
SOUTHERN EDGE CHECK DAM



3 SECTION DETAIL
RESTORED ERODED GULLY

ZENTNER and ZENTNER
Land Planning and Restoration

MITIGATION DESIGN DETAILS

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

SCALE: NTS
PROJECT: 980 RANCHO LAGUNA
DATE: 2015.11.10
SHEET: D1.2
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4. Native grassland and woodland buffers will be restored alongside the Creeks and restored seasonal wetlands. Native grasslands were dominant on this site prior to the advent of grazing and farming while shrubs would have been common adjacent to the tributary channels. The re-establishment of these will allow their eventual spread and the use of these areas by native wildlife, which will also enjoy the additional cover and forage from native trees and shrubs.

5. All of the mitigation and buffer areas will be permanently preserved within a conservation easement and managed for habitat functions and values. The remainder of the property outside of the developed and mitigated areas will be permanently protected through an open space easement

B. Design Reference Sites

The on-site channels and seasonal wetlands were used as reference sites to provide the basis for the design of the creation wetlands; the geomorphology of these reference wetlands are all very similar and reflects the potential conditions further upstream--they are found on shallow slopes (2% to 5%) on deep clay loam soils adjacent to small tributary channels or in the flats adjacent to the main tributaries. The depth of ponding in these wetlands is extremely shallow, ranging from extended saturation to approximately 6". These wetlands generally do not fill completely until the onset of heavy rains in mid-winter and usually dry with increasing temperatures around mid-May. The native vegetation in the reference wetlands can be described as wet meadow or seasonal marsh dominated by perennial grasses and grass-like plants such as Baltic rush (*Juncus balticus*) or iris-leaved rush (*Juncus xiphiodes*).

C. Goals for Mitigation

The goal of the wetland mitigation project is to create high-quality, self-sustaining wetlands and restore associated upland habitats to offset impacts of the Rancho Laguna II project to jurisdictional wetlands and waters. This goal will be achieved through the creation of an integrated, self-sustaining native landscape.

D. Mitigation Habitats

1. Rheem Creek/Riparian

Grading to stabilize the old buttress fill along Rheem Blvd will require recontouring the upper portion of Rheem valley. As part of the mitigation program, the creek would be extended north into upper Rheem Valley. The recreated channel would be 1,021 lf in length. The recreated creek will meander through a relatively level terrace with created seasonal wetlands and riparian plantings with an upland buffer of native trees, shrubs, and grasses. The channel will be connected to the existing lower reach of Rheem Creek

through a series of step-pools. Currently this connection between the upper and lower areas is made through a crumbling concrete V-ditch.

The lower reach of Rheem Creek contains the necessary hydrology to support riparian vegetation, however, it currently contains only a few willow trees. Riparian woodland trees and shrubs will be planted along this length of channel and grazing eliminated. The seasonal wetlands along the Creek will be expanded and additional seasonal wetlands adjacent to the Creek will be restored. The riparian vegetation will be buffered with upland woodland shrubs and native grasslands. The result will be a complete system of wetlands, grasslands and woodlands that will provide native diversity and cover for wildlife foraging and movement.

Riparian habitat on the eastern side of the property contains Coyote Creek and its tributaries. Over 6,012 linear feet of riparian habitat will be preserved in this area.

2. Seasonal Wetland

A total of 0.84 acres of seasonal wetlands will be constructed as part of the mitigation program. These wetlands will be created primarily along and adjacent to Rheem Creek. In the upper reach of Rheem Creek, the created meandering channel will flow through a level area with low weirs that will back up water on to the surrounding basins. Outside of these wetlands will be a band of mesic grassland. The seasonal wetlands will be planted with native wetland vegetation and the mesic grassland will be planted with seasonal wet tolerant grasses and sedges.

In the lower reach of Rheem Creek, seasonal wetlands will be created alongside the existing wetlands within Rheem Creek itself while other wetlands will be created adjacent to the channel. The adjacent seasonal wetlands will be placed in relatively level areas within natural drainages. Most of these areas currently support a small amount of hydrophytic vegetation and minor grading will allow these areas to hold approximately 6" to 10" of water and overflow naturally into the drainage system.

As mentioned previously, the seasonal wetlands adjacent to the creek will be buffered by native grasslands while those co-mingled along the creek itself, will be buffered with native woodland and grassland vegetation.

3. Upland Grassland and Woodland Buffers

All of the mitigation areas will be buffered with native upland vegetation. Native trees and shrubs will be planted in clusters adjacent to the creeks and above the riparian woodland to provide enhanced habitat for wildlife, a potential wildlife corridor, and to buffer the creeks. The uplands around the created wetlands, currently dominated by non-native annual grasses, will be substantially improved as habitat by planting of native perennial grasses of local grassland habitats. Planting will include creeping

wildrye (*Elymus triticoides*), purple and nodding needlegrasses *(Stipa pulchra* and *cernua),* blue wildrye *(Elymus glaucus)* and California melic *(Melica californica).*

E. Aquatic Functions

The mitigation work at the site will result in a substantial increase in a variety of aquatic functions as shown in the table below.

Table 7
Existing and proposed seasonal wetland functions

Function	Existing channels and seasonal wetlands	Proposed channels and seasonal wetlands
Dynamic surface water storage	Low: shallow character precludes storage	Moderate: basins will provide storage
Long-term storage of surface water	Low: absence of impounding forces	Moderate: impoundment allows longer term storage
Subsurface storage of water	Low to Moderate: flat topography, perennial vegetation results in both heavy runoff and shallow infiltration	Moderate: basins and high plant cover and perennial cover promotes infiltration
Energy dissipation	Low to Moderate: short, perennial vegetation results in minor dissipation in SW; tributaries with no vegetation results in little dissipation	Moderate: high, perennial plant cover dissipates energy in flows
Nutrient cycling	Low to Moderate: short, perennial vegetation results in moderate cycling in SW; tributaries with no vegetation results in little cycling	High: high cover by natives including tree and shrub cover cycles nutrients
Organic carbon export	Low to Moderate: flat rather than pooled SW with perennial cover	Moderate: high, perennial plant cover allows carbon export
Removal of polluting elements and compounds	Low to Moderate: flat rather than pooled SW with perennial cover	Moderate to high: native perennial vegetation removes elements

Retention of particulates	Low to Moderate: flat rather than pooled SW with perennial cover	Moderate to high: restored tributaries and wetlands will store water and retain better
Maintain characteristic plant communities	Low to Moderate: moderate native cover but very little diversity	High: diverse, native vegetation restored
Maintain distribution and abundance of native wildlife	Low: little to no ponding reduces wildlife use	High: seasonal ponding and plant cover increase wildlife use of wetlands and use/movement in riparian zones

The existing channels and seasonal wetlands scored low, compared to the restored creek channels and seasonal wetlands, because of their shallow character and the absence of dense native, perennial vegetation. The restored tributaries and wetlands score higher in every function due to their greater propensity for ponding and the increased height and diversity of native plant cover, dominated by native perennials. These factors allow the wetlands to provide water storage or groundwater infiltration and pollutant and retention or transformation. Finally, the provision of increased seasonal ponding greatly increases storage and retention of particulates and native, perennial vegetation increases the potential wildlife use.

F. Hydrology and Grading

1. Created and Restored Creek Channels

The restoration program for upper reach of Rheem Creek simply recreates an existing system that has sufficient flows from the upstream watershed and a local seep to support wetlands. The restoration program will not change the flow or its periodicity, but shift it slightly to the west.

Similarly, the lower reach of the Creek is supported by off-site flows that will not be affected by the project but will be allowed to continue.

2. Restored Seasonal Wetlands

The project will include the restoration of seasonal wetlands associated with and adjacent to the created and enhanced tributaries.

Along the upper portion of Rheem Creek, low weirs will be placed along the constructed terrace and created channel. These will back up water into the adjacent terrace and support seasonal wetlands.

Currently, there are a few low, relatively level areas adjacent to the lower reach of Rheem Creek. These will be graded to within a few inches of the existing Creek wetlands (see notes on **Sheet N1.0**). These wetlands will have more than enough water to sustain them due to the year-round saturated conditions.

The seasonal wetlands that will be created adjacent to and just above Rheem Creek will be placed within natural drainages that currently support a few hydrophytic plants. However, because of the topography and vegetation, these areas do no currently hold water. Minor grading and compaction in these areas, along with the planting of native seasonal wetlands plants will allow these areas to support wetland vegetation. These wetlands will generally dry by mid-May to early June, with increasing spring temperatures and evapotranspiration, and would then remain dry until filled by rains in the following late fall or early winter.

G. Soils/Substrate

The seasonal wetland and riparian restoration will take place on Altamont-Fontana complex soils. The Altamont-Fontana complex soils contain about 50% Altamont clay, 35% silty clay loam, and 15% Millsholm loam. In this complex, Altamont clays are found on the lower portions of the slopes, where the mitigation would take place.

The clay loam substrates favor creation of wetlands in relatively flat or depressed areas where surface runoff is concentrated and/or blocked or where the surface can be lowered by grading to approach the underlying low-permeability substrates.

The soil and hydrology is the same or similar to both on-site and off-site reference wetlands. These reference wetlands developed where subtle topography and compaction from either cattle grazing or vehicle/equipment use combined to concentrate runoff and retard infiltration.

H. Planting and Revegetation Methods

1. Technical Supervision

All revegetation activities will be conducted under the supervision of an experienced Ecological Monitor (EM). The EM and Restoration Contractor (RC) will work closely together to assure that revegetation is accomplished according to plans. Any deviation from the revegetation plans will be approved by the EM. The EM will be on site during initiation of each revegetation task (e.g., site preparation, plant installation, seeding, etc.), and all work will be monitored on a regular basis. The EM will also prepare field memos to document the progress of revegetation.

2. Experienced Contractor

Only contractors with previous experience in native habitat restoration will be considered for this project. By limiting this work to construction personnel that have developed a precise understanding of the nuances and complications of native habitat restoration, the risk of failure or damage to existing habitats is significantly reduced. This also reduces the amount of detail that needs to be included in restoration plans and specifications and allows greater flexibility for making adjustments in the field.

3. Preconstruction Activities

Prior to initiation of plantings, the EM and RC will establish and stake the limits of habitat planting areas, including new habitats and restoration plantings areas. Flagging of the new habitats may involve making adjustments from plan locations as dictated by field conditions.

Access routes, staging areas, and similar features will also be located and staked in the field. Where necessary, orange construction fencing or similar visible barrier will be installed to delimit sensitive areas adjacent to construction areas.

4. Site Preparation

New habitat and restoration areas will be prepared for revegetation as follows:

- Vegetation, trash, debris, and weeds shall be cleared.
- Any eroded areas shall be repaired uniformly without leaving pits, holes, or low areas.

5. Supplemental Irrigation System

The native trees and shrubs planted around the restored portions of Rheem Creek will be irrigated through a temporary drip system. Drip irrigation will be supplied for the planted trees and shrubs for up to three years from their initial planting with a gradual tapering in the fourth year and no irrigation from the fifth year. No broadcast irrigation will be applied at any time except if needed during the first winter of the planting to ensure the plant materials are established.

Trees and shrubs will be watered through a drip system that will run from a point of connection (POC) at an exterior line on the edge of the proposed development. At the POC will be a series of electrical valves and filters that connect to hard "main lines" running along the length of the planted area. About every 500 ft, the hard line will have a "T" line that runs perpendicular to the main line. From these T's, drip irrigation pipe will run parallel to the slope (and the main line) to the planting clusters. These lines will all be buried except that, at the planting basins (see below), the drip pipe will emerge

and include at least one, 2 gallons per hour (gph) emitter.

A planting basin shall be formed around each installed plant to help hold water near these plants, to ensure adequate irrigation. The basin consists of a two-foot diameter water ring two inches deep with a surrounding berm two inches above grade centered on the plant. An emitter will be placed directly on top of the root ball. After installation, the plant will be watered thoroughly. Plants will all be checked for settling and stress within two to three days of installation.

Planted graminoids (grasses, sedges, etc.) will be watered-in at the time of planting. This initial watering will require a water truck, spray irrigation or other water source. Additional irrigation of the graminoids should not occur beyond this initial watering, however, the need for supplemental watering may be deemed necessary if these plants show serious stress due to any prolonged dry spells during monthly monitoring in the first winter/spring.

6. Planting Design

Planting densities in the new habitats and the habitat restoration areas will be relatively high, to favor development of dense ground cover typical of seasonal wetlands and native grasslands, which will also serve for erosion control. The plantings will be by planting groups that mimic natural variation within the habitats, which commonly have groupings of dominant and minor species that vary with slope, aspect, shade, drainage and/or soil texture. Each group will include many individuals of one to three dominant species, interspersed with fewer individuals of several minor associates.

Plant materials will consist of young plants (no more than one-year-old) in small containers; direct seeding may also be used for some species. This approach increases the chances of successful revegetation and will enhance diversity, while also maximizing efficiency and reducing costs.

7. Timing

Grading for the restoration work will commence in the summer/fall of 2015 (projected). Container and cutting plant materials will be installed between October 1, and February in the same year as construction; winter is the optimal period for planting as many plants are dormant and weather conditions are favorable. Any replacement plantings, if required, will also be installed during the winter. Seeding will be conducted between October 1 and November 31 during the same year of construction to take advantage of winter rains for seed germination and growth. Specific planting dates will be based on weather conditions and subject to approval of the EM.

8. Plant Materials

Proposed plant palettes are presented in Tables 8 through 12, below. Plants are arranged by preference of wetter to drier environments. Existing stands of creeping wildrye will be salvaged where feasible. **Sheets L1.0 and L1.1** show proposed revegetation areas in Upper and Lower Rheem Creek and **Figure 4** typical section views of the same.

The seasonal wetlands will total 0.84 acres in extent. The EM will mark out any appropriate areas in the impacted seasonal wetlands were salvage material will be taken. This material will be used in the seasonal created seasonal wetlands and tributaries as appropriate. Table 8 provides the planting palette.

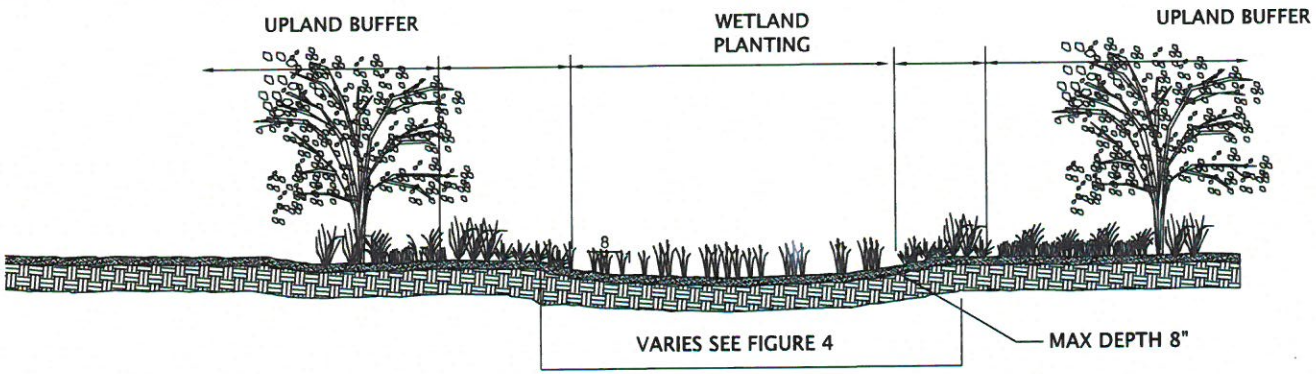
Table 8
Seasonal Wetland Plant Palette

Common Name	Scientific Name	Size	spacing	Density
iris-leaved Rush	*Juncus xiphioides*	Plug	1-foot o.c.	12,000/acre
Baltic rush	*Juncus balticus*	Plug	1-foot o.c.	12,000/acre
Santa Barbara sedge	*Carex barbarae*	Plug	1-foot o.c.	10,000/acre
Slender rush	*Juncus occidentalis*	Plug	1-foot o.c.	10,000/acre
Total				**44,000/acre**

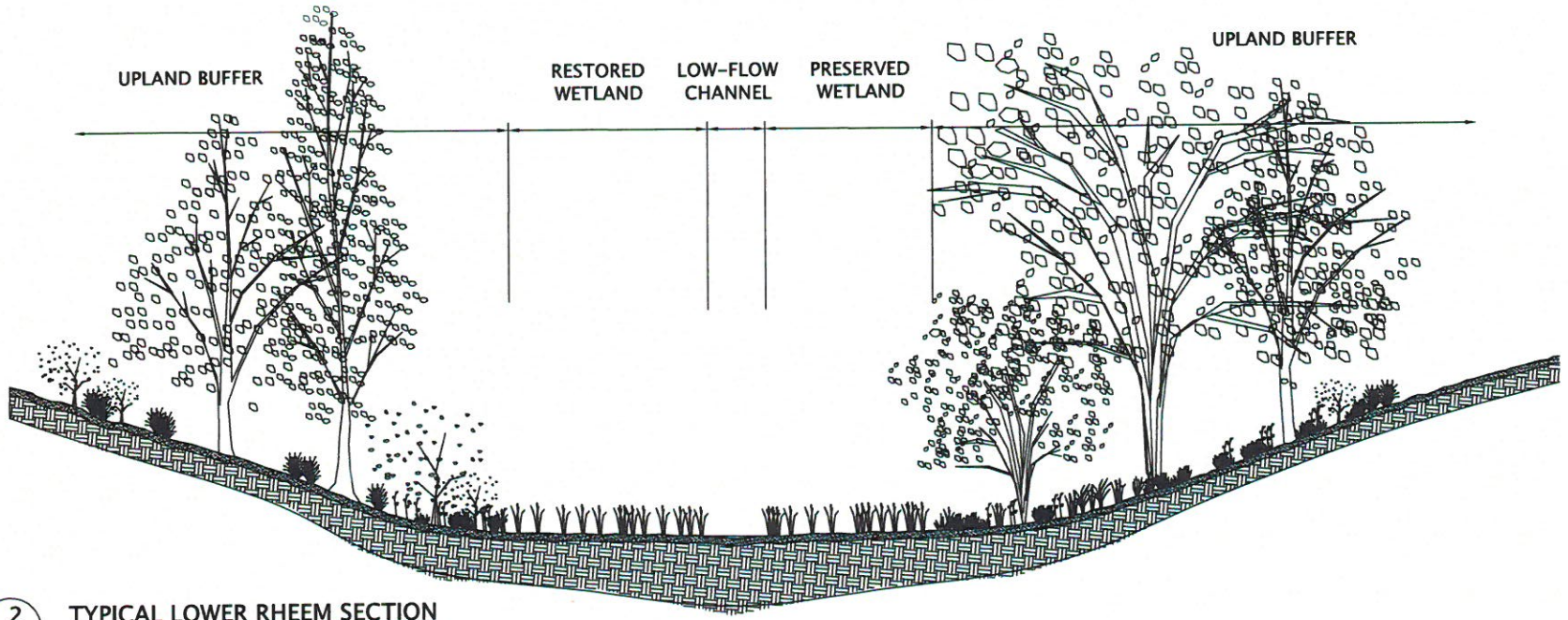
The upland buffer includes riparian woodland and grassland components, described separately below.

Table 9
Upland Buffer: Riparian Woodland

Common Name	Scientific Name	Size	Density
Calif. Boxelder	*Acer negundo*	Tree-pot	10-foot centers
Calif. Buckeye	*Aesculus californica*	Tree-pot	"
Calif. Hoptree	*Ptelea crenulata*	Tree-pot	"
Fremont cottonwood	*Populus fremontii*	Tree-pot	"
Red willow	*Salix laevigata*	Tree-pot	"
Arroyo willow	*Salix lasiolepis*	Tree-pot	"



1 TYPICAL UPPER RHEEM SECTION



2 TYPICAL LOWER RHEEM SECTION

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FIGURE 4
RIPARIAN RESTORATION TREATMENT DETAILS

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MORAGA, CALIFORNIA

N

0 N/A

SCALE: NTS

TOPO SOURCE: N/A

PROJECT NO: 980

FILE: D:PROJ/2014VESTING

DATE: 04.29.2014

Common Name	Scientific Name	Size	Density
Red twig dogwood	*Cornus stolonifera*	1-gal	In clusters on 5-foot centers
Calif. Rose	*Rosa californica*	1-gal	"
Toyon	*Heteromeles arbutifolia*	tree pot	"
Coffeeberry	*Frangula californica*	tree pot	"
Golden current	*Ribes aureum*	tree pot	"
Red flowering current	*Ribes sanguineum*	tree pot	"
Total			**430 per acre**

Table 10
Upland Buffer: Grassland Plant Palette

Common Name	Scientific Name	Size	Spacing	Density
clustered field sedge	*Carex praegracilis*	plug	1-foot o.c.	12,000/acre
creeping wild rye	*Elymus triticoides*	Plug	1-foot o.c.	22,000/acre
purple needlegrass	*Stipa pulchra*	Plug	1-foot o.c.	14,500/acre
Nodding needlegrass	*Stipa cernua*	Plug	1-foot o.c.	5,000/acre
blue wildrye	*Elymus glaucus*	Plug	1-foot o.c.	5,000/acre
California melic	*Melica californica*	Plug	1-foot o.c.	5,000/acre
Total				**44,000/acre**

Container plants proposed for habitat restoration are shown in the tables above. Arrangements will be made well in advance of planting to ensure that plant materials are available at the appropriate planting time and that container plants are no more than one-year-old. Sufficient time will be allocated for seed collection and contract growing. Subject to confirmation by the plant suppliers, a minimum lead time of six months will be allocated prior to the anticipated planting dates.

Container plants will have healthy, well developed root systems, and will not be rootbound. The EM will inspect a representative sample of all plant stock, and will reject those plants that do not meet these requirements.

The seeding palette in Table 11 below will be used in all temporarily disturbed areas.

Table 11
Seeding Palette

Common Name	Scientific Name	Seeding Rate (lbs/acre)
meadow barley	*Hordeum brachyantherum*	3.0
California brome	*Bromus carinatus*	6.0
3-weeks fescue	*Festuca microstachys*	5.0
blue wildrye	*Elymus glaucus*	6.0
yarrow	*Achillea millefolium*	2.5
California poppy	*Eschscholtzia californica*	4.0
sky lupine	*Lupinus bicolor*	1.5
Total		**28**

The seed mix will be applied to all temporarily disturbed areas. Seeding will follow installation of container plantings. Arrangements for seed collection will be made well in advance (up to one year) to ensure availability of material. Seeds and other propagules from appropriate native species will be collected within the project area or as close as possible to the site. If the RC cannot locate adequate seed/plant material collection areas for any of the species, the RC will contact the EM immediately so that the can assist in locating adequate collection locations.

9. Planting Techniques

All container and direct seeded plants will be installed in planting groups including up to several individuals of the same species. Plants will be arranged in planting groups, and the center point of each planting group will be located in the revegetation area, by the EM.

a. Container Plants

The following specifications will be employed for installing container plants, planting notes are provided on **Sheet N1.0**:

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH THE WETLAND MITIGATION PLAN, ISSUED ON JUNE 2014.

2. ALL REVEGETATION ACTIVITIES WILL BE CONDUCTED UNDER THE SUPERVISION OF AN EXPERIENCED ECOLOGICAL MONITOR (EM). THE EM AND RESTORATION CONTRACTOR (RC) WILL WORK TOGETHER TO ASSURE REVEG. IS ACCOMPLISHED.

3. EM WLL BE ON SITE DURING INITIATION OF EACH REVEGETATION TASK (SITE PREP., PLANT INSTALL, SEEDING) AND ALL WORK WILL BE MONITORED ON REGULAR BASIS.

4. NEW HABITAT AND RESTORATION AREAS WILL BE PREPARED FOR REVEG. AS FOLLOWS:

- VEGETATION, TRASH, DEBRIS, AND WEEDS SHALL BE CLEARED.
- ANY ERODED AREAS SHALL BE REPAIRED UNIFORMLY WITHOUT LEAVING PITS, HOLES, OR LOW AREAS.

5. BASIS OF ELEVATION: CONTRA COSTA COUNTY BENCH MARK: NO. 3384 (ELEV. = 498.596) SET CONCRETE FASTENER & TAG IN NORTHEAST CORNER OF 5' X 5' CENTRAL CONTRA COSTA SANITARY DISTRICT CONCRETE BOX ON WEST SIDE OF MORAGA WAY, 0.4 MILE SOUTH OF THE SOUTH INTERSECTION WITH IVY DRIVE, AND NO. 3553 (ELEV. 502.359) STATE DISC SET IN TOP OF PLANTER CURB NORTHWEST CORNER OF UNION OIL STATION AT THE NORTHEAST CORNER OF MORAGA WAY AND CAMINO RICARDO.

6. ANY CLEARING, SITE PREPARATION, AND EARTHWORK PERFORMED ON THE PROJECT SHALL BE CONDUCTED BY THE CONTRACTOR UNDER THE OBSERVATION OF THE PROJECT BIOLOGIST.

7. ALL CUT AND FILL SLOPES SHALL BE ROUNDED AT THE TOPS AND TOES OF SLOPES TO MEET EXISTING GRADES AND TO GENTLY BLEND WITH SURROUNDING TOPOGRAPHY FOR A NATURAL APPEARANCE.

8. THE CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY AND TOWN OF MORAGA LAWS AND ORDINANCES, AND REGULATIONS OF THE DEPARTMENT OF INDUSTRIAL RELATIONS, O.S.H.A., AND INDUSTRIAL ACCIDENT COMMISSION RELATING TO THE SAFETY AND CHARACTER AT WORK, EQUIPMENT, AND LABOR PERSONNEL.

9. PRECONSTRUCTION MEETING AT THE SITE IS REQUIRED 48 HOURS PRIOR TO THE START OF CONSTRUCTION WITH THE FOLLOWING PEOPLE PRESENT: OWNERS, CONTRACTOR, OR ECOLOGICAL MONITOR (EM).

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REQUIRED INSPECTIONS AND SHALL MAKE PROPER (48 HOURS PRIOR) NOTIFICATION TO THE EM.

11. INGRESS AND EGRESS OF PROJECT SITE SHALL BE KEPT CLEAN. DUST CONTROL MEASURES WILL BE IN PLACE.

EXISTING TREE CARE INSTRUCTIONS

12. PRIOR TO BEGINNING WORK, ALL CONTRACTORS WORKING IN THE VICINITY OF TREES TO BE PRESERVED ARE REQUIRED TO MEET WITH CONSULTING ARBORIST AT THE SITE TO REVIEW ALL WORK PROCEDURES, ACCESS ROUTES, STORAGE AREAS AND TREE PROTECTION MEASURES.

13. PRIOR TO GRADING, EXCAVATION OR TRENCHING, TREES MAY REQUIRE ROOT PRUNING OUTSIDE THE TREE PROTECTION ZONE BY CUTTING ALL ROOTS CLEANLY TO THE DEPTH OF THE EXCAVATION. ROOTS SHALL BE CUT BY MANUALLY DIGGING A TRENCH AND CUTTING EXPOSED ROOTS WITH A SAW, VIBRATING KNIFE, ROCK SAW, OR OTHER APPROVED ROOT PRUNING EQUIPMENT. PRUNING CUTS SHALL BE CLEAN AND SQUARE AT UNDAMAGED TISSUE WITH A SAW. THE CONSULTING ARBORIST WILL IDENTIFY WHERE ROOT PRUNING IS REQUIRED AND MONITOR ALL ROOT PRUNING.

14. IF INJURY SHOULD OCCUR TO ANY TREE DURING CONSTRUCTION, IT SHOULD BE EVALUATED AS SOON AS POSSIBLE BY THE CONSULTING ARBORIST SO THAT APPROPRIATE TREATMENTS CAN BE APPLIED.

15. FENCES HAVE BEEN ERECTED TO PROTECT TREES TO BE PRESERVED. FENCES DEFINE A SPECIFIC TREE PROTECTION ZONE FOR EACH TREE OR GROUP OF TREES. FENCES ARE TO REMAIN UNTIL ALL SITE WORK HAS BEEN COMPLETED. FENCES MAY NOT BE RELOCATED OR REMOVED WITHOUT PERMISSION OF THE CONSULTING ARBORIST.

16. CONSTRUCTION TRAILERS, TRAFFIC AND STORAGE AREA MUST REMAIN OUTSIDE FENCED AREAS OF THE TREE PROTECTION ZONE AT ALL TIMES.

17. SUPPLEMENTAL IRRIGATION WILL BE REQUIRED FOR ALL TREES INCURRING ROOT LOSS, INCLUDING SPECIFIC REQUIREMENTS FOR COAST REDWOOD TREES, ALL OF WHICH SHALL BE SPECIFIED BY THE CONSULTING ARBORIST.

18. NO EXCESS SOIL, CHEMICALS, DEBRIS, EQUIPMENT OR OTHER MATERIALS SHALL BE DUMPED OR STORED WITHIN THE TREE PROTECTION ZONE.

19. ANY ADDITIONAL TREE PRUNING NEEDED FOR CLEARANCE DURING CONSTRUCTION MIST BE PERFORMED BY A CONSULTING ARBORIST AND NOT BY CONSTRUCTION PERSONNEL.

EROSION CONTROL NOTES

20. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE PROVISIONS OF THE ASSOCIATION OF BAY AREA GOVERNMENTS (ABAG) "MANUAL OF STANDARD FOR EROSION AND SEDIMENT CONTROL MEASURES" UNLESS OTHERWISE STATED WITHIN THESE GENERAL NOTES. CONTROL MEASURES ARE SUBJECT TO THE INSPECTION AND APPROVAL OF THE GRADING DEPARTMENT.

21. ALL LOOSE SOIL AND DEBRIS SHALL BE REMOVED FROM THE STREET AREAS UPON STARTING OPERATIONS AND PERIODICALLY THEREAFTER AS DIRECTED BY THE INSPECTOR. THE SITE SHALL BE MAINTAINED SO AS TO MINIMIZE SEDIMENT LADEN RUNOFF TO ANY STORM DRAIN SYSTEM.

22. AFTER OCTOBER 1, ALL EROSION CONTROL MEASURES WILL BE INSPECTED BEFORE AND AFTER EACH STORM.

23. TO MINIMIZE EROSION OF GRADED BANKS, ALL GRADED BANKS GREATER THAN 2% AND HIGHER THAN 3' SHALL BE HYDROSEEDED, LANDSCAPED, OR SEALED. IN ADDITION TO HYDROSEEDING THE APPLICATION OF A STRAW TACKIFER OR MULCH MAY BE REQUIRED BY PB.

24. BORROW AREAS AND TEMPORARY STOCKPILES SHALL BE PROTECTED WITH APPROPRIATE EROSION CONTROL MEASURES TO THE SATISFACTION OF PB.

PLANTING INSTRUCTIONS

20. HERBICIDE TREATMENT IN PLANTING ZONES PRIOR TO PLANTING REQUIRED.

21. PLANTING HOLES FOR SHRUBS AND SMALL TREES WHICH ARE NOT IN PLANTING BEDS SHOULD BE APPROXIMATELY TWICE THE DIAMETER OF THE ROOT BALL, BUT LARGE ENOUGH TO ASSURE BACK FILL CONTACT WITH THE ENTIRE BURIED SURFACE OF THE ROOT BALL. THE BACK FILL MIX SHALL CONSIST OF 100% NATIVE SOILS.

22. GRASS PLUGS TO BE PLANTED IN GRADE FORMATION, ABOUT 1' ON CENTER.

23. SMALL TREES PLANTED IN HIGH WIND AREAS WILL REQUIRE AT LEAST 1 TREE STAKE FOR STABILITY. IF NOT IN HIGH WIND AREA, TREE STAKES ARE NOT REQUIRED.

24. CONTRACTOR RESPONSIBLE FOR MAINTENANCE AND WATERING UNTIL PROJECT IS COMPLETED.

25. HEAVILY GRADED AREAS WITH SEED MIX WILL BE COVERED WITH EROSION FABRIC.

26. DEER SCREEN AND/OR TUBEX TREE GUARDS WILL BE INSTALLED AROUND SMALL TREES AND SHRUBS. *AS NOTED IN PLANS.

27. PLANTING BASIN SHALL BE FORMED AROUND EACH INSTALLED PLANT TO HELP HOLD WATER NEAR THESE PLANTS. THE BASIN CONSISTS OF A TWO-FOOT DIAMETER WATER RING TWO INCHES DEEP WITH A SURROUNDING BERM TWO INCHES ABOVE GRADE CENTERED ON THE PLANT. AN EMITTER WILL BE PLACED DIRECTLY ON TOP OF THE ROOT BALL. AFTER INSTALLATION, THE PLANT WILL BE WATERED THOROUGHLY. PLANTS WILL ALL BE CHECKED FOR SETTLING AND STRESS WITHIN TWO TO THREE DAYS OF INSTALLATION.

28. PLANTED GRAMINOIDS (GRASSES, SEDGES, ETC) WILL BE WATERED-IN AT THE TIME OF PLANTING. THIS INITIAL WATERING WILL REQUIRE A WATER TRUCK, SPRAY IRRIGATION OR OTHER WATER SOURCE. ADDITIONAL IRRIGATION OF THE GRAMINOIDS SHOULD NOT OCCUR BEYOND THIS INITIAL WATERING. IF SUPPLEMENTAL WATER IS NEEDED IF THESE PLANTS SHOW SERIOUS STRESS DUE TO ANY PROLONGED DRY SPELLS DURING MONTHLY MONITORING IN THE FIRST WINTER/SPRING.

29. ANY DISTURBED SOILS LEFT BARREN WILL BE REVEGETATED WITH NATIVE PLANTS OR SEEDED WITH EROSION CONTROL SEED MIX. COCONUT FIBER BLANKET, OR A SIMILAR EROSION CONTROL METHOD WILL BE APPLIED.

ZENTNER and ZENTNER
Land Planning and Restoration

MITIGATION PLAN NOTES

REVISIONS	BY

RANCHO LAGUNA
RHEEM BLVD.
MORAGA, CALIFORNIA

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SCALE: NTS

PROJECT: 980 RANCHO LAGUNA

DATE: 2015.11.10

SHEET: N1.0
2 OF 9

- Planting holes shall have vertical sides with roughened surfaces. Each planting hole shall be partially backfilled with soil excavated from the planting hole.
- Planting holes shall be filled with water, and the water allowed to absorb into the surrounding ground. This should effectively remove any air pockets and allow good contact between the root ball and the surrounding soil.
- Roots shall be adequately protected at all times from the sun and/or drying winds.
- After plants are removed from containers, the sides of the root ball shall be scarified to promote development of new roots. Any roots wrapped around the sides of the container shall be pulled loose from the root ball.
- Plants shall be planted with the roots untangled, and spread out in the planting hole to promote even root penetration.
- Plants shall be set in planting holes so that the crown of the root ball is at or just above the ultimate soil surface (i.e., finished grade).
- Finely broken-up backfill shall be tamped firmly around the root ball, making certain not to depress the crown of the plant.
- The top of the root collar shall be exposed rather than covered with soil; however, the sides of the root ball shall not be exposed.
- Immediately following installation, each plant shall be deep soaked with sufficient water to reach the lower roots.

b. Seed Installation Technique

Seed will be sown by drill seeder wherever possible; on slopes or other areas too steep for drill seeding, hydroseeding or broadcast seeding will be employed.

10. Plant Protection

Container plantings may be subject to herbivory that could result in damage or loss of plants. Based on the recommendation of the EM, any or all of the following corrective measures may be implemented during plant installation, if it is determined that plants may be jeopardized by wildlife:

- Plants susceptible to browsing shall be protected using wire cages, tree shelters (e.g., hardware wire cages, etc.), or exclosure fencing (e.g., temporary rabbit fences).
- Wire screening shall be installed around the roots of plants to prevent damage attributed to subterranean herbivores (e.g., gophers).
- Protective devices shall be maintained in place for at least three years, or until herbivory is no longer a threat to the survival of the plants.

I. Present and Proposed Uses Adjacent to the Mitigation Areas

The properties around the mitigation site mostly consist of existing residential and private ranch land. No further development will take place on the property and further residential development in the area is not anticipated.

IX. MAINTENANCE PLAN

This section describes the maintenance activities which the Applicant will implement on the restoration site during the time period between initiation of the restoration project and agency confirmation of completion and approval (the Establishment Period). After agency confirmation that the restoration project is meeting the performance standards, long-term maintenance will begin by the GHAD (see below for more detail).

A. Responsible Parties

The Applicant is responsible for all maintenance activities described below.

B. Maintenance Activities

1. Control of Weeds and Exotic Plants

The open space wetlands are generally not threatened by invasive, non-native plants. Additionally, the wetland planting program, which emphasizes rhizomatous perennial graminoids such as creeping wild rye (*Leymus triticoides*) and Santa Barbara sedge (*Carex barbarae*) will likely provide for high native cover in the wetlands. Invasive aquatic weeds in these systems are relatively unusual and none have been observed within the LTOSMP area. However, plants such as giant reed grass (*Arundo donax*) and purple loosestrife (*Lythrum salicaria*) are not uncommon in the creek systems in the region and should be removed immediately following the methods below if observed.

However, the site uplands, and the dispersal habitat for AWS and CRLF, are currently threatened by existing populations of invasive non-natives. Nonnative invasive plants that threaten California's wildlands, have been categorized by the California Invasive Plant Council (Cal-IPC 2006). Invasive plants classified by Cal-IPC as High (severe ecological impacts on physical processes, plant and animal communities, and vegetation structure) or Moderate (substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure) will be controlled as necessary within the restoration area for a minimum of three years in order to prevent aggressive weeds from out competing native plant species for resources (e.g., space, water, nutrients, and light). These invasive weeds will be removed mechanically, if feasible.

If mechanical control is not effective or practicable, an EPA-approved systemic herbicide may be applied. Herbicides will be applied under the direction of a licensed applicator.

The following table includes several species likely to be included on the list for control. These species will be closely monitored and control efforts implemented as necessary.

Table 12
Site List of Invasive Plants to be Controlled

Common Name	Scientific Name	Cal IPC Rating (threat)	Management Considerations
yellow Star thistle	*Centaurea solstitialis*	High	Present; colonizes disturbed areas.
Italian and bull thistles	*Carduus pycnocephalus, Cirsium vulgare,*	Moderate	Localized distribution; good potential for control.
artichoke thistle	*Cynara cardunculus*	Moderate	Present: large colonies present, especially in Coyote Creek watershed. Difficult to control
giant reed grass	Arundo donax	High	Not observed on-site; remove immediately if found
purple loosetrife	*Lythrum salicaria*	High	Not observed on-site; remove immediately if found

Prior to initiation of revegetation efforts, the EM will consult the most recent Cal-IPC list to update this list.

2. Grazing

While grazing by sheep or goats may be used in the Open Space areas adjacent to the wetlands, grazing of any kind will not be allowed at any wetlands, springs or drainages, due to the potential for damage to special habitats and species. Whenever grazing is employed in the open space, temporary fencing along with a shepherd will be used to ensure that grazing remains within the designated pastures and not within the wetlands.

3. Supplemental Irrigation

Artificial irrigation will be supplied to certain plantings (trees and shrubs) as needed through the first summer after planting to facilitate the establishment of plants from containers. At the direction of the EM, irrigation may be continued on an as-needed basis during the second and third years following initial planting to facilitate root development, so that plants will be sufficiently established to survive without artificial irrigation beyond the third year. However, irrigation will not be required as part of the long-term management.

The Maintenance Contractor (MC) will be responsible for providing supplemental irrigation to the container plants by a temporary irrigation system as described above.

The amount and frequency of irrigation of each planting area will be determined through monitoring soil moisture conditions during the initial irrigation period. The goal is to provide deep, infrequent watering to encourage deep rooting of all perennial species.

4. Protective Devices

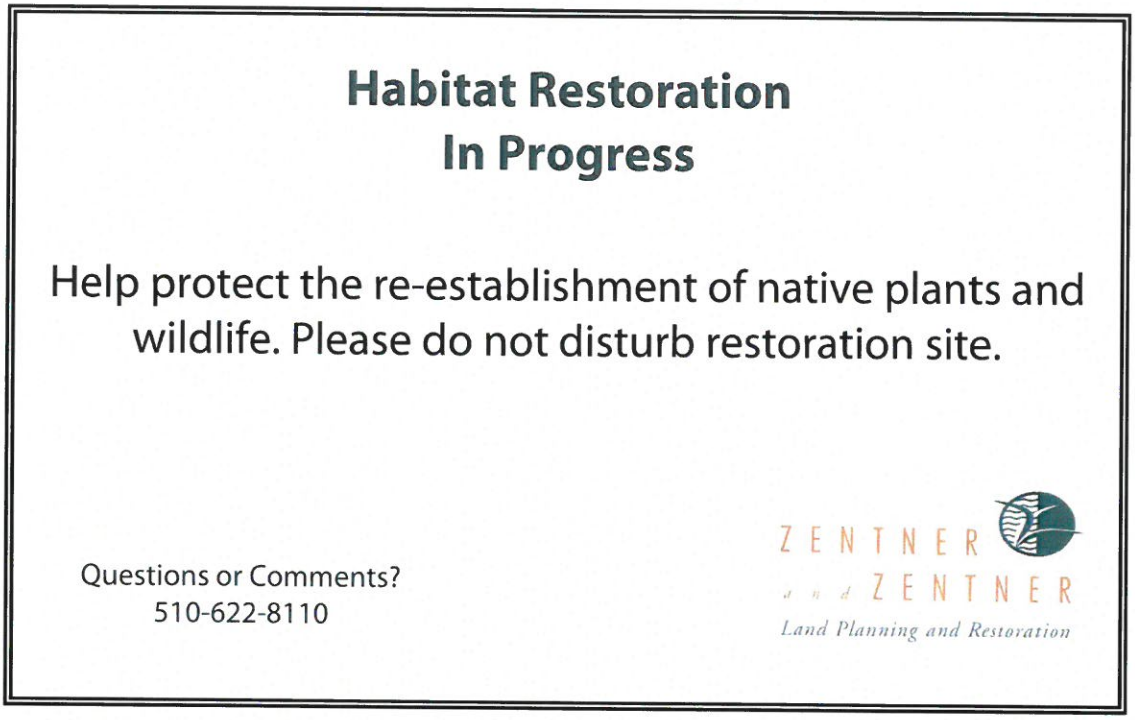
Protective devices, *e.g.* tubex tree shelters, if installed, will be maintained in good condition. Additional devices will be installed or other measures taken if monitoring indicates plant damage from herbivory. However, maintenance of these devices will not be required as part of the long-term management.

5. Replacement of Dead or Diseased Plant Materials

Planting densities given above and the performance standards assume a certain level of mortality during the monitoring period as well as potential colonization of the site by native species. As long as the performance standards are met, replacement of plant materials will not be necessary. Similarly, the seeding rates provided above account for expected germination rates. If mortality levels exceed the performance standards, however, the cause of mortality will be investigated and corrective actions taken as necessary to resolve any problems prior to plant replacement. Plants will be replaced only during the appropriate time of year as noted above. Note, though, that plant replacement will not be required as part of the long-term management.

6. Signage

Signage may be used to inform the general public of the sensitivity of the preserve area and that unauthorized trespass is prohibited. Signs can also help generate good will that may facilitate preserve management. A sign of approximately two feet by two feet in size will be placed along the adjacent sidewalk. Text on the signs will be similar to the example shown below:



Signs will be maintained in good condition and any missing signs will be immediately replaced.

7. Flow conveyance and erosion control

Flow conveyance and erosion control is best treated by good design. However, one of the truisms of any construction project is that site conditions are not completely predictable. If unseen channel irregularities, inclusions of different soil types, and similar events are not properly addressed during construction, they become maintenance problems. Reviewing the project site for flow impediments and erosion shall occur immediately after the first three storms and each time thereafter for any storms of greater intensity. Remediation is best applied annually, either immediately following the storm event that caused the conveyance issue or erosion or during the appropriate planting or grading period. The EM shall evaluate apparent problems and recommend appropriate remedial actions. In many cases, the area may simply require minor repairs and revegetation or may not require any action. Severe problems may dictate an engineering solution.

X. PERFORMANCE STANDARDS

This WMP proposes to create seasonal wetlands and channels that are functionally superior to the habitats being impacted by the Rancho Laguna project. The success of achieving these goals will be determined by comparing the mitigation habitats with the performance standards established for each habitat type. Success will be evaluated five years after construction for wetlands and 10 years after construction for creeks and riparian vegetation or two years after all artificial support (e.g., irrigation, replacement of any failed plantings) has ceased.

A. Target Mitigation Acreages

A breakdown of the target areas of wetlands and other waters to be created and enhanced under this WMP to offset impacts resulting from the Rancho Laguna project is provided in Table 13 below.

Table 13
Target Mitigation Areas

Mitigation Element	Proposed Mitigation
Seasonal wetlands	0.84 acre
Creek Channels	Create 1,021 lf at upper Rheem Creek

B. Proposed Mitigation Performance Standards

The performance criteria, provided in Tables 14, 15 and 16, will be used to determine completion of the permittee's mitigation responsibilities. Fulfillment of these criteria will indicate that the mitigation area is progressing well toward the habitat characteristics, functions, and values that constitute the long-term goals of the mitigation. The seasonal wetlands and tributaries will be monitored annually and performance standards should be met by the fifth year of monitoring.

1. Seasonal Wetlands

The seasonal wetland restoration work should promote both the number and diversity of species and ensure their growth and survival. Consequently, construction of a high value seasonal wetland system will require the establishment and maintenance of native-dominated seasonal wetland vegetation as well as near-absence of invasive, exotic species.

Table 14
Seasonal Wetlands
5-Year Performance Criteria

Habitat Element	Year 5 Performance Criteria
Seasonal Wetland	
Average Number of Natives	≥3 species
Vegetation Cover (combined strata)	≥50%
Relative hydrophyte Cover	≥60%
Relative hydrophyte Cover	≥60%
Relative Cover of Natives	≥75%
Invasive cover	<1%
Extent	0.84 acres

2. Upland Buffers

The native grassland and woodland habitats will serve as upland buffers to the created and preserved seasonal wetlands and tributary. The buffers should create higher value uplands with a greater diversity and cover of native species and low cover of non-native invasive species.

Table 15
Upland Buffers
10-Year Performance Criteria

Habitat Element	Year 10 Performance Criteria
Native Grassland	
Average Number of Natives	≥3 species.
Vegetation Cover	≥80%
Relative Cover of Natives	≥20%
Woodland	
Number of Trees and Shrubs	80% of planted
Height of Trees	All Class 3 (>6')
Height of Shrubs	All Class 3 (>36")

XI. MONITORING REQUIREMENTS

A. Post-Construction Monitoring

After completion of mitigation construction, all the elements discussed below will be monitored by the Applicant for a period of five years for the seasonal wetlands and 10 years for the creeks and riparian vegetation or until the performance standards are met, whichever comes first. Monitoring results, including photographs, will be submitted as an annual report to the appropriate agencies by August 15 of each monitoring year.

B. Monitoring Frequency and Season(s)

This project will require a monthly walk-through by an ecologist or maintenance technician for the first year and bi-annual reviews thereafter, unless vandalism or other acts appear to threaten the integrity of the wetlands. Specific monitoring activities shall occur at the frequency and season(s) indicated in Table 16.

Table 16
Monitoring Frequency & Seasons

Category	Frequency and Seasons
Hydrology	Monthly, November to May of each year
Vegetation	Annually, in late spring or early summer
Maintenance activities	As completed
Wetland extent	Spring, in first and last year

C. Monitoring Methods

Performance monitoring will include both qualitative and quantitative assessment. Qualitative monitoring will occur during periodic inspections of the revegetation areas. These inspections will occur frequently (approximately every month) during the first year and bi-annually in subsequent years as noted above. Quantitative monitoring will take place annually until the Year Five performance criteria are met for wetlands and the Year 10 criteria are met for creeks and riparian vegetation. This monitoring will typically occur annually in the late spring or early summer beginning the first year after planting.

1. Qualitative Monitoring

Qualitative monitoring methods will include visual observation and photo documentation from set stations. There are no specific performance criteria associated with this monitoring.

a. Visual Observation

During monitoring events, the EM will document the condition of revegetation areas based on visual observations. Current conditions, potential problems (i.e., vandalism, fence damage, presence of exotic plant species, herbivory, erosion, etc.), and any recommended actions will be documented in a Field Memo that will be provided to the Applicant. Any recommended actions in a given will also be documented in the annual Monitoring Report for that year.

b. Photo Documentation

Annual photographs of revegetation areas will be taken from preset photo stations during quantitative data collection events. Additional photographs will be taken of any potential problem areas. All photographs will be logged and representative photos included in each annual report.

2. Quantitative Monitoring

a. Hydrology

Wetland hydrology will be assessed with at least 4 gauges in the created wetlands. These will be used to assess to hydro-period (depth and duration of inundation and/or of saturation within 12 inches of the surface) in the created wetlands. Hydrologic monitoring shall include site assessment by the biological monitor at a frequency adequate to determine if saturated soil or inundation is present for a minimum period of 14 to 21 consecutive days

Rainfall will be tabulated on a daily basis during the rainy season from a local source and the depth and extent of ponding defined in comparison to rainfall and the measured depth.

b. Wetland Extent

The extent of the constructed seasonal wetlands and channel will be mapped using the Corps delineation methodology in the fifth year of the post-construction monitoring. The results of the mapping will be included in the annual report and mapped on the baseline figure.

c. Vegetation

Vegetation monitoring will be conducted in the same fashion for both of the habitat types, using permanent 10 foot by 10 foot plots. Vegetation monitoring shall be conducted using permanent quadrats randomly selected prior to the start of construction of the wetlands, or quadrats randomly selected on an annual basis. The

quadrats will be of sufficient number to provide vegetation assessment for a minimum of 1/10 of the mitigation acreage. The annual monitoring reports shall provide a detailed description of the vegetation monitoring methods and a map showing the locations of all quadrats used for monitoring.

The percent cover of unvegetated ground and of each species will be recorded from these plots in the late spring or early summer of each year during the monitoring period (beginning at the end of the first growing season), using cover classes suggested by Ralph Tiner. Other data will then be calculated from the cover data for each plot, using the mid-point of the range for each code (Table 17, below).

Table 17
Vegetation Monitoring Cover Classes

Percent Cover	Code	Value Used for Calculations (mid-point of the range)
100%	9	100%
86-99%	8	92.5%
76-85%	7	80.5%
61-75%%	6	68%
41-60%	5	50.5%
26-40%	4	33%
16-25%	3	20.5%
6-15%	2	10.5%
1-5%	1	2.5%
<1%	X	0.01%

Plants will also be categorized as either "wetland species" or other species. Indicator status will be based on the listing for Region O (California) in the Corps of Engineers Wetland Delineation Manual," (Environmental Laboratory, 1987). Species identified as OBL, FACW+, FACW, FACW-, FAC+ or FAC on this list will be considered wetland plants, while species identified as FAC-, FACU+, FACU, FACU-, NI, and unlisted will be considered upland species. For comparison to performance criteria, values for all stands within a habitat type will also be averaged. Formulas are described in Table 18, below.

Table 18
Vegetation Cover Calculations

Cover Calculation	Formula
Total Species Cover (totals can exceed 100 with shading or 'overlap' between species.)	Sum of cover for all species.
Vegetation Cover	100 minus non-plant cover
Relative Cover by Native Species	Sum of cover for the native species / Total Species Cover.
Relative Cover of Hydrophytes	Sum of cover for the wetland species /Total Species Cover.

e. Maintenance Activities

All maintenance activities will be reported in the annual monitoring report, including the date and a short description of the work involved. Maintenance activities to be reported include mowing, herbicide use, replacement of dead or unhealthy shrubs, replacement of plantings, major debris removal and irrigation line repair.

D. As-built Report

An as-built report containing updated drawings and actual limits of restored habitats will be prepared and submitted to the Corps, RWQCB and CDFW within 90 days of mitigation work completion. The report will include, but not be limited to, modifications to the original design, finish contours and boundaries of mitigation sites and wetland hydrology, planting locations, and the contacts of all contractors and subcontractors who worked on the project.

E. Annual Reports

Monitoring reports will be submitted annually beginning the first year after construction and continuing until the end of the monitoring period. Reports will include both raw data (as appendices) and summary tables and graphs of the data required to assess project progress. These reports will be due by the 15th of September each year a report is required, e.g. the Year One report will be due September 15th 2015 or 2016 (projected). In addition to evaluating the progress relative to the performance standards quantitatively and qualitatively, the reports will include representative photographs taken each year from permanent photo stations. The reports will include a list of names, titles, and companies of all persons who prepared the reports and who

participated in the monitoring. Reports will be submitted to the Corps, RWQCB and CDFW.

F. Notification of Completion

The Applicant will notify the Corps, RWQCB and CDFW following completion of the monitoring period, or at the time the Year 5 and Year 10 success criteria have been met. As part of this notification, a jurisdictional delineation will be provided to the Corps, which shows the boundaries of wetlands and waters of the U.S. at the mitigation site.

XII. LONG-TERM MANAGEMENT PLAN

The long-term management plan for the wetland mitigation areas is contained within the Long Term Open Space Management Plan (LTOSMP), which is provided as **Appendix A.** This LTOSMP provides a comprehensive, long-term management plan for the Rancho Laguna Open Space area, including wetlands and waters of the US/State and special status species habitats.

The open space will include a variety of preserved and created wetlands. The wetland mitigation areas described in this plan will be managed during the Establishment Period by the developer as described in the WMP. After the Establishment Period when the wetlands have met the specified performance standards contained in this WMP, the responsibility for long-term management and monitoring of the wetlands will be transferred to the GHAD and will be managed, along with the remainder of the open space, by the LTOSMP (Which is on file with the GHAD).

The GHAD will retain a Qualified Biologist (QB) to implement the LTOSMP. The QB will be responsible for completing the required surveys and performing the monitoring and management functions detailed in the LTOSMP.

XIII. FINANCIAL ASSURANCES

The long-term management of the mitigation area will be assured through funding generated annually by the GHAD through property tax assessments on all landowners within the GHAD boundaries.

XIV. POTENTIAL CONTINGENCY MEASURES

A. Initiating Procedures

If an annual performance goal is not met for all or any portion of the mitigation project in any year, or if the final success criteria are not met, the permittee will prepare an analysis of the cause(s) of failure and propose remedial action for Corps approval. Remedial actions could range from replanting, to relocating the mitigation site.

B. Contingency Funding Mechanism

The Applicant has agreed to restore and preserve in perpetuity the mitigation areas, which will be preserved through a conservation easement. The remainder of the undeveloped portion of the site will also be preserved through a conservation easement. The applicant will be responsible for ensuring that all mitigation described in this WMP is implemented successfully and to dedicate funds towards completion of the restoration work.

Long-term management and funding of that management will be assured through a GHAD, as noted above.

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EXHIBIT H

Rancho Laguna Development
Open Space Management Plan

EXHIBIT H

ZENTNER and ZENTNER
Land Planning and Restoration

Rancho Laguna II

Rancho Laguna Long-term Open Space Management Plan (LTOSMP)

Project No.:
980 SHH

Zentner and Zentner
and
Engeo Inc.

Oakland, CA

Prepared for:
SummerHill Homes

Date Issued:
June 2015

Revised:
February 2016

95 Linden Street Suite 3 Oakland California 94607 510.622.8110

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Long-term Open Space Management Plan

Zentner and Zentner and Engeo Incorporated
Revised February 2016

I. Introduction

This Long-term Open Space Management Plan (LTOSMP) provides a comprehensive, long-term management plan for the Rancho Laguna Open Space area, including wetlands and waters of the US/State and special status species habitats. The LTOSMP is guided by the Town of Moraga's requirements as set forth in the various approval documents for the Rancho Laguna project, as well as requirements of the US Fish and Wildlife Service (USFWS as expressed in the USFWS Biological Opinion of February 18, 2015, US Army Corps of Engineers (Corps), the California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board (RWQCB) that have been or will be included within the project permits from these agencies.

The overall goal of the LTOSMP is to monitor and maintain the open space in such a way that the existing biological, geological, scenic, and recreational elements will be protected and enhanced while ensuring these open spaces do not present or create a hazard to the community.

The LTOSMP includes the following chapters:

II. **Site Assessment.** This chapter reviews the current and likely future site conditions as well as the results of the research, site assessment and survey work performed by the project team. It constitutes the factual basis for this plan. Chapter II discusses:
    - Vegetation studies;
    - Grazing, fuels and fire hazards;
    - Cultural and visual resources;
    - Evaluations and mapping of trails and public facilities; and
    - Information on open space visitor use and open space management concerns.

III. **Agency Requirements.** This chapter describes the various mitigation and other measures imposed or likely to be imposed by the Town of Moraga, the USFWS, Corps, CDFW and the RWQCB.

IV. **Goals.** This chapter identifies the goals derived from the site assessment and agency requirements.

V. **Policies and Procedures.** The final chapter establishes policies and procedures to address fire hazards, geotechnical issues, and access. The Monitoring and Management procedures and requirements necessary to maintain the biotic values of the Open Space are detailed in this Chapter as well.

The LTOSMP does not address facilities, mitigation or other measures that will be built or provided by the project developer and maintained by the Homeowner's Association (HOA), such as the stormwater retention/detention basins on Parcel B. Nor does the LTOSMP address the wetlands and associated habitats on Parcel D during the initial five-year monitoring term for wetlands and ten-year period for creeks and riparian plantings (Establishment Period), which are detailed in the *Rancho Laguna II, Mitigation Program* (WMP) by Zentner and Zentner; revised February 2016. (A copy of the WMP is on file with the Moraga Geological Hazard Abatement District.) However, the LTOSMP does include goals, policies and procedures, including monitoring, for long-term management of the wetlands and associated habitats for the period after the Establishment Period when the performance standards have been met, as well as the existing special status species habitat.

II. Site Assessment

A. Introduction

This chapter reviews the various physical features of the open space, such as location, topography and soils, as well as the existing management, to identify likely future management issues.

B. Location

The Rancho Laguna open space is a portion of a 178.9-acre site located in the coastal hills of the Town of Moraga in Contra Costa County (**Figure 1**). In conjunction with the development of 27 new single-family homes on approximately 26 acres, the developer will dedicate the remainder of the site (approximately 162.63 acres) as permanent open space. Eleven of the new homes will be located near Rheem Boulevard, and sixteen of the homes will be located on the northwest side of the main northwest-southeast ridge than runs through the site.

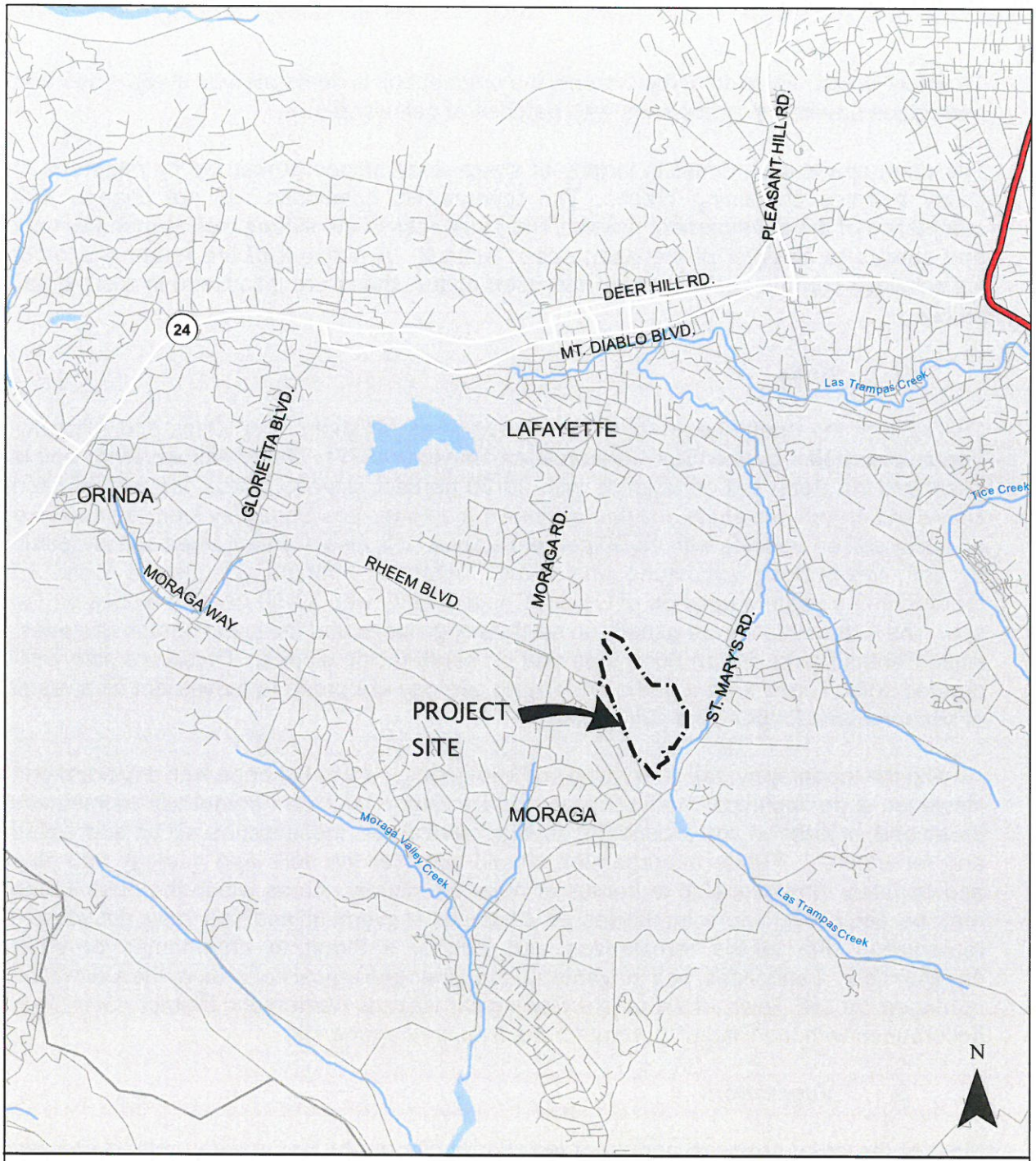
The site is bordered by Rheem Boulevard and single-family residences on the southwest side, by Las Trampas Creek and St Mary's Road on the southeast side and by existing open space to the north. The property is located within the western half of Section 8 and the eastern half of Section 7 of Township 1 South, Range 2 West of the Las Trampas Ridge USGS 7.5-minute quadrangle.

The open space is part of a larger area of open space that includes open space dedicated by the Palos Colorados project as well as other undeveloped lands. This larger open space area is partially encompassed by the suburbs of Lafayette, Orinda and Moraga. However, preserved regional open space occurs adjacent to or near this area—Las Trampas to the southeast, Huckleberry to the west and Briones to the north.

C. Site Conditions

1. Topography

The open space consists of two narrow valleys and the intervening steep-sided ridge and slopes. The western valley, which includes Rheem Creek at its lower end, is divided between the upper and lower Rheem valleys. As shown in the submitted project plans, restored wetlands and eleven of the new homes will be located in the upper Rheem valley along Rheem Boulevard. Rheem Creek now flows through the lower Rheem Valley and will also include restored wetlands. Rheem Creek is a relatively natural creek, although the flows are supplemented by summer irrigation from adjacent housing and the creek and the banks have been heavily grazed. The eastern valley comprises most of the open space and includes Coyote Creek, an ephemeral to intermittent stream within a relatively incised and actively eroding channel. Rheem Creek and Coyote Creek both drain to Las



DATE: 02/16/2016, 04:09 pm BY: CJL SOURCE: CaSIL 2009 FILE: D:\Graphic Designer\My Documents\PROJECTS\1000-1100\1035 Rancho Laguna const\Adobe\1035 LOCATION MAP 16-02-16	**FIGURE 1** LOCATION MAP RANCHO LAGUNA MORAGA, CALIFORNIA	ZENTNER and ZENTNER *Land Planning and Restoration* 95 Linden Street, Ste. 3, Oakland, CA 94607 Phone: 510.622.8110 Fax: 510.622.8116

Trampas Creek. Outside of the Creeks, the open space is dominated by steep-sided hills and ridges covered in grasslands with patches of oak woodlands.

The open space area consists largely of steep-sided slopes broken up by ridgetops or valley bottoms containing creeks. The topographic conditions will not change with completion of the development project. The steepness of the slopes makes management and access to all parts of the open space difficult. A network of fire roads and other accessways currently exist through the open space; these are discussed in more detail below.

2. Soils

The soils of the open space have been mapped as Millsholm, Los Osos and Altimont-Fontana complex by the Soil Conservation Service (1977). The Millsholm loam soil is described as steep soil on uplands with 30-50 percent slopes. These are well-drained soils that formed from shale and fine-grained sandstone. Los Osos clay loam is described as a hilly soil on uplands with 15-30 percent slopes. It is also a well-drained soil underlain by soft, fine-grained sandstone and shale. Altamont-Fontana complex is found on foothills in the eastern uplands of Contra Costa County with 30-50 percent slopes on the site. The Altamont soils are usually on north-facing slopes and the lower portion of slopes, while Fontana soils are on ridge tops and on south-facing slopes. These are also well-drained soils. These soils and the underlying geology are prone to movement as a result of seasonal and longer-term influences.

As with the topography, the underlying soil and geology will not change with development. However, a geotechnical analysis prepared by Engeo identifies potentially problematic areas and, at least on and around the development areas, these issues will be addressed and remediated. Future management should consider the soils and geology and plan appropriately in relationship to homes or other structures. Areas within the open space may be subject to future landslides or other soil movement and this may not require remediation due to the remoteness and lack of a threat to any homes or other development. Landslides, soil movement, and other geological hazards at the site will be managed by the Town of Moraga's Geological Hazard Abatement District (GHAD) in accordance with the Plan of Control for the Rancho Laguna site.

3. Vegetation

Most of the open space is annual grassland dominated by non-native, upland grasses and forbs. Large parts of the grasslands in the western portion of the open space are currently infested with the invasive artichoke thistle (*Cynara cardunculus*), a large, woody thistle. This plant will require control to avoid further infestations. As well, grasslands are notably prone to wildfires and the need for wildfire control is evident.

Oak woodland is found in patches in the open space. The woodland is dominated by live oak (*Quercus agrifolia)* but also includes moderate amounts of valley oak (*Quercus*

lobata), California bay laurel (*Umbellularia californica*) and buckeye (*Aesculus californica*). As with the grasslands, the oak woodlands are prone to fires.

The riparian woodland/scrub areas generally include a variety of trees and shrubs, primarily coyote bush (*Baccharis pilularis*). This association forms a relatively dense thicket along Coyote Creek and a more open association along Rheem Creek. The dominance by coyote bush is the result of the historically intense grazing on-site near the streams. However, in spots on Rheem Creek and upstream on Coyote Creek, the coyote bush is joined by dense thickets of willow, including arroyo willow (*Salix lasiolepis*), yellow willow (*S. lucida* var. *lasiandra*), and red willow (*S. laevigata*).

As noted above, the open space includes two Creeks: Rheem Creek on the west and Coyote Creek on the east. Along Rheem Creek, vegetation is sparse in the upper section, reflecting grazing, but the amount of vegetation increases downstream. Downstream, tree cover dominated by valley oaks (*Quercus lobata*) becomes quite dense, while the understory is almost absent due to grazing. This portion of the creek is also incised by as much as 15 feet, leaving a relatively narrow channel below the tree cover on the terraces above. On Coyote Creek, native tree cover is limited but total cover is often dense due to the extent of coyote bush scrub.

D. Existing Access and Management

The Rancho Laguna site is currently owned by Rancho Laguna, LLC. Management currently consists of seasonally grazing for fire suppression. A series of fire roads cross parts of the open space and will be used for future management. However, unmanaged seasonal grazing creates its own issues. Coyote Creek is deeply incised due to grazing and several gullies have formed on the upper slopes, also as a result of grazing. Both Creeks and the open space in general will require a more refined management program to reduce erosion and down-cutting.

E. Wildlife and Wetlands

The open space hosts a variety of wildlife, although many of these are common, suburban-adapted species. Raptors are readily observed hunting the grasslands and likely roost and may nest in the oak woodlands. Numerous small mammals and birds also use the grasslands for foraging. Some common amphibians such as Pacific tree frog (*Hyla regilla*) have been heard in the wetlands and California ground squirrel (*Spermophilus beechyi*) is found in more disturbed areas. Other species that occur on-site include black-tailed jack rabbit (*Lepus californicus*), California mule deer (*Odocoileus hemionus*), brewer's blackbird (*Euphagus cyanocephalus*), western fence lizard (*Sceloporus occidentalis*), American crow (*Corvus brachyrhynchos*), and red-tailed hawk (*Buteo jamaicensis*). Management should work to enhance local native wildlife populations without creating habitat for species that will become problematic for neighboring residents.

1. Wetlands and Other Waters of the State/U.S.

Wetlands are areas periodically or permanently saturated by surface or groundwater and typically support vegetation adapted to life in saturated (hydric) soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and floodwaters, promotion of groundwater recharge, and their water filtration and purification functions. "Other waters" of the State or the U.S. may include tributaries or drainage ditches which exhibit perennial or ephemeral flow to a navigable waterway, wetland, or other significant water feature. Other waters may not necessarily be wetlands.

Wetlands and waters are shown in the submitted project plans and specifically detailed in the WMP. (A copy of the WMP is on file with the GHAD.) A jurisdictional delineation was conducted by Zentner and Zentner in September 2012 and confirmed by the Corps. The project WMP proposes the creation of additional wetlands, primarily along Rheem valley; these are shown in the submitted project plans and WMP and are subject to performance standards and other measures to ensure their development (see below for more detail). Management of these areas will recognize their high societal and other values, the management requirements contained in the USFWS, Corps, CDFW and RWQCB permits, as well as the issues involved with any fill or other alteration.

2. Special Species Habitats/Species

The only two federally-listed species known to occur within five miles of the Project site are the California red-legged frog (CRLF; *Rana draytonii*) and the Alameda whipsnake (AWS; *Masticophis lateralis euryxanthus*). Although CRLF have not been observed on-site, Coyote Creek may be used as dispersal habitat for CRLF during the summer; breeding habitat for this species is known from the upper watershed. As well, although AWS have not been observed on-site, they are difficult to find and annual grassland within the open space may be used by AWS as dispersal habitat.

The development project applicant has completed a Section 7 consultation with the Corps and USFWS for these species, and additional management information has been generated through this process. Management of the open space areas will recognize their value to these species as suitable dispersal habitat, as well as the issues involved with any habitat alteration.

F. Management Issues: A Summary of Existing Site Conditions

The open space area consists largely of steep-sided slopes broken up by ridgetops or valley bottoms containing creeks. The steepness of the slopes may make management and access to all parts of the open space difficult.

As with the topography, underlying soil and geology will not change with development. However, the geotechnical analysis prepared by Engeo identifies potentially problematic

areas and, at least on and around the development nodes, these issues will be addressed and remediated. Future management will have to consider the soils and geology and plan appropriately in relationship to homes or other structures.

Large parts of the grasslands in the western portion of the open space are currently infested with the invasive artichoke thistle (*Cynara cardunculus*), a large, woody thistle. This plant will require control to avoid further infestations. These controls, however, can be applied incrementally with adaptive management to ensure their eventual success. As well, fire protection plan will also include vegetation management, possibly including the use of goat herds, which can also help control artichoke thistle and other noxious exotics. The grasslands and oak woodlands are also notably prone to wildfires. Riparian woodland is generally not fire-prone; however, the fire protection plan must include measures to control the dense coyote bush along Coyote Creek. Historically, the site has been used for cattle grazing, which helps to reduce local fire hazards but the cattle tend to "camp out" in Rheem and Coyote Creeks and the effects of this in terms of gullying are described above. Similarly, a number of smaller gullies on-site require management to reduce down-cutting and erosion. Again, though, this can be done incrementally over time with adaptive management to ensure success.

The open space will include a variety of preserved and created wetlands. These areas will be managed during the Establishment Period by the developer as described in the WMP. After the wetlands have met specified performance standards, responsibility for long-term management and monitoring of the wetlands will be transferred to the GHAD.

The GHAD will retain a Qualified Biologist (Qualified Biologist) to implement the LTOSMP. The Qualified Biologist will be responsible for completing the required surveys and performing the monitoring and management functions detailed in this LTOSMP. At a minimum, the Qualified Biologist must be familiar with the flora and fauna of the region, have knowledge and successful experience managing and maintaining wetland mitigation areas such as those found on-site and have knowledge and experience with AWS and CRLF ecology, habitat and the issues involved with these species as they pertain to the Rancho Laguna Open Space.

The open space also contains suitable dispersal habitat for two federally-listed species. Management of this potential habitat will recognize its value to these species, as well as the issues involved with any habitat alteration.

Management currently consists of seasonally grazing for fire suppression. A series of fire roads cross parts of the open space and will be used for future management. The GHAD will be responsible for implementing the fire protection plan for the site.

III. Agency Requirements

A. Town Requirements

The Town of Moraga imposed conditions of approval on the development of 27 new single-family homes on the Rancho Laguna site. Conditions of approval related to protection and management of the open space area, as adopted by the Planning Commission in April 2014, are restated below for convenient reference.[1]

Open Space Management Plan Conditions

- The open space areas of the property shall be subject to an Open Space Management Plan for the 27 Lot Project, that will ensure the undeveloped 162 acres [stet] of the property continue to be grazed as a means of fire protection and open space preservation. The Open Space Management Plan, prepared by a qualified ecologist, shall be consistent with resource agency permit conditions, including jurisdictional and non-jurisdictional wetland and special status species monitoring, required by the USACE, RWQCB, and CDFG, in consultation with the USFWS. Those requirements shall be included in the final Wetland and Special-Status Species Mitigation and Monitoring Plan (Wetland/Special-Status Species Plan) prepared by a qualified restoration ecologist/biologist and incorporated in the Open Space Management Plan.
- The GHAD shall be responsible for open space management, which may include grazing. [Mitigation Measure 3.10 #2 (for "Conversion of Agricultural Land Impact")]
- The Open Space Management Plan shall include a final Public Trail System Plan. The Public Trail System Plan shall include trail management measures that address recreational impacts to wildlife and wildlife habitat. Such measures shall include the designation of trail access, informative signage regarding the sensitive nature of the native habitats and wildlife, homeowner education, and restrictions on pet access.to minimize human encroachment and predation by domestic pets. The GHAD shall be responsible for public trail maintenance and control. [Mitigation Measure 3.35 #6 (for "Recreation & Trails Impact")] [Mitigation Measure 3.55 #23b (for "Habitat Loss and Fragmentation Impact")]
- The updated Wetland/Special-Status Species Plan shall provide guidance on managing and monitoring preserved aquatic and upland habitat for special-status and common wildlife species. The Plan shall be updated to be consistent with the GDP/VTM and the visual Quality Mitigation Measures. Details of the Plan and the required measures are outlined in Mitigation Measures 3.55 #9b and #10b in the Mitigation Monitoring and Reporting Program. The Wetland/Special-Status Species Plan shall provide details of on-going monitoring and maintenance to be implemented in perpetuity, and incorporated as part of the Open Space

[1] For a copy of the conditions of approval currently applicable to the project and the site, please contact the Town of Moraga Planning Department.

Management Plan. [Mitigation Measure 3.55 #15a (for "Degradation of Wildlife Habitats and Decrease in the Carrying Capacity for Wildlife and Special-Status Species" impacts)], [Mitigation Measure 3.55 #15c (for "Degradation of Wildlife Habitats and Decrease in the Carrying Capacity for Wildlife and Special-Status Species" impacts)], [Mitigation Measure 3.55 #16b (for "California Red Legged Frog" impacts)]

- All restored jurisdictional and non-jurisdictional wetlands, along with an appropriate upland buffer, shall be placed in a permanent Conservation Easement, or similar deed restriction, in favor of the Town or appropriate third party entity, preserved in perpetuity, and managed by the GHAD.
- The Wetland/Special-Status Species Plan shall include measures to eradicate the existing infestation of artichoke thistle throughout the site, including the conservation easement or other appropriate deed restrictions. [Mitigation Measure 3.55 #22b (for "Invasive Species Impact")]
- The 2005 Wetland/Special-Status Species Plan includes a grazing management plan intended to prevent over-grazing of the Conservation Easement or deed restricted lands, and a Fire Protection Plan. The GHAD shall pay for and administer these measures. Proper implementation of these measures shall be documented by the qualified biological and fire protection monitors for the GHAD and confirmed in reports submitted to the Town.
- Adaptive management shall be utilized to identify and respond to problems that arise and which threaten to degrade potential CRLF and AWS dispersal habitat [Mitigation Measure 3,55 #9b,5 (for California Red Legged Frog); MM 3.55#10b7 (for direct impacts to Alameda Whip Snake)].
- The eastern edge of the Coyote Creek corridor shall be protected from grazing by a permanent fence to exclude livestock from the channel banks (Mitigation Measure 3.55 #9b.3 (for California Red Legged Frog)].
  [Note: This measure was intended to protect the area from cattle grazing. However, cattle grazing will not be allowed within the LTOSMP area. Grazing, when necessary, will be conducted using sheep or goats and will employ temporary, portable fencing and a shepherd to ensure that grazing is kept within the fenced pastures and that no impacts to wetlands or other jurisdictional areas, such as Coyote Creek, occur.]
- Existing springs within any areas proposed for grazing shall be fenced to exclude livestock. If access to water is required, water may be piped from the springs to water troughs outside of the enclosure fencing [Mitigation Measure 3.55 #9b.4 (for California Red Legged Frog) Mitigation Measure 3.55 #10b.6 (for direct impacts to Alameda Whip Snake)].
  [Note: Temporary, portable fencing and a shepherd will be used to ensure that sheep or goat grazing is kept within the fenced pastures and that no impacts to wetlands or other jurisdictional areas occur.]
- Signs shall be installed identifying the site as a sensitive habitat area. [Mitigation Measure 3.55 #9b.6 (for California Red Legged Frog) Mitigation Measure 3.55 #10b.8 (for direct impacts to Alameda Whip Snake)]

- An education brochure shall be produced for future homeowners describing the purpose of the conservation easement and other mitigation measures, the species and habitats being protected, prohibited activities, and homeowner responsibilities [Mitigation Measure 3.55 #9b.8 for California Red Legged Frog) Mitigation Measure 3.55 #10b.10 (for direct impacts to Alameda Whip Snake)].
- The final Wetland/Special-Status Species Plan shall provide details of on-going monitoring and maintenance to be implemented in perpetuity, as part of the Open Space Management Plan [Mitigation Measure 3.55 #9b.13 (for "Red-Legged Frog Impact") Mitigation Measure 3.55 #10b.15 (for direct impacts to Alameda Whip Snake)].
- Monitoring of the average grass height shall be conducted one month after "green-up" following the first inch of rain. Around mid-March, and monthly thereafter, average grass height shall be monitored to determine the residual dry matter level and timing of grazing cessation, adjusting grazing levels, or the need for supplemental feeding for no less than five years [Mitigation Measure 3.55 #9b.9 for California Red Legged Frog) MM 3.55 #10b.11 (for direct impacts to Alameda Whip Snake)].
- A Fire Protection Plan shall be included as part of the Open Space Management Plan. The following measures (identified by the Fire District) will reduce the risk of wildland fires and should be incorporated in the Fire Protection Plan:
- The Fire Protection Plan shall ensure that:
  The project is designed to be consistent with the Town's emergency evacuation plan.
  The water lines serving the project shall provide continuous water flow and adequate pressure for fire suppression.
  All residences shall be no more than the distance required by the Uniform Fire Code from a fire hydrant.
  Project design, including street alignment, shall be such that emergency vehicles have full access to the site.
  Residential buildings shall be equipped with residential fire sprinklers per the Fire Code at the time of project approval.
  Water supply for fire flow water shall meet the most current Fire Code at the time of project approval.
  The project shall pay fire flow tax. The rate is based on fire protection systems and square footage. [Mitigation Measure 3.61 #2 (for "Fire Protection Impact

The LTOSMP will be managed by the GHAD. Due to their importance to the LTOSMP, the Town conditions relevant to the GHAD are provided in their entirety below.[2]

[2] For a copy of the conditions of approval currently applicable to the project and the site, please contact the Town of Moraga Planning Department.

Restricted Development Areas Conditions

- The Project Sponsor shall request and the Town Council shall form or annex into, a Geologic Hazard Abatement District (GHAD) or other Town designated entity, to be funded in perpetuity by the property owners within the project through district assessments, with initial funding by the Project Sponsor. The GHAD shall be formed prior to recordation of the Final Map. [Mitigation Measure 3.10 #2 (for "Conversion of Agricultural Land" impacts)] [Mitigation Measure 3.35 #7 (for "Wetlands Restoration" impacts)]
- The GHAD or another entity designated by the Town, shall own and manage Parcel "A" (approximately 120.9 acres) and Parcel B (approximately 39.4 acres), both of which shall be preserved in a Conservation Easement (or other appropriate deed restriction) as open space (as defined in the Open Space Management Plan) in perpetuity as enforceable by the Town and shall be in the GHAD described in Condition 91 regardless of ownership. The form of the Conservation Easement shall be approved by the Town Manager and Town Attorney, prior to approval of the Precise Development Plan, and the Easement shall be recorded concurrently with the Final Subdivision Map. The term "GHAD" as used in these Conditions of Approval shall refer to the entity or entities designated by the town to either own and/or manage Parcel A and Parcel B. The Town may choose separate entities to perform management and ownership functions described herein. [Mitigation Measure 3.55 #23a (for "Habitat Loss and Fragmentation Impact")]
- The GHAD shall have its own district engineer and other qualified professional consultants, including a qualified ecologist/biologist. The GHAD shall be responsible for the following management, monitoring and maintenance tasks: (i) geotechnical stability and erosion control; (ii) stormwater control and water quality basins; (iii) open space grazing, fire protection and control, and trails; and (iv) intermittent drainage, seasonal wetlands, seeps and biological resources.
- The above obligations shall include compliance with the final (i) Geotechnical Plan of Control, (ii) Drainage Plan, (iii) Open Space Management Plan, (iv) Public Trail System Plan, (v) Fire Protection Plan, (vi) Wetland/Special-Status Species Plan, (vii) Rheem Valley Revegetation Plan, and (viii) Conservation Easement (or other appropriate deed restriction), which are more fully described in other Conditions of Approval and the Mitigation Monitoring and Reporting Program [Mitigation Measure 3.20 #5a (for "Landslides Impact")]
- The GHAD shall have sufficient permanent funding for the estimated costs of the following functions: (a) monitoring and annual reporting, (b) weeding, trail maintenance, erosion control and repair, grazing management, and fence repair, and (c) a designated preserve manager and a designated biologist to periodically visit the site and report to the District, and (d) maintaining water quality and detention basins. Funding sources for the GHAD may include seed money provided by the Project Sponsor, annual contributions from homeowners, and income from grazing leases, and other sources as provided under GHAD law. The actions of the GHAD in meeting its responsibilities, including the adequacy of permanent funding from the Project Sponsor and project homeowners, shall be

subject to Town review, direction and control. All Town costs, if any, shall be paid by the GHAD. Alternatively, the Project Sponsor shall establish an endowment to provide for its maintenance and monitoring. No grading or building permits shall be issued by the Town until the funding sources have been agreed upon and secured. [Mitigation Measure 3.10 #2 (for "Conversion of Agricultural Land")] [Mitigation Measure 3.20 #5a (for "Landslides Impact")] [Mitigation Measure 3.55 #9b (for "Red-Legged Frog Impact")] [Mitigation Measure 3.55 #22a (for "Invasive Plant Species Impact")]

- The Project Sponsor shall prepare CC&Rs that shall prohibit unleashed pets outside of the owner's private property (e.g., within areas held in conservation easement or in open space). Signs shall be posted at the edges of open space areas identifying the areas as sensitive wildlife habitat and stating that leash laws are enforced by the HOA, GHAD, Contra Costa Animal Control, and the Moraga Police Department. This prohibition shall enforceable by the HOA, GHAD and Town. [Mitigation Measure 3.55 #25 (for "Interruption to and Loss of Wildlife Movement Corridors Impact")]
- Physical barriers shall be installed by the Project Sponsor to prevent vehicles and motorcycles from traveling off designated roadways to minimize future disturbance to grassland cover and other vegetation in the surrounding undeveloped lands and open space. The HOA and GHAD shall be responsible for their maintenance and monitoring. [Mitigation Measure 3.55 #32 (for Off-Road Vehicle Activity Impact")]
- The Applicant/Owner shall disclose to the homebuyer in the Conditions, Covenants, and Restrictions and in the Department of Real Estate Public Report that pedestrian trails and staging areas are planned in and around the project area, and that the public use associated with such trails and recreational facilities (and the private roads) will be present during various times, including but not limited to evening and nighttime hours.
- The CC&Rs shall include notification to each property owner of any restricted development areas (e.g. open space easements, utility easements, drainage easements) located on their property and within common areas. The notification shall inform future property owners of specific restrictions on use and development associated with each such area, including but not limited to prohibition of structures, impervious surfaces, parking and similar uses as required by these Conditions of Approval, EIR Mitigations, or by applicable utilities and agencies.
- Applicant shall relinquish "development rights" over portions of the site that are designated "Open Space Easements" on the Tentative Map. Improvements shown on the tentative map are allowed in such areas. "Development rights" over the open space shall be conveyed to the Town by grant deed or an open space conservation easement, in a form approved by the Town Attorney. The Town will not accept these properties for ownership or maintenance, except as specifically agreed to for lands intended as public open space/park, as described in the project approvals.

B. Federal and State Agency Requirements

The Corps, CDFW and RWQCB will provide permits for the proposed project; the USFWS has completed its BO. As a result, requirements have been and will be placed on the project with regards to wetland creation, monitoring and management and management of the open space for the CRLF and AWS. Relevant to this LTOSMP are the following.

- Conservation easement deed restriction over the open space
- Wetland Mitigation Plan (WMP) (on file with the Moraga GHAD)
- Exotic wildlife control program (attached hereto as Appendix A)

These are described in more detail below.

1. Conservation easement deed restriction

In conjunction with the development of 27 new single-family homes on the site, the developer will record a conservation easement deed restriction (CEDR) dedicating the open space area as permanent open space. The CEDR will generally prohibit any activity on or use of the open space area inconsistent with the purpose of the deed restriction. Specifically, the CEDR will prohibit:

- Unseasonable or supplemental watering except for habitat enhancement activities described in the Wetland Mitigation Plan (WMP);
- Use of herbicides, pesticides, biocides, fertilizers, or other agricultural chemicals or weed abatement activities, except weed abatement activities necessary to control or remove invasive, exotic plant species;
- Incompatible fire protection activities except fire prevention activities as described in the deed restriction;
- Use of off-road vehicles and use of any other motorized vehicles;
- Cattle grazing or other agricultural activity of any kind;
- Recreational activities including, but not limited to, horseback riding, biking, hunting or fishing;
- Residential, commercial, retail, institutional, or industrial uses;
- Any legal or de facto division, subdivision or portioning of the Reserve;
- Construction, reconstruction or placement of any new building, road, wireless

communication cell towers, or other improvement, or any billboard or sign except those signs specifically allowed; the two wireless communication cell towers currently operating on the site are exempt from this restriction;

- Dumping soil, trash, ashes, refuse, waste, bio-solids, garbage or any other material;

- Planting, gardening, or introduction or dispersal of non-native plant or animal species;

- Filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, gravel, soil, rock, sand or other material on or below the surface of the mitigation areas;

- Altering the general topography of the mitigation areas, including but not limited to building of roads and flood control work; except as permitted by the Section 404 Permit, or as necessary to implement the WMP;

- Removing, destroying, or cutting of trees, shrubs or other vegetation, except for (1) emergency fire breaks as required by fire safety officials, (2) prevention or treatment of disease, (3) control of invasive species which threaten the integrity of the habitat, or (4) completing the WMP;

- Manipulating, impounding or altering any watercourse, body of water or water circulation in the mitigation areas, and activities or uses detrimental to water quality, including but not limited to degradation or pollution of any surface or sub-surface waters; and

- Creating, enhancing, and maintaining fuel modification zones (defined as a strip of mowed land or the planting of vegetation possessing low combustibility for purposes of fire suppression).

The final CEDR is under review by USFWS and will be a part of the final approvals and Project Documents.

2. Long-Term Management Plan for the Wetlands

The long-term management plan for the wetlands on site (LTMP) has been incorporated into this LTOSMP and will ensure that the preserved and created wetlands are managed, monitored, and maintained in perpetuity consistent with the WMP and the CEDR. The LTOSMP would take effect after the Establishment Period, upon the wetland creation effort meeting its performance standards. By this point, the wetlands and others habitats in the mitigation areas should be self-sustaining and require little active management. Long-term management should consist primarily of monitoring, weed control, minor landscape maintenance, sediment or debris clearance, trash removal and access control. These actions are described in more detail below.

3. Exotic Wildlife Control Program

USFWS and CDFW have required control of exotic wildlife that may be the result of subdivision construction. An exotic wildlife control program has been developed and is a part of this LTOSMP. The program is contained in **Attachment A.** Exotic wildlife are known to prey on special status species, such as the AWS and CRLF, making control of these exotic species important.

IV. LTOSMP Goals

The goals of the LTOSMP are as follows.

1. Provide a functional structure, through the GHAD, capable of implementing the LTOSMP.

2. Provide for the management of fuel loads in the open space to reduce or eliminate potential hazards to developed areas.

3. Provide for the monitoring and maintenance of any geotechnical hazards within the open space to reduce or eliminate potential hazards to developed areas.

4. Provide for public access but manage that access to reduce or eliminate threats to the public and to neighboring homes.

5. Manage the preserved and created wetland and upland areas to maintain their biotic values, including the provision of habitat for the California red-legged frog (CRLF) and Alameda whipsnake (AWS).

6. Manage created wetlands and adjacent area such that they shall remain free of invasive weeds and maintain wetland hydrology.

7. Manage the Rheem Creek stream channel to ensure the flow conveyance is maintained.

8. Manage the riparian vegetation to ensure that is remains in adequate health.

9. Inform the Rancho Laguna homeowners as to the management of the open space and advise them of their responsibilities through the Covenants, Codes and Restrictions (CC&Rs) for the project.

Chapter V describes policies and procedures to implement the goals of the LTOSMP.

V. Policies and Procedures

A. GHAD Administration and Management

The Moraga GHAD was formed to address the prevention, mitigation, abatement, and control of geologic hazards on designated land within its boundaries which includes the Hetfield Estates, Palos Colorados, and Rancho Laguna developments. Members of the Moraga Town Council sit as the Board of Directors of the Moraga GHAD.

For the purposes of a GHAD, a "geologic hazard" as defined in California resources Code §26507, "means an actual or threatened landslide, land subsidence, soil erosion, earthquake, fault movement, or natural or unnatural movement of earth." Further, as a prudent landowner, a GHAD is able to acquire, construct, operate, manage, or maintain improvements on any land it specifically owns such as Open Space Parcels "A", "B", and "D" within the Rancho Laguna development.

As required by the Beverly Act, the Rancho Laguna development within the Moraga GHAD is governed by a Plan of Control (POC). Based on the scope of services within the POC and to allow for accumulation of an adequate reserve, an estimated budget was prepared to provide assessments that are adequate for the GHAD operations at the time the GHAD assumes responsibility for site monitoring, maintenance and repair activities. Figures from the estimated budget are used to prepare the Engineer's Report. The Engineer's Report documents the scope of the GHAD services; the assessment allocation for parcels within the district, the assessment amount with inflation adjustment, and the timing for levying the assessment.

The Moraga GHAD is financed through the collection of property tax assessments. In accordance with state law, each fiscal year the Moraga GHAD provides the county auditor with a listing of the parcels and the amounts to be charged to each parcel on the property tax roll. The district also provides the auditor with a resolution authorizing the placement of the charge on specific parcels. The county auditor must place the special assessment charge on a secured property tax bill.

Title to the Open Space Parcels owned by the Petitioner, will be conveyed to the Moraga GHAD as early as three years after issuance of the first building permit within the GHAD according to the provisions of the Ranch Laguna II Plan of Control. Prior to the transfer of maintenance and monitoring responsibilities to the GHAD, the petitioner or the current owner of the open space parcels will be responsible for all activities of the GHAD. Since long-term maintenance and stability of the GHAD property will protect the open space, which is an amenity that will benefit all of the current and future property owners, the funding for the GHAD's activities will be shared by all current and future property owners within the GHAD's boundaries.

B. Fuels Management and Grazing Management Plan

Grazing and Fuels Management Plan Principles:

1. Cattle grazing is not allowed in the LTOSMP area.

2. Grazing, when necessary as determined by the Qualified Biologist, will be conducted by sheep or goat grazing only.

3. Grazing management will employ flash grazing methodology in the LTOSMP.

4. Temporary electrified fencing will be used to contain sheep and goats within pastures, which will be flash grazed.

5. Grazing will not be allowed in any created or preserved wetland areas including: wetlands, creeks, or drainages.

6. A shepherd will be employed to watch over the grazing animal

7. Grazing will be consistent with Moraga-Orinda Fire District (MOFD) standards for vegetation management.

The Rancho Laguna property contains a significant amount of open space but the area potentially at risk from fire hazard is relatively small, consisting of about 26 acres in two, very defensible nodes. In general terms, to manage vegetation for fire control in the open space, the GHAD manager will rely primarily on mowing, thinning and grazing consistent with the MOFD's Standards for Vegetation Management. All mowing or mechanized vegetation removal be conducted under the supervision of a qualified biologist (Qualified Biologist). In addition, the landscaping will be fire-resistant and consistent with local requirements for fire safety.

More specifically, the GHAD manager will utilize the standards recommended by the Diablo Firesafe Council to manage fire safety. These standards provide for a variety of measures to control potential fire hazards, including the provision of firebreaks around the housing nodes, but in the case of Rancho Laguna will specifically prohibit grazing cattle on the property. However, the GHAD manager may choose to temporarily graze goats or sheep on the property to control invasive plants and fire hazards, in which case the goats or sheep will be fenced into a specific area and monitored. Whenever stock are used in grazing, fencing will be moved relatively quickly to provide for flash grazing that will promote native plants. Grazing will not be allowed at any wetlands, springs or drainages. A shepherd/livestock manager will be employed during grazing to ensure animals stay within pastures and to move animals into other pastures at the appropriate times. The shepherd/livestock manager will provide a water tub or trough with water from off-site or from a metered source on-site if water is necessary during grazing events.

The overall goals for the open space include fuels management and the promotion of native habitat, especially for CRLF and AWS dispersal habitat. The LTOSMP does not allow the use of cattle in grazing at this site because: (1) they need more water than sheep or goats and will "camp" in the riparian zone during the summer, eliminating any plants aside from coyote bush and thistles; (2) they are heavier than sheep and goats and heavily compact the soil and as the soils are heavy clays, additional compaction is problematic; (3) they primarily eat grasses and will not eat himalayaberry, artichoke thistle or the other problematic forbs; in fact, cattle grazing tends to create a dominance of those species and coyote bush as they are ungrazed and allowed to flourish.

The LTOSMP promotes the use of sheep and goats because: (1) they eat both grasses and forbs (himalayaberry, artichoke thistle or the other problematic forbs); and (2) they are relatively light and will not compact local soils to the same extent as cattle. Additionally, sheep and goat grazing is done with temporary electric fencing that is put up the day before the grazing begins and taken down when grazing is done.

The LTOSMP will promote "flash" grazing, that is, time-controlled, short duration, high intensity grazing in early spring and again in summer to promote natives and control exotics. This approach has been popularized among grazers and native plant ecologists by Dr. John Menke. His work on grazing has informed a good deal of our (and others) approaches to grazing. His approach is especially notable in the recently published Sotoyome Grazing Handbook. EBRPD also uses this approach at a number of their sites with very good results. In sum, flash grazing is used in early spring to reduce Residual Dry Matter loads among the non-native annuals while the perennials are relatively low-statured. A short summer graze may also be used to further reduce fuel loads at a time after the perennials have set seed.

C. Geotechnical Hazards

Monitoring and maintenance of geologic hazards within the Open Space Parcels are a GHAD responsibility and these activities are described in the Plan of Control for the Rancho Laguna portion of the Moraga GHAD. As listed in the Plan of Control, the Moraga GHAD will monitor and maintain the following site improvements.

- Slopes
- Reconstructed and unaltered creek channels
- Water quality/detention basin
- Bioretention cells and vegetated bio-swales
- Debris benches
- Emergency vehicle access (EVA) and maintenance roads
- Concrete-lined drainage ditches
- Storm drain system improvements
- Developer constructed retaining walls
- Subdrains and subdrain outlets

The GHAD intends to mitigate, prevent, abate or repair landslide or erosion hazards that could directly affect property within the GHAD boundary, as necessary to implement the Plan of Control. The Open Space Parcels will be subject to a deed restriction for development. It is anticipated that the Corps, RWQCB and CDFW will have enforcement rights for the deed restriction. After the GHAD has accepted transfer of monitoring, maintenance, and ownership of the Open Space Parcels, funding of responsibilities will be provided through the GHAD assessment. All activities in GHAD-owned open space parcels shall be subject to approval of the GHAD.

The GHAD will comply with the requirements of the Wetland Mitigation Program (WMP) and LTOSMP and will obtain necessary State and federal permits required before performing any maintenance that affects the bed, bank, wetlands, or riparian habitat associated with the creeks and the water quality/detention basins and associated improvements. (A copy of the WMP is on file with the GHAD.)

Under provisions of the Plan of Control, the responsible party for the open space parcels should be prepared to conduct a minimum of two inspections per year. In addition, the responsible parties' budget should provide for three or more inspections in years of heavy rainfall. Generally, inspections should take place in October, prior to the first significant rainfall; mid-winter as necessary during heavy rainfall years; and in early April at the end of the rainy season. The frequency of the inspections should increase depending upon the intensity and recurrence of rainfall.

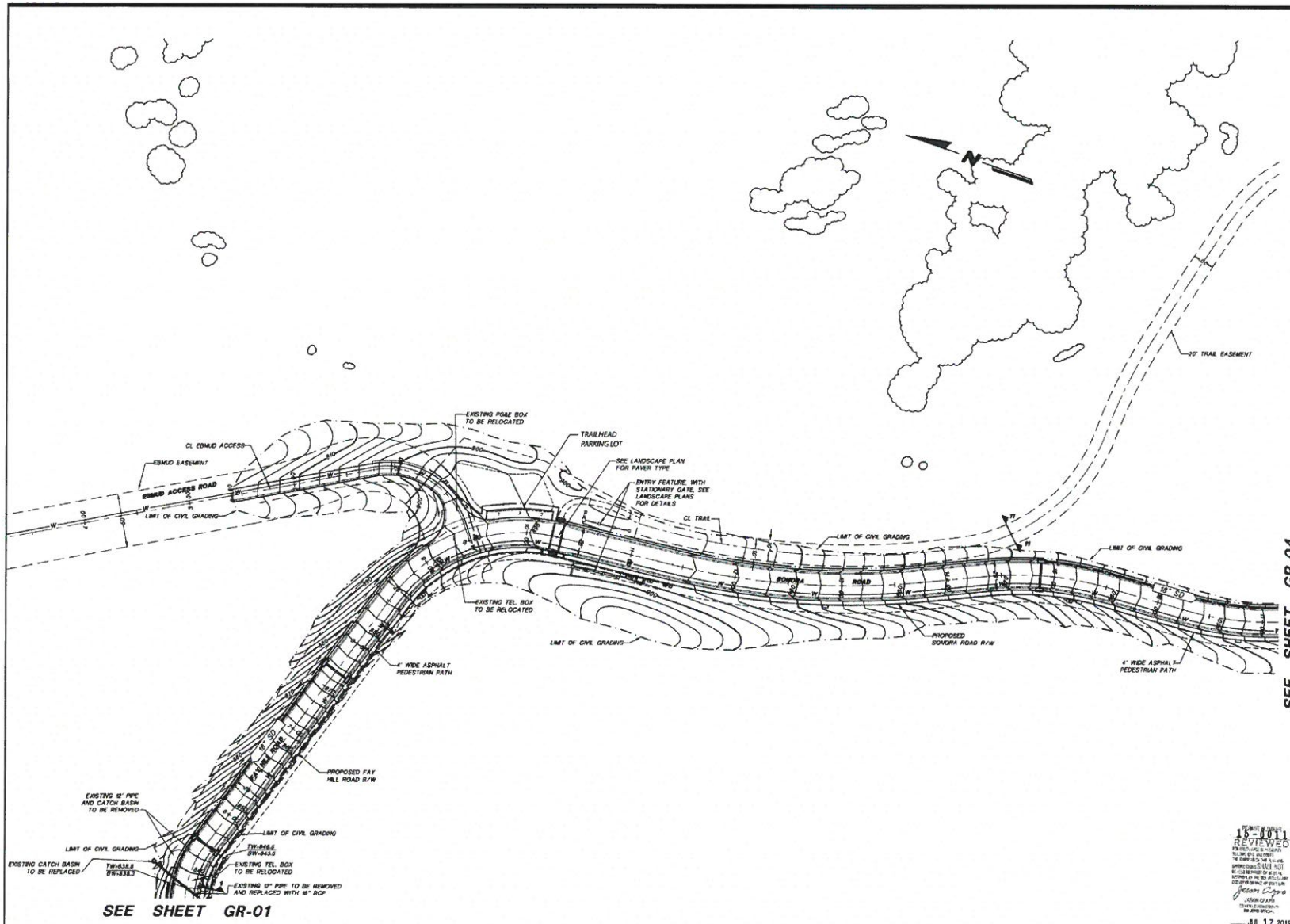
D. Public Access and Management

With the exception of access to the gravel surfaced parking lot and the public trail on Parcel "A", public access is not anticipated on the Open Space Parcels. As a responsible land owner the Moraga GHAD will, as described below, maintain the trail, informational signage, and fencing to limit public access to designated areas.

1. Trails

(1) Description

The public trail system will be located on Parcel "A" as shown on the Public Trail System Plan (**Figure 2**). The proposed trail will be approximately 1 to 3 feet wide and approximately 1.22 miles long (6,430 LF), including approximately 0.89 miles (4,720 LF) of existing informal trails that are currently used by the public. As part of the trail system, the applicant will install a kiosk at the trail head (**Figure 3**) describing the trail system and the use policies. A public footbridge will cross Coyote Creek near the southeastern portion of the property (**Figures 3 and 4**). Access to the public trail on Parcel "A" is from "E" Street near the intersection with Fay Hill Road. A fire truck access gate to gain entry to these trails is located off of the Lafayette-Moraga trail on the east side of the site (**Figure 2**). Parking at the trailhead includes an informal gravel surfaced parking lot (**Figure 5**). The parking lot, trail, and signage on Parcel "A" will be maintained by the



ZENTNER and ZENTNER
Land Planning and Restoration
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Phone: 510.622.8110 Fax: 510.622.8116

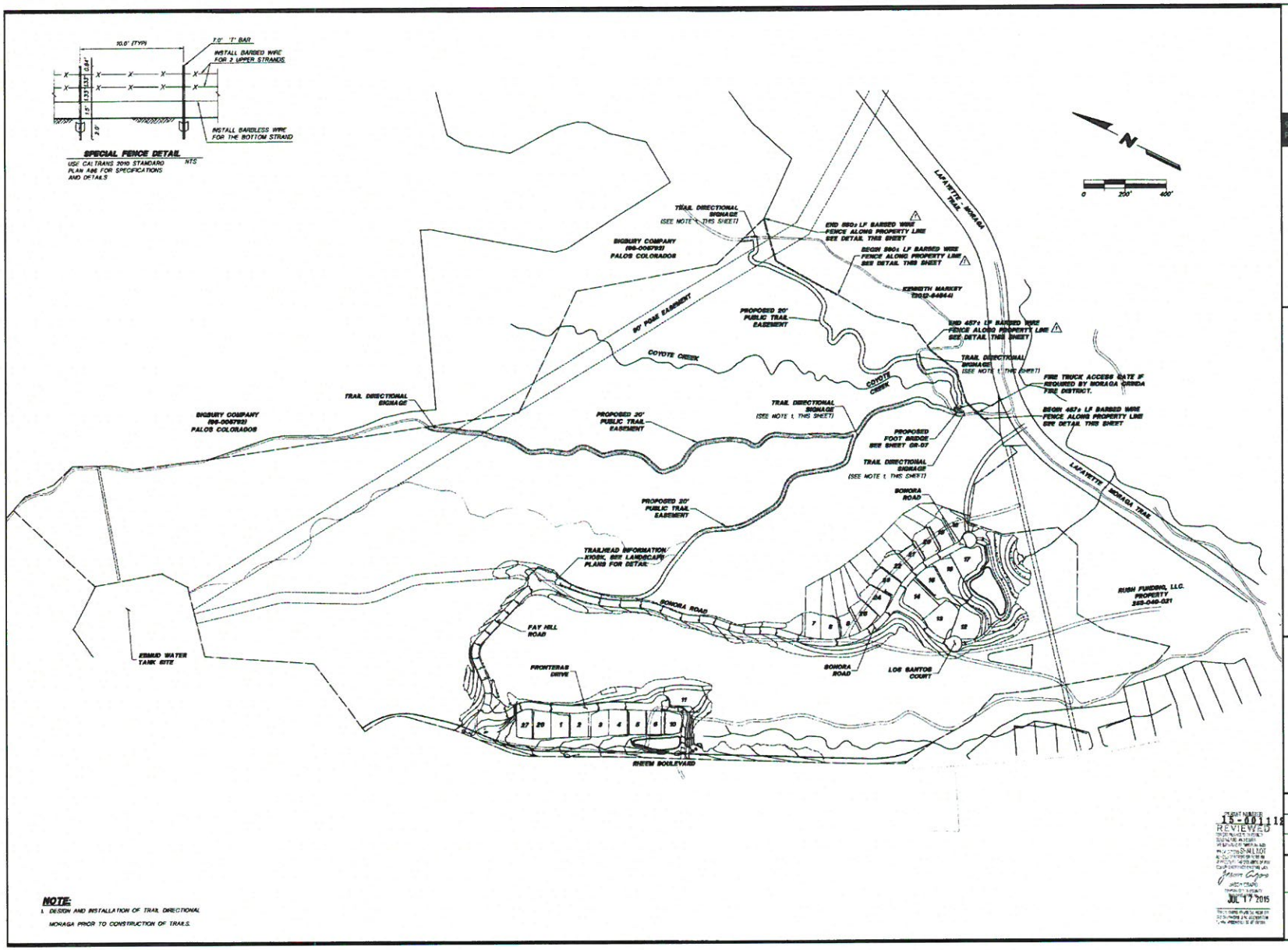
FIGURE 2
GR-03
Trailhead
Parking

RANCHO LAGUNA
MORAGA, CALIFORNIA

NOT TO SCALE

REVIEWED
15-001118
JUL 17 2015

BY: CJL
DATE: 02/18/2016, 03:02 pm
PROJECT: 980 Rancho Laguna
SOURCE: P/A Design Resources - Approved Grading Plans GR-03 7/17/15
FILE: D:\Graphic Designer\My Documents\PROJECTS\900-999\980 Rancho Laguna\Adobe\980 Grading GR-03 16-02-17



NOTE:

1. DESIGN AND INSTALLATION OF TRAIL DIRECTIONAL SIGNAGE TO BE APPROVED BY MORAGA PRIOR TO CONSTRUCTION OF TRAILS.

PLANNING NUMBER 15-00111
REVIEWED
JUL 17 2015

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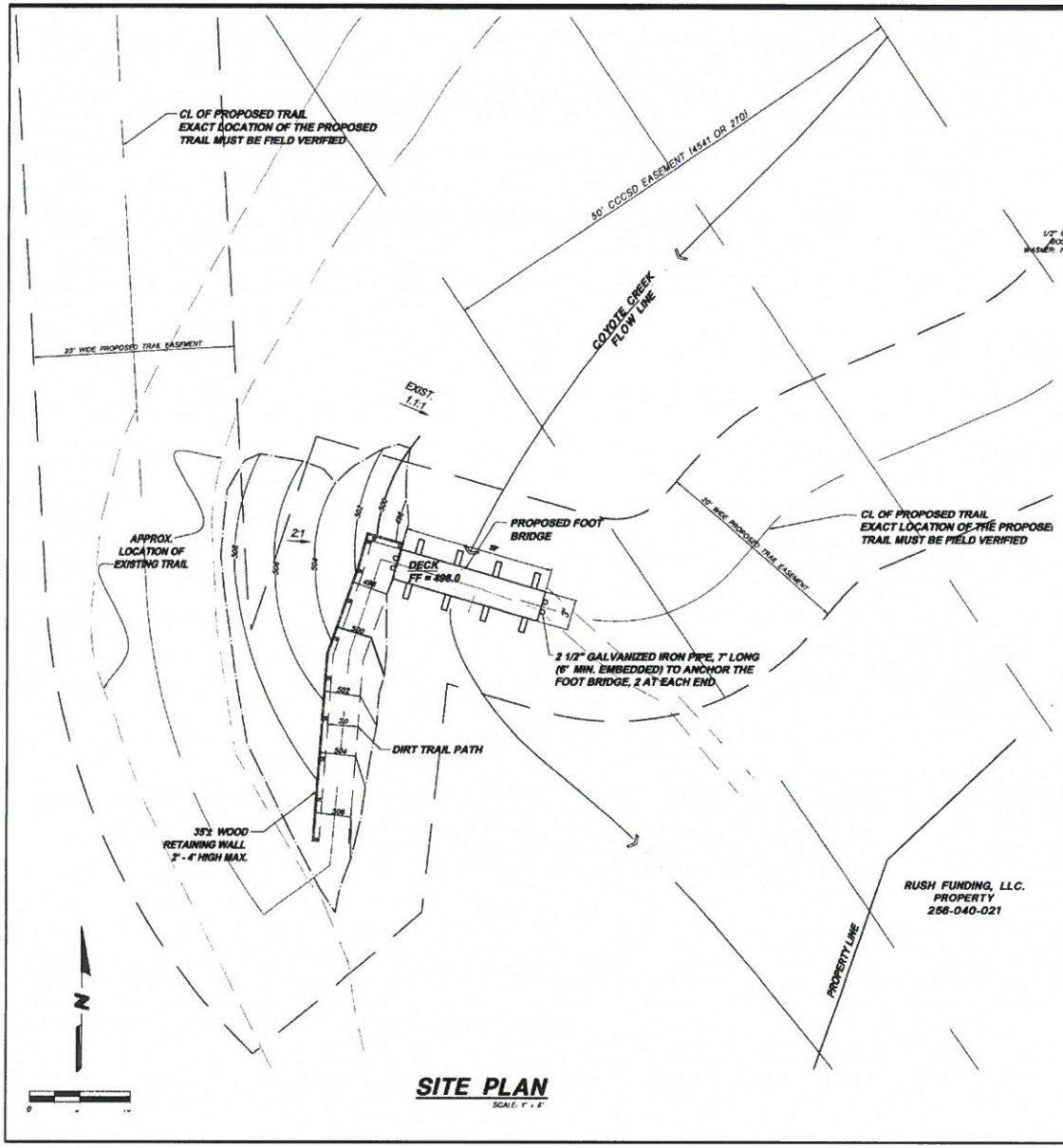
FIGURE 3

GR-06
Overall Site Plan
Public Trail
Exhibit

RANCHO LAGUNA
MORAGA, CALIFORNIA

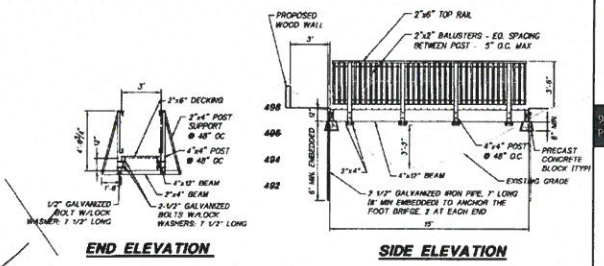
NOT TO SCALE

BY: CJL
DATE: 02/18/2016, 03:00 pm
PROJECT: 980 Rancho Laguna
SOURCE: P/A Design Resources - Approved Grading Plans GR-06 7/17/15
FILE: D:\Graphic Designer\My Documents\PROJECTS\900-999\980 Rancho Laguna\Adobe\980 Grading GR-06 16-02-17

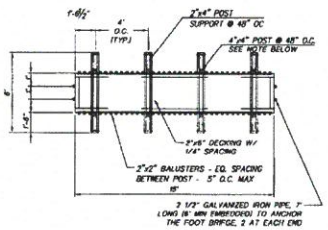


SITE PLAN

SCALE: 1" = 8'



END ELEVATION **SIDE ELEVATION**

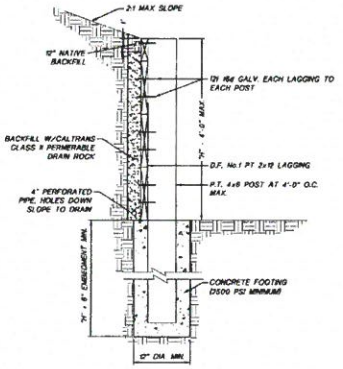


PLAN VIEW

FOOT BRIDGE PLAN

SCALE: 1/4" = 1'

NOTE:
USE DOUGLAS FIR NO.1 LUMBER FOR CONSTRUCTION OF THE BRIDGE BEAMS, RAILING AND DECKING.



WOOD RETAINING WALL

NOT TO SCALE

REVIEWED
JUL 17 2015

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FIGURE 4
GR-07
Footbridge and Retaining Wall

RANCHO LAGUNA
MORAGA, CALIFORNIA

NOT TO SCALE

BY: CJL
DATE: 02/18/2016, 02:58 pm
PROJECT: 980 Rancho Laguna
SOURCE: P/A Design Resources - Approved Grading Plans GR-07 7/17/15
FILE: D:\Graphic Designer\My Documents\PROJECTS\900-999\980 Rancho Laguna\Adobe\980 Grading GR-07 16-02-17

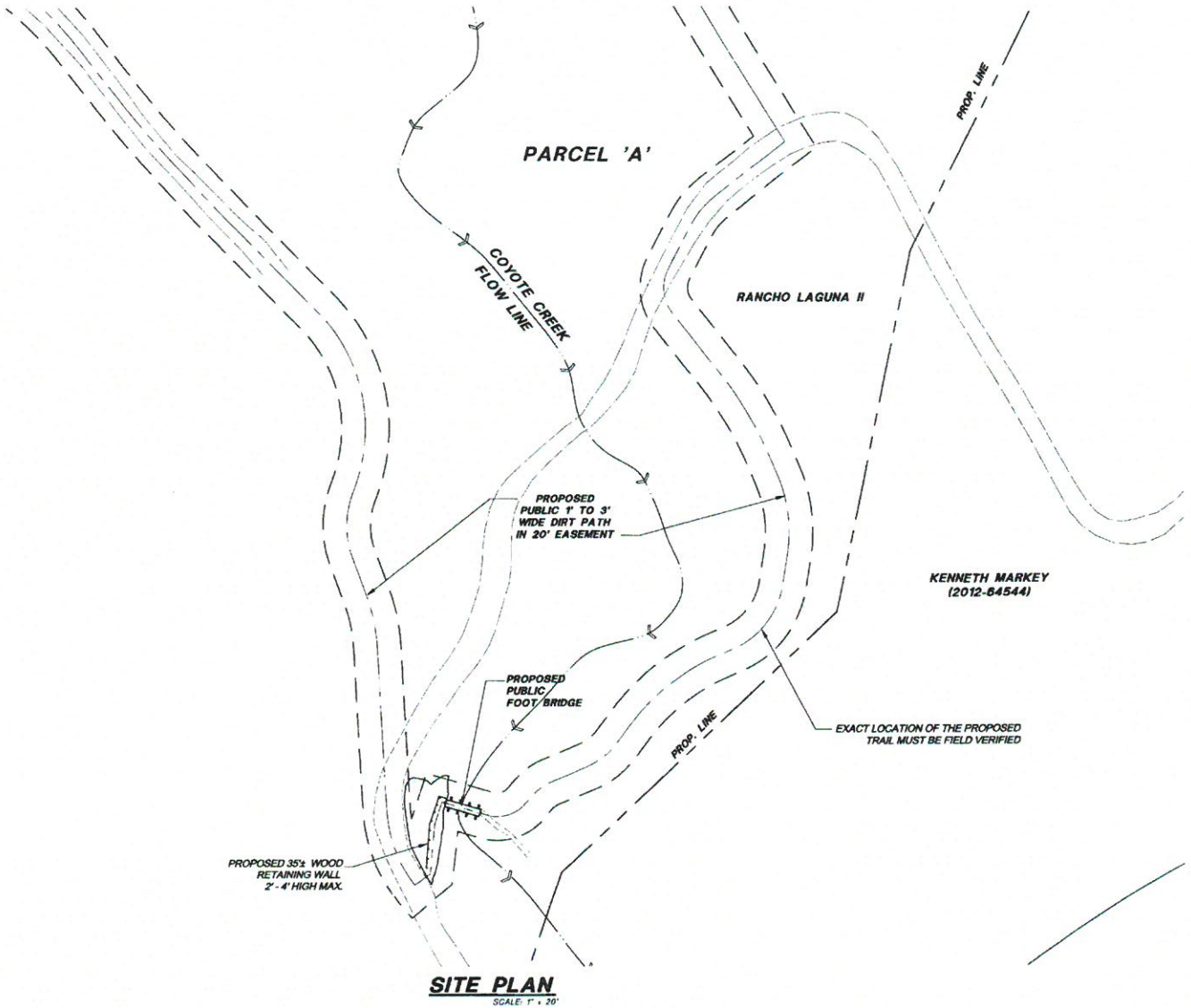

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FIGURE 5

GR-08
Coyote Creek
Flowline and
Public Footbridge

RANCHO LAGUNA
MORAGA, CALIFORNIA

NOT TO SCALE

BY: CJL

DATE: 02/18/2016, 02:57 pm

PROJECT: 980 Rancho Laguna

SOURCE: P/A Design Resources - Approved Grading Plans GR-08 7/17/15

FILE: D:\Graphic Designer\My Documents\PROJECTS\900-999\980 Rancho Laguna\Adobe\980 Grading GR-08 16-02-17

Moraga GHAD in accordance with the Public Trail System Plan and the adopted Plan of Control.

The trail will be approximately 1 to 3 feet wide within a 20-foot wide easement. Therefore, the trail will meander within the easement as necessary to avoid trees and other important native vegetation, and instead will primarily impact areas dominated by non-native grasses. In addition, approximately 70% of the proposed trail will follow the alignment of the existing informal trails on site that are currently used by the public. Several existing informal trails that duplicate the proposed trail system will be abandoned.

(2) Maintenance Measures

- Monitoring Trail Conditions
  The trails will be monitored as part of the routine Open Space monitoring. Monitoring will be conducted after large storms and at the end of the rainy season to check for safety concerns, weed invasions, and damage caused by natural events or public use.

- Safety
  Trail safety issues include, but are not limited to: erosion, rocks, branches or other debris. Trail hazards or other safety issues will be maintained on a regular basis as these issues are detected by monitoring.

- Weed Control
  As part of the routine site and trail monitoring, invasive vegetation will be identified and removed.

- Maintain Signage/Kiosks
  Kiosks and trail signage will be routinely monitored and repaired or replaced as needed.

2. Signage

(1) General Signage

Signage may be used to inform the general public of the location of the preserve area, as well as prohibited activities; see Attachment B for more detail. Sign placement and maintenance will fall under the scope of the GHAD. A sign of two feet by two feet in size will be placed along the adjacent sidewalk, preserve entrance, and trails.

Condition of Approval No. 238 provides that signage will be will be provided to:

- Designate trail access
- Inform users about the sensitive nature of the native habitats and wildlife
- Provide homeowner education and restrictions on pet access

In addition, the GHAD will provide and maintain signage at selected access point as required by the GHADs insurance carrier to maintain general liability insurance for open space Parcels "A", "B", and "D".

(2) Interpretative/Educational Signage

Sign content can be utilized to educate the public and Rancho Laguna development residents about their local natural resources. Educational signage may encourage stewardship and respect for the Open Space amongst visitors. Information may be included about sensitive habitats on-site, habitat restoration, native plants and animals, and contact information for the GHAD. Educational signage will be provided at specific points identifying the open space as important habitat for CRLF and AWS.

3. Fencing

Cattle grazing will not be allowed within the LTOSMP area. Grazing, when necessary, will be conducted using sheep or goats and will employ temporary, portable fencing and a shepherd to ensure that grazing is kept within the fenced pastures and that no impacts to wetlands or other jurisdictional areas, such as Coyote Creek, occur. Specifically, sheep and goat grazing is completed using temporary fencing that is put up the day before the grazing begins and taken down when grazing is done.

Maintenance of fencing on open space Parcels "A", "B", and "D" will be the responsibility of the GHAD. The GHAD manager will inspect the fencing during the scheduled site visits. If maintenance or repair of the perimeter fencing is required, it will be completed in a timely manner. The GHAD manager will note the condition of the open space fencing during monitoring site visits. All exterior or interior cross-fencing will be permeable to wildlife as will all decorative fencing also. Backyard fencing will not be permeable to wildlife.

E. Wetland, Stream and Upland Monitoring and Management for Biotic Values

As noted above, the WMP describes the monitoring and management activities within the preserved and created wetlands during the ten-year establishment period. After the wetlands have met specified performance standards, responsibility for long-term management and monitoring of the wetlands will be transferred to the GHAD and managed as detailed in this LTOSMP. As well, this LTOSMP provides for the management of the wetland, stream and uplands for other values, such as special status species, i.e., the CRLF and AWS. Together, these are referred to here as the site's "Biotic Values".

The land manager for implementation of the LTOSMP will be the GHAD. The following describes the management activities to be completed in the wetlands and uplands to preserve and enhance biotic values over the long-term. As noted earlier, the GHAD is

required to retain a Qualified Biologist to carry out the monitoring and management functions noted below.

The monitoring and management issues will be the following.

1. Monitoring of site conditions.

2. Weed control and management for native species, including CRLF and AWS habitat.

3. Maintaining flow conveyance and erosion control

4. Minimizing harmful intrusions

Maintenance of the irrigation system, a primary component of the WMP, will not be a long-term concern as irrigation will be halted after the third year post-construction.

Additionally, all LTOSMP work will include adaptive management techniques and, as the site evolves, these management tasks may be modified.

F. Adaptive Management

An adaptive management approach will be used to manage the LTOSMP area; i.e. where the monitoring program shows an area is tending towards an unsuccessful conclusion, the land manager shall take immediate action to correct that trend. Where these actions are relatively minor and/or already approved by the WMP and LTOSMP — *e.g.*, removal of large organic debris — the GHAD or Qualified Biologist will implement the corrective or remedial action. However, where these actions would require additional agency approval, the GHAD or Qualified Biologist must first seek and receive approval from the appropriate agencies.

Each monitoring report shall include any recommendations the biologist/ecological monitor feels are required to ensure the project meets the performance standards, including remedial actions requiring additional agency approvals as described above. If no comments are received within thirty days after submittal of an annual report, the biologist/ecological monitor shall proceed to implement the recommendations contained within the monitoring report, with the exception of any recommendations that include actions that are subject to additional regulatory approval. Such actions are not pre-approved by this mitigation plan.

Where remedial actions that require additional agency authorizations are required, the long-term manager will prepare a written report documenting the issue, the proposed solution and any appropriate alternative actions that might have less environmental impact. The long-term manager will submit the report to the appropriate regulatory agencies for review and approval. The long-term manager will then follow the processing

recommendations of the agencies. The following year's annual report will include a summary description of the actions taken and the results.

1. Monitoring site conditions

Objective: Monitor, conserve and maintain the Open Space including wetlands and listed species habitat and trail facilities.

Task 1.1: On a twice yearly basis, the open space will be walked by a project biologist (a Qualified Biologist as detailed in Section II.F) to qualitatively and quantitatively monitor the condition of the habitats. Topographic conditions, hydrology, erosion, sedimentation, vegetation cover and composition and invasive species will be noted in writing and mapped in reference to specific landmarks.

Task 1.2: During the bi-annual inspections, photographs will be taken from eight standard reference sites covering important parts of the open space, using four of the same reference sites used during the wetland Establishment Period. Site notes and photographs will then be documented and filed.

Task 1.3: After the first inspection of the year, typically in early spring, the project biologist will review the results of the inspection with the maintenance staff and develop a program and schedule of maintenance activities for the year. Specific maintenance goals to be addressed include: maintenance of native cover in the wetlands; enhancement of native cover in the uplands for CRLF and AWS dispersal habitat; and enhancement of CRLF dispersal habitat in the creeks.

2. Weed control

Objective: Monitor and maintain control over non-native, invasive species.

The open space wetlands are generally not threatened by invasive, non-native plants. Additionally, the wetland planting program, which emphasizes rhizomatous perennial graminoids such as creeping wild rye (*Leymus triticoides*) and Santa Barbara sedge (*Carex barbarae*) will likely provide for high native cover in the wetlands. Invasive aquatic weeds in these systems are relatively unusual and none have been observed within the LTOSMP area. However, plants such as giant reed grass (*Arundo donax*) and purple loosestrife (*Lythrum salicaria*) are not uncommon in the creek systems in the region and should be removed immediately following the methods below if observed.

The site uplands, and the dispersal habitat for AWS and CRLF, are currently threatened by existing populations of invasive non-natives. Nonnative invasive plants that threaten California's wildlands, have been categorized by the California Invasive Plant Council (Cal-IPC 2006). Invasive plants classified by Cal-IPC as High (severe ecological impacts on physical processes, plant and animal communities, and vegetation structure) or Moderate (substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure) will be

controlled within the wetland restoration area and uplands of the open space in order to prevent aggressive weeds from out competing native plant species for resources (e.g., space, water, nutrients, and light). These invasive weeds will be removed mechanically, if feasible. Note that all mowing or mechanized vegetation removal be under the supervision of a qualified biologist. If mechanical control is not effective or practicable, an EPA-approved systemic herbicide may be applied. Herbicides will be applied under the direction of a licensed applicator and shall be consistent with protection of wildlife potentially occurring on-site, e.g. CRLF or AWS.

The following table includes several species likely to be included on the list for control. These species will be closely monitored and control efforts implemented to meet specific criteria described below.

Table 1
Site List of Invasive Plants to be Controlled

Common Name	Scientific Name	Cal IPC Rating (threat)	Management Considerations
yellow Star thistle	*Centaurea solstitialis*	High	Present; colonizes disturbed areas.
Italian and bull thistles	*Carduus pycnocephalus, Cirsium vulgare,*	Moderate	Localized distribution; good potential for control.
artichoke thistle	*Cynara cardunculus*	Moderate	Present: large colonies present, especially in Coyote Creek watershed. Difficult to control
giant reed grass	Arundo donax	High	Not observed on-site; remove immediately if found
purple loosetrife	*Lythrum salicaria*	High	Not observed on-site; remove immediately if found

Based on site surveys, artichoke thistle is the most problematic invasive plant on the project site. Artichoke thistle has an aggressive root system which out-competes native vegetation for light, water, and nutrients. At high densities it becomes a monoculture that excludes shrubs, herbaceous plants, and annual grasses. The long-term goal for this species is eradication from the open space. This goal will take a number of years to accomplish and, even if accomplished, may require additional effort as new colonies become established from adjacent properties. This issue is addressed further below.

Artichoke thistle may resprout after chemical spraying and has a seedbank that lasts five years or more; yearly monitoring and repeat eradication are necessary. Studies show that a combination of herbicides and grubbing is the most effective for artichoke thistle control.

Any herbicides used shall, as noted above, be consistent with wildlife use of the site, including CRLF and AWS.

During the wetland Establishment Period, the applicant will work to eradicate artichoke thistle near the wetlands and to develop a systematic approach that will work over the long-term for the entire site; this approach will be termed the Artichoke Thistle Management Approach (ATMA). The LTOSMP envisions a relatively slow process by which patches of 200 to 300 sq ft of thistle are eradicated each year, replaced by native grasses and forbs, with annual monitoring to document success or failure, followed by adaptive modification of the ATMA.

Task 2.1: During the first annual open space survey noted in Task 1.1., the project biologist will survey the open space and the trail areas for infestations of non-native invasives; the general condition of the open space will also be noted at this time as well to describe compliance with the LTOSMP goals (see Task 1.3 for a summary of the Biotic Values goals. The project biologist will then provide the locations of noxious exotic infestations to the maintenance staff with appropriate recommendations for their control during the maintenance review noted in Task 1.3 above, including any modifications to the ATMA that appear justified. This survey and treatment effort will focus on the artichoke thistle that occurs on-site now. This will be partially eradicated during the Establishment Period but will require long-term control. However, this control can be focused on an incremental approach, *i.e.* eradicating a patch each year, replanting with natives and assessing the usefulness of the ATMA.

Task 2.2: Subsequent to the annual weed survey, the target infestation noted above shall be mown and spot-sprayed with an appropriate herbicide. Mowing and herbicides are not allowed in site wetlands. This work will continue on an annual basis until the artichoke thistle is eradicated on-site. However, additional work may be required in succeeding years should the thistle reappear. Where new thistle patches appear, they will be treated in accordance with the most recent version of the ATMA. Essentially, the LTOSMP adopts a "zero cover" goal for the thistle, although the plan recognizes that this goal will be only achieved over a long period of time.

3. Maintain flow conveyance and erosion control

Objective: Surface flow conveyance in the creeks and wetlands shall be maintained to ensure all habitats are inundated as planned and that flow impedance does not cause erosion or flooding of adjacent lands; as well erosion in the form of existing gullies will be addressed. Finally, to the extent consistent with project permits and permitting, Coyote and Rheem Creeks should provide useful dispersal habitat for CRLF and enhancement of the Creeks through revegetation and restoration during erosion control activities should emphasize this goal.

Task 3.1: On an annual basis, the project biologist will monitor the open space prior to the winter storm season to identify any impediments to flow in the wetlands and creeks. This may include downed trees or shrubs or drifts of organic and/or inorganic material

and will occur as part of the site review in 1.1 above. As well, the biologist will note appropriate gullies for treatment and the efficacy of past treatments.

Task 3.2: On an annual basis and prior to the winter's storms, any large organic or inorganic debris blocking flow will be removed from Rheem Creek. The largest likely organic debris would be a downed tree or shrub. This is unlikely to occur, however, for several decades until the planted trees get larger.

Task 3.3: On an annual basis and prior to the winter's storms, perform and required erosion control in Rheem Creek. In most years, this work will consist of gully repair, working from the headcut down, completing a small reach each year.

4. Minimize harmful intrusions

Objective: Minimize disturbance of the mitigation area by the public. Enhance the appreciation of wetlands, native habitats and native wildlife by K-12 students through educational activities.

Task 4.1: On an annual basis, the maintenance staff will maintain and repair the access signage. Any fences adjacent to or near the mitigation areas will be the maintenance responsibility of the GHAD.

Task 4.2: On an annual basis, the maintenance staff will collect and dispose of any trash and repair any trespass impacts.

Task 4.3: On an annual basis, the project biologist will organize and host a community planting and educational activity at the mitigation area. The goal of the activity will be to educate local residents as to the value of the habitats and the importance of their protection.

5. Reporting, Management and Administration

Task 5.1 An annual report summarizing the results of the site reviews and maintenance actions will be submitted to the GHAD, Corps, RWQCB, USFWS and CDFW by September 15 of each year. Significant biotic sightings (CRLF or AWS for example) or other issues will be reported. As well, any actions taken in the mitigation area or activities occurring in the area that are not consistent with the terms of the conservation easement shall be reported along with any enforcement actions taken.

Task 5.2 Administration costs (10% of the total of the above costs) include all other management costs.

6. Task Summary

Table 1 summarizes the tasks and time required for each task on an annual basis. Note that costs will be set through GHAD negotiations with individual contractor's and are not estimated here so as to provide flexibility for the GHAD in its negotiations.

The biologist/ecological monitor shall proceed to implement the recommendations contained within the monitoring report, with the exception of any recommendations that include actions that are subject to regulatory approval. Such actions are not pre-approved by this Plan.

Where remedial actions that require additional agency authorizations are required, the long-term manager will prepare a written report documenting the issue, the proposed solution and any appropriate alternative actions that might have less environmental impact. The long-term manager will submit the report to the appropriate regulatory agencies for review and approval. The long-term manager will then follow the processing recommendations of the agencies. The following year's annual report will include a summary description of the actions taken and the results.

Table 1
Annual Long-term Management Tasks and Time Requirements

Task	Task Description	Personnel	Frequency	Total hrs	Materials
1. Monitoring Site Conditions					
1.1	Site Reviews	PB: 8	twice annual	PB: 16	
1.2	Photography	Included in 1.1			
1.3	Maintenance Recommendations	PB: 1	Once annual	PB: 1	
2. Weed Control					
2.1	Map weeds	PB: included in 1.1	annual	PB: included in 1.1	
2.2	Weed Control	MS: 4 L: 4	annual	MS: 4 L: 4	$100
3. Maintain Flow Conveyance					
3.1	Monitor flow conveyance	PB: included in 1.1	Annual	PB: included in 1.1	

3.2	Remove flow impediments	MS: 4 L: 4	Annual	MS: 4 L: 4	
4. Minimize Harmful Intrusions					
4.1	Maintain access signage	MS: 2	Annual	MS: 2	$100
4.2	Trash Collection	L: 2	Annual	L: 2	
4.3	Educational program	PB: 4	Annual	PB: 4	$200
5. Reporting and Administration					
5.1	Annual report	PB: 4	Annual	PB: 4	$50
5.2	Administration	10% of subtotal	Annual		

PB: Project Biologist; MS: Maintenance staff; L: Laborer

Attachment A

Exotic Wildlife Control Program

ZENTNER and ZENTNER
Land Planning and Restoration

Rancho Laguna

Wildlife Control Plan

Zentner and Zentner
February 2015

I. Summary

The approximately 179-acre Rancho Laguna property is located in the Town of Moraga in Contra Costa County (**Figure 1**). The property includes two narrow valleys: Coyote on the east and Rheem on the west, divided by a steep-sided ridge. The vegetation is dominated by non-native annual grasses with occasional patches of oak woodlands or coyote bush scrub. Wetlands are generally confined to a seasonally wet swale running along the west edge of the property on old fill used to buttress the adjacent Rheem Blvd. Coyote Creek runs through the entirety of Coyote Valley on-site while Rheem Creek is confined to the lower section of Rheem Valley.

The proposed project will build 27 homes in two clusters covering 26 acres, about 15% of the total property. This area is referred to as the "development site." The remainder of the property, about 162.63162.63 acres, will be preserved, including Coyote and Rheem Creeks.

II. Federal and State-listed Species

The Rancho Laguna property was assessed for the presence of federal- and state-listed species as part of the project environmental review, and the development site was subsequently assessed by Zentner and Zentner in 2014 to determine whether the project may affect federally listed species. These analyses focused on two species: California red-legged frog (CRLF; *Rana draytonii*), federally listed as Threatened, and Alameda whipsnake (AWS; *Masticophis lateralis euryxanthus*), federally and state-listed as Threatened. No other federally-listed species are known from within 5 miles of the development site. No federally designated Critical Habitat for these or any other species is present.

A. California Red-legged Frogs

The nearest CRLF to the Rancho Laguna development site was found in 1994 in Las Trampas Creek, about 1 mile from the development site. This location is well downstream of the development site, and major creeks such as Las Trampas are not highly suitable for CRLF as flooding tends to disperse the adults, juveniles and egg masses. Two other CRLF sightings occurred in 2001 in two ponds in the upper watershed of Coyote Creek on the Palos Colorados project site, about 1 mile from the development site in a straight line. However, the ponds are in a different watershed than the development site, well upstream within that watershed, and are separated from the development site by the steep ridge noted above. As well, Coyote Creek downstream of these ponds is not suitable habitat as it is steep, lacks ponds and has almost no associated wetland vegetation.

The development site does not contain CRLF breeding habitat. The southern portion of the development site is near the top of the ridge and the habitat is entirely non-native annual grassland. As well as lacking wetlands, waters or other aquatic habitat, there are no squirrel burrows at this location which might possibly serve as CRLF refuge areas. The western portion of the development site is on the slope and flats adjacent to Rheem Blvd. This area includes about 0.5 acres of seasonal wetlands, but these are shallow and do not pond sufficiently to support breeding habitat.

An earlier analysis found that CRLF are unlikely to move through or occur at the development site due to the lack of an upstream habitat connection to occupied habitat; relatively sparse vegetation, and the lack of plunge pools in Rheem or adjacent Coyote Creeks to provide breeding or summering habitat (Jennings 2003a). Jennings also concluded that the entire 179-acre Rancho Laguna property was not likely to support a resident population of CRLF due to the lack of ponds on-site, the absence of ponds or plunge pools in or near either of the two creeks, the limited bank and emergent vegetation on both creeks, the fluctuating water levels of both creeks, and the presence of abundant predators. In short, while CRLF could occur on the property, they are not likely to occur in the development area. They could move through the Coyote or Rheem Creeks though during summer and fall movement periods. Accordingly, ensuring the development does

not encourage CRLF predators (skunks, raccoons and domestic cats) is important.

B. Alameda Whipsnake

The nearest AWS sightings to the Rancho Laguna development site are about 4 miles away to the east and west. The locations cited in the CNDDB records are a good distance from the development site and are separated from the development site by suburban housing and other movement impediments.

The development site does not contain suitable AWS breeding habitat. As noted above, the southern portion of the development site is near the top of a grassy ridge and the habitat is entirely non-native annual grassland, without rock outcrops or shrub habitats which are the AWS preferred habitat. The western portion of the development site is on the slope and flats adjacent to Rheem Blvd. As noted above, this area includes about 0.5 acres of seasonal wetlands but generally this area is annual grassland also without rock outcrops, scrub habitats or other preferred habitat for AWS.

The overall 179-acre Rancho Laguna property is not highly likely to support AWS breeding due to the absence of dense thickets of scrub vegetation and suitable rock outcrops on any part of the site (Jennings 2003b). In addition, grazing has kept the grasses and other vegetation very low, reducing the availability of cover for AWS. As with CRLF, while AWS could occur on the property, they are not likely to occur in the development area. They could move through the southern part of the site though during movement periods. Accordingly, ensuring the development does not encourage AWS predators (skunks, raccoons and domestic cats) is important.

III. Wildlife at Issue

As implied by the discussion above, the Rancho Laguna development project has potential to increase problematic wildlife populations. The primary wildlife species of concern are raccoon (*Procyon lotor*), *striped skunk* (*Mephitis mephitis*), and feral and domestic cat (*Felis catus).* They may be attracted to garbage or other attractants generated by the new homes and then frequent the site, using the creeks as a water source. They could then prey on the listed species and other wildlife such as song birds.

A. Raccoons

Raccoons prefer forest areas near a stream or water source, but have adapted to various environments. Raccoon populations can get quite large in urban areas, owing to the few predators and human-supplied food.

Raccoons are omnivorous, their main diet are aquatic inverts and vertebrates, such as – clams, crayfish, frogs, fish and snails. They also eat insects, slugs, dead animals, birds and bird eggs, as well as fruits, vegetables, nuts and seeds.

Dens are used for shelter and raising young. They include abandoned burrows dug by other mammals, areas in or under large rock piles and brush piles, hollow logs, holes in trees, attics, crawl spaces, chimneys, and abandon vehicles.

A raccoon's search for food may lead it to a vegetable garden, fish pond, garbage can, or chicken coop. Its search for a den site may lead it to an attic, chimney, or crawl space. The most effective way to prevent conflicts is to modify the habitat around the new homes so as not to attract raccoons.

B. Striped skunk

Striped skunk is found in a variety of habitats including woodlands, forests, wooded ravines, and grassy plains. Over time, they have become more prominent in urban areas as well as in suburban neighborhoods. The striped skunk is a docile creature and often ignores other animals, except during breeding season.

Striped skunks are omnivorous and will change its diet as needed. They primarily feed on insects such as grasshoppers, crickets, beetles, larvae and bees. Other invertebrates may include worms and crayfish. They are also known to consume small mammals such as voles, as well as the eggs and young of ground nesting birds, amphibians, reptiles, carrion, fish, corn, and berries.

Skunks use underground dens year-round for daytime resting, hiding, birthing and rearing young. Dens are located under wood and rock piles, building, porches, concrete slabs, culverts, drainpipes and in standing or fallen hollow trees.

The most effective way the project from attracting skunks is to modify the habitat around the new homes so as not to attract skunks.

C. Feral, stray, and outdoor cats

A feral cat is a domestic cat which has been born in the wild or has reverted to the wild and is not tame. Members of a feral cat colony can include cats that have strayed after living with human caretakers as well as their offspring, which have had little human contact or none at all. Stray cats were either indoor or outdoor cats at one point but their owners abandoned them and now they roam free, feeding where they can on either wildlife or food left out by strangers. Outdoor cats spend most of their time outside but have a home to go to for food and shelter; they are comfortable around people and may sometimes kill wildlife out of instinct.

Domestic cats have the ability to live in almost any environment. Cats prey upon small animals; some of the small animals that cats prey upon are rare and in danger of extinction (USFW, 2009). Feral and stray cats pose some health and safety risks to both humans and wildlife.

Domestic cats can be a nuisance and cause damage in many of the same ways that wild animals do, such as killing native animals. The most effective way to prevent conflicts is to modify the habitat at the site so as not to attract cats.

IV. Wildlife Control

Wildlife control at Rancho Laguna will depend primarily on the design of the individual homes and the Covenants, Codes and Restrictions (CC&Rs) for the project.

A. Home Design

The homes will have features that reduce the potential for skunks, raccoons and similar wildlife to exploit local resources. These include the following.

- Common space irrigation will be drip irrigation, eliminating any potential over spray and subsequent ponding that can provide water for skunks, raccoons and similar wildlife.
- Homes will have fenced back yards and garbage cans will be kept behind fences.
- The homes will not provide access to denning sites, e.g. attics, sheds, etc.

B. CC&Rs

CC&Rs are created and enforced to help communities continue to support the homeowner's investment and to protect property. CC&Rs require universal compliance among all home owners and residents. The project will include CC&R's to eliminate potential wildlife issues, as described below.

- No feeding of wildlife will be allowed, with the exception of bird feeders.
- All garbage cans will be kept secured and lids will fasten to the garbage cans and eliminate the potential for skunks, raccoons and other wildlife to remove the lids.
- All pets will be fed indoors; no pet food will be allowed outdoors.
- All pet doors will prevent skunks, raccoons and similar wildlife from entering pet doors. This may include electronically activated openers on pet collars.
- Any compost facility will be kept secured against skunks, raccoons and similar wildlife. These may include commercially available raccoon-proof composters.
- All pet cats will be kept indoors.

These measures will also help to control non-native rat populations, which can also be problematic for native wildlife.

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EXHIBIT I

Rancho Laguna Wildfire Hazard Assessment and Plan
April 15, 2015

EXHIBIT I

WILDFIRE HAZARD ASSESSMENT AND PLAN

for

Rancho Laguna

SummerHill Homes
Moraga, CA

Prepared by
Wildland Res Mgt.
Reno, NV
June 5, 2015

Approved by:

Kathy Leonard 7-8-15
Fire Marshal
Moraga-Orinda Fire District

Table of Contents

APPENDICES

WILDFIRE HAZARD ASSESSMENT & PLAN
Rancho Laguna
Rheem Blvd., Moraga, California

Summary

This Wildfire Hazard Assessment and Plan ("Plan") for the Rancho Laguna II residential subdivision ("Project") meets the requirements established by the Moraga-Orinda Fire District Ordinance 13-01 (2010 California Fire Code). The Plan addresses the following items related to wildfire hazards:

- Provision of access for fire apparatus,
- Provision of water supply for fire protection, and
- Provisions to control the spread of fire.

The Plan also is intended to meet the Town of Moraga's Conditions of Approval for the Project to provide a Fire Protection Plan as part of the Open Space Management Plan. The Plan will ensure that:

- The Project design is consistent with the Town's emergency evacuation plan.
- The water supply is adequate for fire suppression, in terms of flow, pressure, hydrant location and compliance with fire codes.
- Emergency response vehicles have full access to the site.
- Residences have fully compliant fire sprinklers.
- The project shall pay fire flow tax.

The Plan describes existing conditions and proposed fuel modifications that will direct maintenance of landscaping and open space areas. The Plan describes actions needed to maintain fuels (both vegetative and structural) in a fire-safe condition. The proposed fuel modifications will decrease fire intensity, facilitate fire suppression, and reduce property loss. The Plan recommends development and maintenance of a defensible space zone for 100 feet from each structure and 10 feet from roadside edge to help ensure fire safety. Open space management will prevent shrubby growth in the grassland areas.

The Plan designates areas to be cultivated regularly and requires areas of irrigated landscaping using fire resistant species. The Plan complies with the Town of Moraga's conditions of approval for the mitigation measures regarding erosion control, biotechnical slope stabilization and preservation of woodland and riparian vegetation.

To make vegetation management easier to implement, the Plan does the following:

- Delineates vegetation fuel management zones.
- Establishes appropriate treatments for each zone.
- Sets record-keeping and reporting requirements and mechanisms for enforcement.

In addition, the Plan provides information on fire-resistant and drought-tolerant landscaping so that homeowners can protect their properties against wildland fire. This Plan also addresses fire-resistant design and construction, based on the Moraga-Orinda Fire District Ordinance 13-01.

The Plan will be implemented by the Project Developer, the Moraga Geologic Hazard Abatement District ("GHAD"), the Homeowners Association, and the individual homeowners. The Project Developer will be responsible for implanting the Plan during construction and until lots are conveyed to individual owners and the Homeowners Association. After the Project Developer conveys the open space areas to the GHAD, the GHAD will be responsible for implementing the Plan with regard to the open space areas and the unfenced back areas of the private lots. The Homeowners Association will be responsible for implementing the Plan in the common area lots, and individual homeowners will be responsible for implementing the Plan and within the front yards and fenced areas of their private lots.

Under current environmental conditions and with mitigation measures in place, fire behavior at the Project site will be generally less than two-foot flame length within 100 feet of a structure.

– Section One –
EXISTING CONDITIONS

A. PROJECT SETTING

1. General Location of Project

The 178.9-acre project site is located in the Town of Moraga bounded by Rheem Blvd to the west, single-family residences to the southwest, St. Mary's Road and Las Trampas Creek to the south and southeast, and existing open space to the north and east.

2. Description of the Project

The project consists of 27 new single-family homes on approximately 17 acres and dedicated open space on approximately 162 acres. The site consists of a grassy prominent steep-sided ridge and two narrow valleys. The east-facing slopes are covered with expanses of grass, with woodlands; the west-facing slope is grassy with woody vegetation in narrow drainages and along Rheem Blvd. Ten of the new homes will be located at the base of the slope near Rheem Boulevard, and seventeen of the homes will be located higher on the slope on the southeast side of the main northwest-southeast ridge than runs through the site.

Access is provided by one road (Fay Hill Road) off Rheem Blvd. Fronteras Drive serves 10 homes a short distance off Rheem Blvd. Fay Hill Road rises up the steep slope to Sonora Road, which traverses the ridgeline approximately one-half mile south to the site of seventeen homes on Sonora Road and Los Santos Court. All roads are at least 20 feet wide, and Fay Hill Rd is 26 feet wide in some places. An emergency vehicle access easement runs from the southern end of Fronteras Drive to Rheem Blvd. Emergency vehicle access inside the open space is provided by a series of old ranch roads and a 20-foot-wide public trail easement. These access routes link adjacent open spaces and development, starting at the staging area near the intersection of Fay Hill Road and Sonora Road.

The Moraga Geologic Hazard Abatement District ("Moraga GHAD" or "GHAD") will be responsible for long-term management of the open space, guided by an Open Space Management Plan. Moraga GHAD responsibilities, as provided in the Open Space Management Plan, will begin a minimum of three years after issuance of the first building permit within the Rancho Laguna development. Prior to the Moraga GHAD acquiring monitoring, maintenance, and ownership responsibilities as provided in the Plan of Control, GHAD tasks within the Open Space Management Plan will be the responsibility of and funded by the developer.

Figure 1. *Project Context Aerial and Site Plan*

Structures will generally be constructed with ignition-resistant design and materials. Landscaping is guided by Homeowners Association Design Review Guidelines or other

similar review process. For the lots along Sonora Road and Los Santos Court, back yard fencing will use non-combustible material such as wire (with wood posts), but side fencing will be built with solid wood and wood lattice for the top one foot. The lattice will be constructed of timber at least one-inch nominal thickness (or other non-combustible material) within five feet of the outside walls of the homes. For the lots along Fronteras Drive, the back and side yard fencing will be built with solid wood and wood lattice for the top one foot.

3. Description of Adjacent Properties

Adjacent properties include both developed and undeveloped parcels. Immediately east of the Project site is the dedicated open space of Palos Colorados. The southeastern border of the Project site abuts undeveloped open space. Single family residences are located adjacent to the southwest side of the Project site (along Rheem Blvd) and approximately 350 to the northwest of the Project site (off Buckingham Drive). In addition, backyards of single family homes on Birchwood Drive comprise the top of the slope to the west of the project. Multi-family structures are located to the west of Rheem Blvd., off Via Barcelona and Woodminster Drive. .

B. REGULATORY CONTEXT

1. Fire Safety Regulations - Ordinance No. 13-01

The Project is within the service area of the Moraga-Orinda Fire District ("MOFD"). MOFD has adopted the California Fire Code, 2013 edition, including Appendix Chapters A, B, C, E, F, G, H, I, J, and the International Fire Code, 2012 Edition, with certain amendments. (See MOFD Ordinance 13-01.)

The Project design complies with the applicable provisions of the California Fire Code, 2013 edition, including Appendix Chapters A, B, C, E, F, G, H, I, J, and the International Fire Code, 2012 Edition. The Project is not within a High Fire Hazard Severity Zone and therefore is not subject to California Fire Code Chapter 7A.

The MOFD Fire Marshal has reviewed and approved the access for fire apparatus and the water supply for fire protection for the Project. The Fire Marshal approved an exception to the general water supply standards to allow a fire flow of 1,500 gpm from one adjacent hydrant. The Project otherwise complies with all MOFD standards regarding fire access and water supply.

A copy of the Fire Marshal's approval is attached as Appendix E.

2. Exterior Fire Hazard Control

The 2014 Exterior Fire Hazard Control Standards for Vegetation Management requires all landowners with parcels smaller than one acre to:

- Keep grass shorter than 3 inches during the fire season.

- Maintain trees adjacent to or overhanging structures free of dead or dying material.
- Remove any portion of a tree within 10 feet of an outlet of a chimney or stovepipe.
- Remove any lower branches of tree up to 6 feet in height above ground.
- Remove hazard trees[1].
- Maintain an area 15 feet from structures clear of combustible materials.

The same MOFD standard requires that the open space parcel comply with a different set of vegetation management treatments:

- Parcels will be treated to create 30-foot-wide firebreaks and crossbreaks, to divide the parcel into approximately 5-acre sections.
- Active pastureland may have 15-foot-wide firebreaks and crossbreaks (rather than 30-foot wide) if the height of the grass during summer months is kept to 3 inches or less.

3. Other Conditions and Restrictions

Conditions of approval relating to conservation easements as well as environmental conditions and ownership of open space can affect the fire hazard by placing limitations on maintenance, or by creating an interface between developed and wildland fuels.

The Town of Moraga imposed conditions of approval on the Project. These conditions state that the Moraga GHAD will be responsible for open space management, that it may use grazing as a management technique except for certain locations. In addition, several deed restrictions pertain to wildland fire hazard reduction and open space management. Neither the conditions of approval nor the deed restrictions would prohibit implementation of this WHAP or compliance with State and local codes regarding fire management.

4. Easements

A 150 KV electrical transmission line traverses the project site east of the developed lots. Electrical power lines can be a source of ignition. The distribution lines are to be underground, and therefore not an ignition source. In response, the easement for this tower entails a requirement that the vegetation around the tower is kept free of vegetation. PG&E is required to ensure that the vegetation is managed each year around each tower before the fire season starts – usually ten feet from the tower in all directions, if certain fire producing equipment is on the tower.

[1] Hazard trees are those that are at risk of falling and causing damage or that are dead or dying and beyond saving with pruning.

C. SITE-SPECIFIC ASSESSMENT OF FIRE HAZARD AND RISK

The site-specific assessment of the project's fire hazard is based upon an analysis of the fuels, weather and topography that influence fire behavior. The potential effectiveness of fire suppression efforts as influenced by access and water supply on the project site is included in the analysis.

1. Wildland Fuels on the Project Site

The vegetative fuels on the project site are annual grasses (Fire Behavior Prediction System [FBPS] Fuel Model #1, oak woodland (FBPS Fuel Model #8) and patches of north coastal scrub (FBPS Fuel Model #5). Grass covers the vast majority of the site and most of the areas closest to structures. Oak/bay woodlands are located below and east of structures on Sonora Road and deep in drainages on east-facing slopes elsewhere in the open space. Shrubby fuels, comprised of linear strings of willows in moisture areas in lower elevations or coyote brush in patches on steep uplands sites and along Coyote Creek and Rheem Blvd., are a significant component of the fuel complex. Figure 2 is a map of the different types of fuels on the project site.

2. General Weather Information

Weather conditions significantly impact both the potential for fire ignition and the rate, intensity, and direction in which fires burn. The most important weather variables used to predict fire behavior are wind, temperature, and humidity.

Wind increases the flammability of fuels both by removing moisture through evaporation and by angling the flames so that they heat the fuels in the fire's path. The direction and velocity of surface winds can also control the direction and rate of the fire's spread. Winds can carry embers and firebrands downwind. These burning fuels can ignite spot fires that precede the primary front. Gusty winds cause a fire to burn erratically and make it more difficult to contain.

The winds that create the most severe fire danger, known as the "Santa Ana" or "Diablo" winds, typically blow from the northeast. However, winds from the west are also likely to cause unacceptable damage. Another worst-case scenario is a fire driven by a northwest wind that follows a northeast wind. Because the northeast wind is normally associated with low humidities and high temperatures, it dries the fuels. At the end of this "Santa Ana" or "Diablo" wind condition, the fog often moves quickly shoreward,

Although summertime temperatures are usually quite warm (75 to 85° F), it is common for the fog to roll in during the early evenings and creep over the ridge tops to the site. Thus, proximity to the bay often creates a pattern of hot days and cool nights. Fog also sometimes keeps summertime temperatures cool in the project site.

The wind normally blows from the west but the most severe fire conditions occur in association with strong north or northeast winds. Under these conditions (common in the fall), humidities drop to 10% and temperatures rise to over 100° F.

In addition, occasional episodes consisting of several still, stagnant days formed by stationary highs occur during summer months. During these periods—characterized by continuous high temperatures and low relative humidities—fuels dry to a National Fire Danger Rating System rating of over 81 for the Burning Index, indicating extreme resistance to fire control. This overall weather pattern creates extremely low humidities and enhances the possibilities of ignition and extreme fire behavior.

4. Terrain on Project Site and Surroundings

The main topographic feature on the project is the ridge that runs from the EBMUD water tank at 950± foot elevation to the southern end of Sonora Road at 700± foot elevation. The side slopes on both aspects are quite steep, exceeding 50 percent slope in most locations. The two main valleys run north to south, which could funnel wind during high fire danger episodes when hot, dry winds blow from the north. This could spread fire from an ignition north of the project to structures on Sonora Road.

In most frequent weather patterns with winds form the west, ignitions along Rheem Blvd. could advance quickly up hill to block Sonora Road, aided by steep terrain and westerly winds.

5. Predicted Fire Behavior of Project Site and Surroundings with No Mitigations

Grasslands pose the greatest ignition potential as they are readily ignited during the fire season. Grasslands also burn with longer flame lengths, reaching 12 to20 feet on steep slopes and burn with spread rates that challenge containment efforts. However, grassy fuel types are among the easiest fuel types to control since they are easily extinguished and burn quickly with a low total heat output.

Patches of shrubby fuels are not currently near any area of the planned development. Shrubby fuels burn with greater intensity than grasslands and are harder to extinguish. However, this fuel type is harder to ignite. In fact, willows tend to maintain higher foliar moisture throughout the fire season and rarely burn even when a fire advances into it. Regardless, if dead material is allowed to accumulate, it will burn with great intensity after a prolonged dry, hot spell. The biggest threat posed by these shrubby fuels is to provide an avenue for fire to reach oak canopies when the shrubby fuels are located directly beneath or contiguous to the woodlands, as is the case near Coyote Creek.

Of the fuel types present on the site, the fire behavior of oak/bay woodlands (in their current condition) is the most benign. Flame lengths are predicted to be less than two feet, and spread rates slower than a leisurely walk.

The oak woodland currently has little crowning potential because the height to live canopy is high (six to eight feet), and the understory fuel is sparse. Understory fuels are comprised mainly of oak leaf litter with grass or scrub on the margins. North coastal scrub grows on the upper margins of the oak woodlands and comprises the greatest ladder fuel and potential for torching. If a fire were to burn downhill with a westerly wind from the scrub and run into the oak woodland, torching and ember production can be expected. Should a fire travel to the oak crown, it is not likely to be sustained due to the lack of understory fuels. The main reason why crown fires are not likely to spread in this type of oak woodland is that the surface fire is not expected to be intense. Rather, flame lengths (predicted to be less than two feet) are not enough to ignite the live crown six to eight feet above.

Flame lengths are often used as an indicator of the ability to suppress a wildfire and potential for damage to structures. Below is a table of fire behavior with varying slope steepness.

	Slope Steepness				
Grassland – FBPS #1	**10%**	**20%**	**30%**	**40%**	**50%**
Rate of spread	87	95	107	123	145
fireline intensity, Btu/ft./sec	150	162	183	212	249
flame length, ft.	5	5	5	5	5

	Slope Steepness				
North Coastal Scrub – FBPS #5	**10%**	**20%**	**30%**	**40%**	**50%**
Rate of spread	31	33	36	40	45
fireline intensity, Btu/ft./sec	393	416	454	507	576
flame length, ft.	7	7	8	8	8

	Slope Steepness				
Coast Live Oak Woodland – FBPS #8	**10%**	**20%**	**30%**	**40%**	**50%**
Rate of spread	2	2	3	3	3
fireline intensity, Btu/ft./sec	9	9	10	11	13
flame length, ft.	1	1	1	1	1

Standard Environmental Factors:	***Low***
Midflame windspeed = 4 mi/hr.	
Fuel moisture	
0–1/4 in. diameter	*3*
1/4 – 1 in. diameter	*4*
1 – 3 in. diameter	*5*
Live herbaceous material	*70*
Live foliage of woody plants	*70*

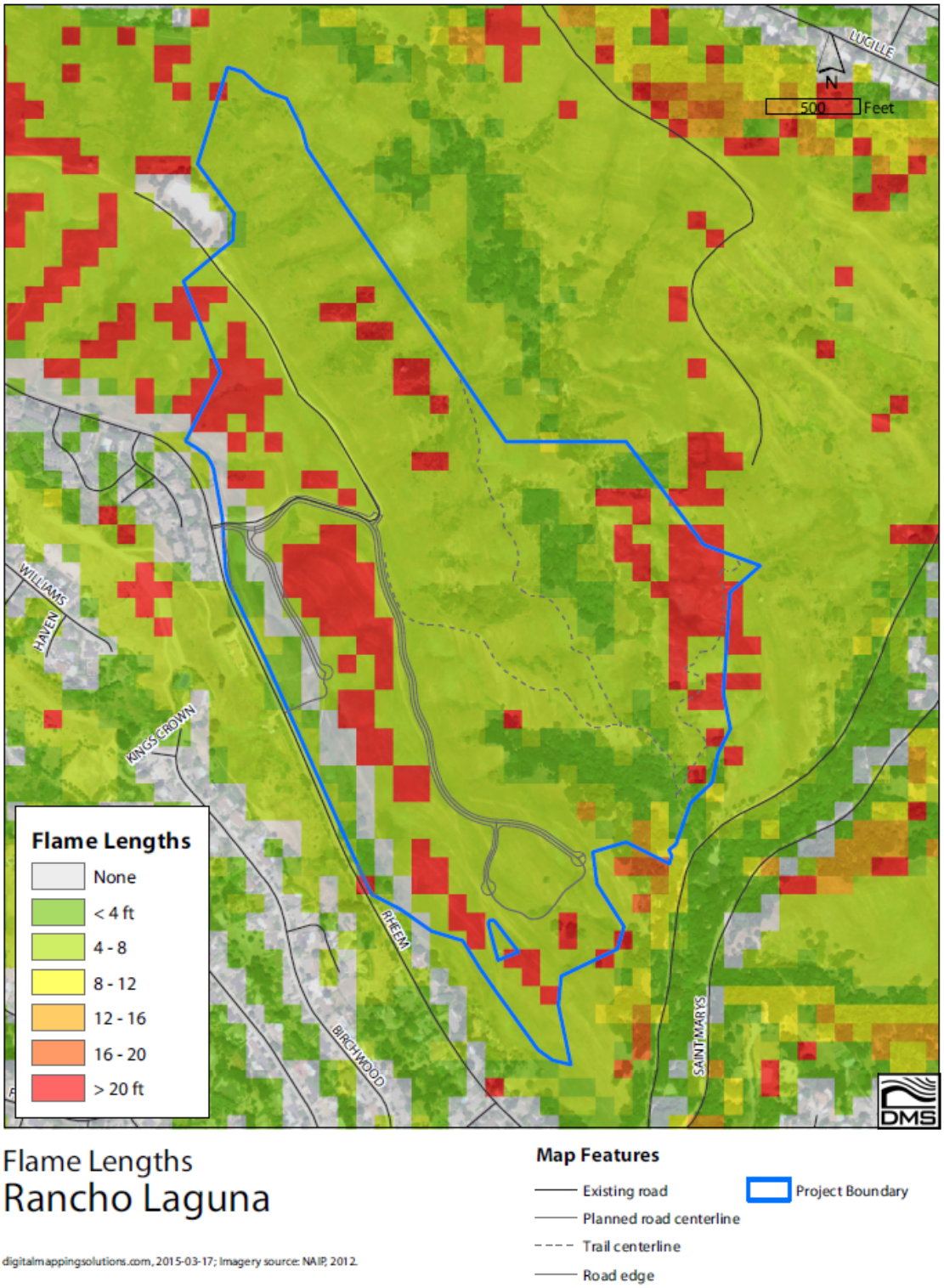


Figure 3. *Spatial distribution of the various flame lengths in the project vicinity.*

6. Fire History of the Area

No fires larger than 10 acres have occurred on the project site since records have been kept. However, fires in the area indicate the potential for large fires to occur. For example, four structures were destroyed by three separate wildfires in the community of Canyon between 2000 and 2005. Another large wildfire occurred approximately 20 years ago near the Crestview neighborhood. In 2004, a 6-acre fire burned near the San Leandro Reservoir.

7. Description of Fire Hazards from CAL FIRE Very High Fire Hazard Severity Zone Mapping

The project site is mapped as a moderate fire hazard severity zone, based on current fuels, population density, and topography. Nearby areas of homes on steep slopes with abundant fuels are mapped as High Fire Hazard Severity, but no Very High Fire Hazard Severity areas are within the eastern part of Moraga.

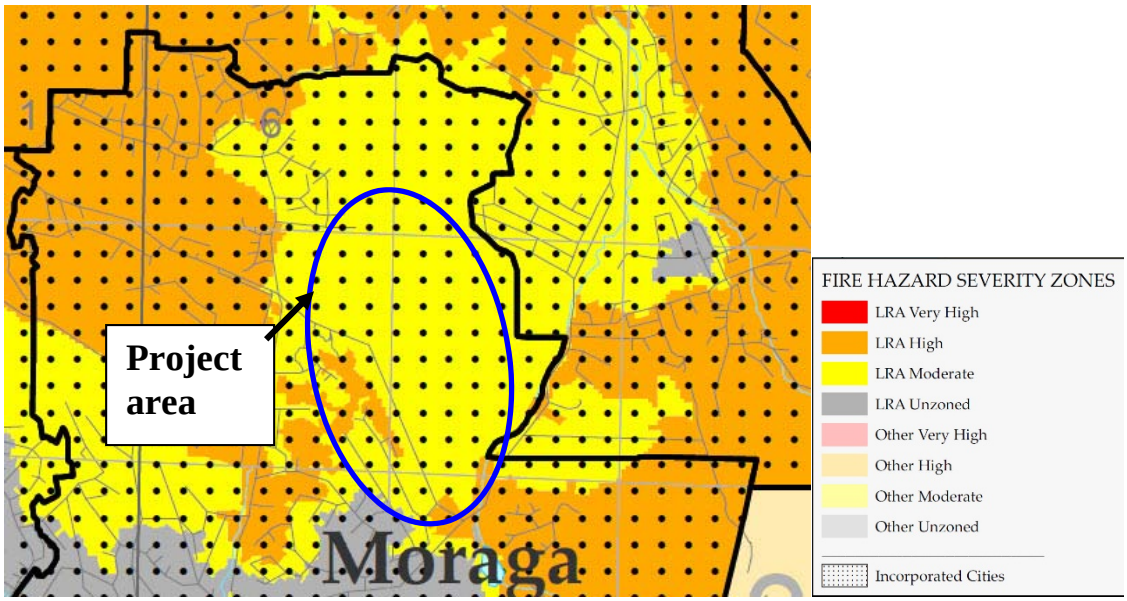


Figure 4. *Fire hazard severity designation by CALFIRE, found on http://frap.cdf.ca.gov/webdata/maps/contra_costa/fhszl06_1_map.7.jpg*

8. Anticipated Fire Threat from and to Adjoining Properties

The fire hazards on the project site are influenced both by the structures located nearby and the proposed new development.

preceded by a brisk, high-speed northwest wind. Under these conditions, the fuels would still be dry from the previous weather conditions.

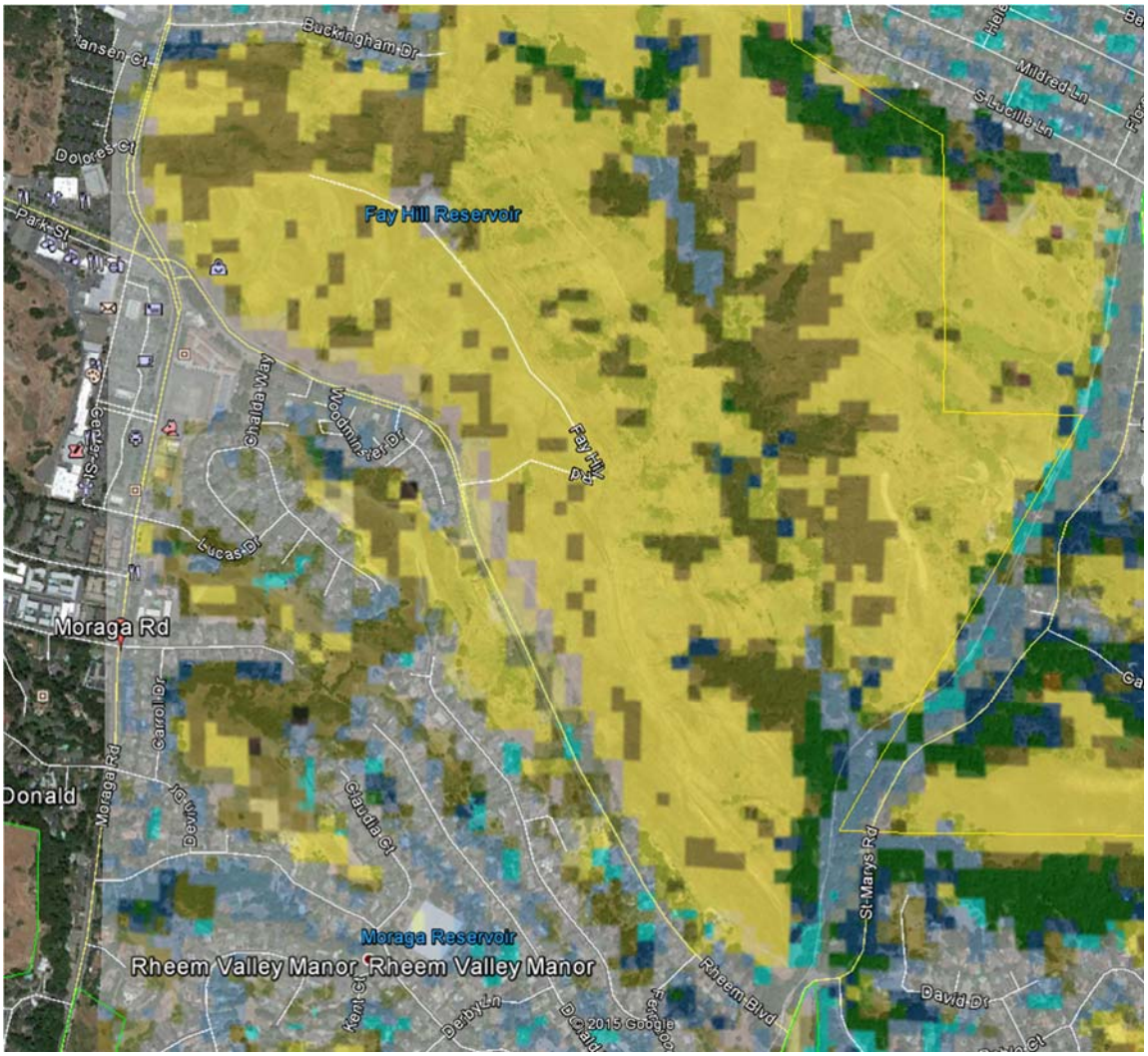


Figure 2. *Wildland fuel types on the project site. Yellow = grass, olive = grass/shrub, green = oak woodland, gray = non-burnable (trails, pavement, development).*

3. Local Weather Conditions

The project site's location in proximity to the coast influences its weather conditions. It has the warm, dry summers and cool, moist winters characteristic of the fog belt area. The area averages about 18 inches of precipitation a year, primarily in the fall and winter. Most of the measurable rainfall generally occurs during the winter months (mid-October to mid-April). Thus, the fire season (the time of highest fire danger) comprises the dry months of May to October.

Threats from Adjacent Properties

There is a significant threat of fire from the neighboring yards and structures due to ignition-prone construction (shake shingle roofing, and siding), as well as from un-maintained ornamental vegetation or small pockets of wildland vegetation.

The adjacent residential neighborhoods could be locations of ignitions because of the concentrated use, and possible unsafe behaviors, including barbecues, mechanical equipment use, or fireplace use without screens. The mature neighborhoods have mixed construction type, with some ignitable structures that could propagate fire to the site. The neighborhood to the north is upwind during a northeast Diablo wind condition; embers produced from this neighborhood would expect to be distributed on the Rancho Laguna site. The mature neighborhood to the south is located below Rancho Laguna; fire in this neighborhood would tend to spread to the project site.

Both the structures and un-maintained vegetation pose an ignition threat to the Project site from possible spread through flaming fronts, but more particularly from the embers they will likely produce, thereby starting fires in the surrounding area.

There is also an ignition threat from the high-voltage powerline. Most commonly ignitions are caused when electrical lines come in contact with vegetation causing an arc. However, the vegetation is well below the powerlines so ignition potential is limited. In addition, all new distribution lines will be underground.

Threats to Adjacent Properties

Untreated fuels on the eastern boundary of Palos Colorados could distribute embers to the mature residential neighborhoods. Additionally, the fast rate of fire spread in the grasslands could challenge fire containment efforts on all boundaries where steep slopes limit access and grass abuts neighbors. However, mitigation measures in Section Two, the generally ignition-resistance construction style, and the placement of structures low on the slope next to Rheem Blvd, limits the threat of this Project to adjacent properties.

- Section Two -
FIRE HAZARD MITIGATION MEASURES

A. INTRODUCTION

The most direct way of affecting the potentially increased fire risk and hazard posed by development is to alter or manage the wildland vegetation, improve access, and improve water supply and distribution. The proposed access and water supply for the Project are discussed in Section One of the Wildfire Hazard Assessment and Plan. This section will address the management of fuels.

B. PRINCIPLES GUIDING VEGETATION MANAGEMENT

Generally the goal of fire hazard management is to create and maintain fuel conditions in which fire can easily be controlled. A specific goal of this fuel management plan is to create conditions where a wildfire will not be propagated in the crowns of oaks near Sonora Road and to ensure a wildfire will not block Fay Hill Road or Sonora Road. One of the most effective ways to minimize damage to structures in a wildfire is to reduce fire intensity. Vegetation management is the pre-suppression means to calm fire behavior in order to reduce structural damage.

Reducing fire spread and intensity is done via altering the volume, size-class distribution, spacing, arrangement, moisture, or chemical content of the fuels on the site. Typically, vegetative fuel modification is done immediately around structures, by roadways, and in areas of potential extreme fire behavior. The effect of fuel modification is to reduce the ignitability, rate of spread, and fire intensity (or heat output). This would result in fewer, smaller, and less damaging fires.

C. SUMMARY OF VEGATIVE FUEL MANAGEMENT ZONES

There are five treatment zones in this fuel management plan:

- The Non-combustible Zone (Zone 0)
- The Defensible Space/Landscaping (Zone I) including the Roadside Vegetation Management Zone
- The Open Space Management Zone (Zone II)
- The Wetland Mitigation Zone (Zone III)
- The Trailside Fuel Management Zone (Zone IV)

The Non-combustible and Defensible Space/Landscaping Zones encompass the space nearest the structures and is designed to reduce ignitions near structures, support structural survival during a wildfire, and reduce the chance that an ignition will move off site. The Roadside Vegetation Management Zone consists of vegetation near the roads and is designed to assist evacuation and emergency vehicle access and to limit roadside ignitions. The standards and actions to comply with both the Defensible

Space/Landscaping Zone and the Roadside Vegetation Management Zone are the same, with one exception. In the Roadside Vegetation Management Zone there must also be a 15-foot vertical clearance and a 3-foot horizontal clearance from the roadway created by tree-trimming the entire length of the roadway.

The Open Space Management Zone encompasses open spaces near residential lots and is designed to limit fire intensity and spread by means of periodic pruning of trees, and reduction of understory plants and ladder fuels.

The Wetland Mitigation Zone is limited to the area within 100 feet of structures outside private lots in the Wetland Mitigation Zone. Actions are limited to periodic removal of dead material to bolster fire safety to the structures that directly abut the Wetland Mitigation Zone.

The Trailside Fuel Management Zone supports the containment of fires well away from structures. Brush will be maintained at three inches in height within three feet of the trail.

D. STANDARDS FOR NON-COMBUSTIBLE ZONE (ZONE 0)

The zone within 5 feet around the perimeter of a structure is called the Non-Combustible Zone.

- This area will be planted with material that will not ignite. Non-combustible landscape constructions such as trellises or fences, and completely herbaceous (not woody) plants which do not have dead material in it are allowed. Wood trellises and fences are allowed, subject to the minimum dimensions identified in Section E.8, below. Lawn, spider plant, sea pink, as well as stone paths or gravel walkways are suitable for this zone. Species that produce and keep dead material such as ice plant or ivy may not be planted here. This zone will be kept free of all dead plants and combustible materials.

- Keep the ground, decking and balconies free of dead leaves, needles or other plant debris

- Dead material that drapes over ground cover will need to be removed yearly, before June 15. This includes leaves, bark, and branches.

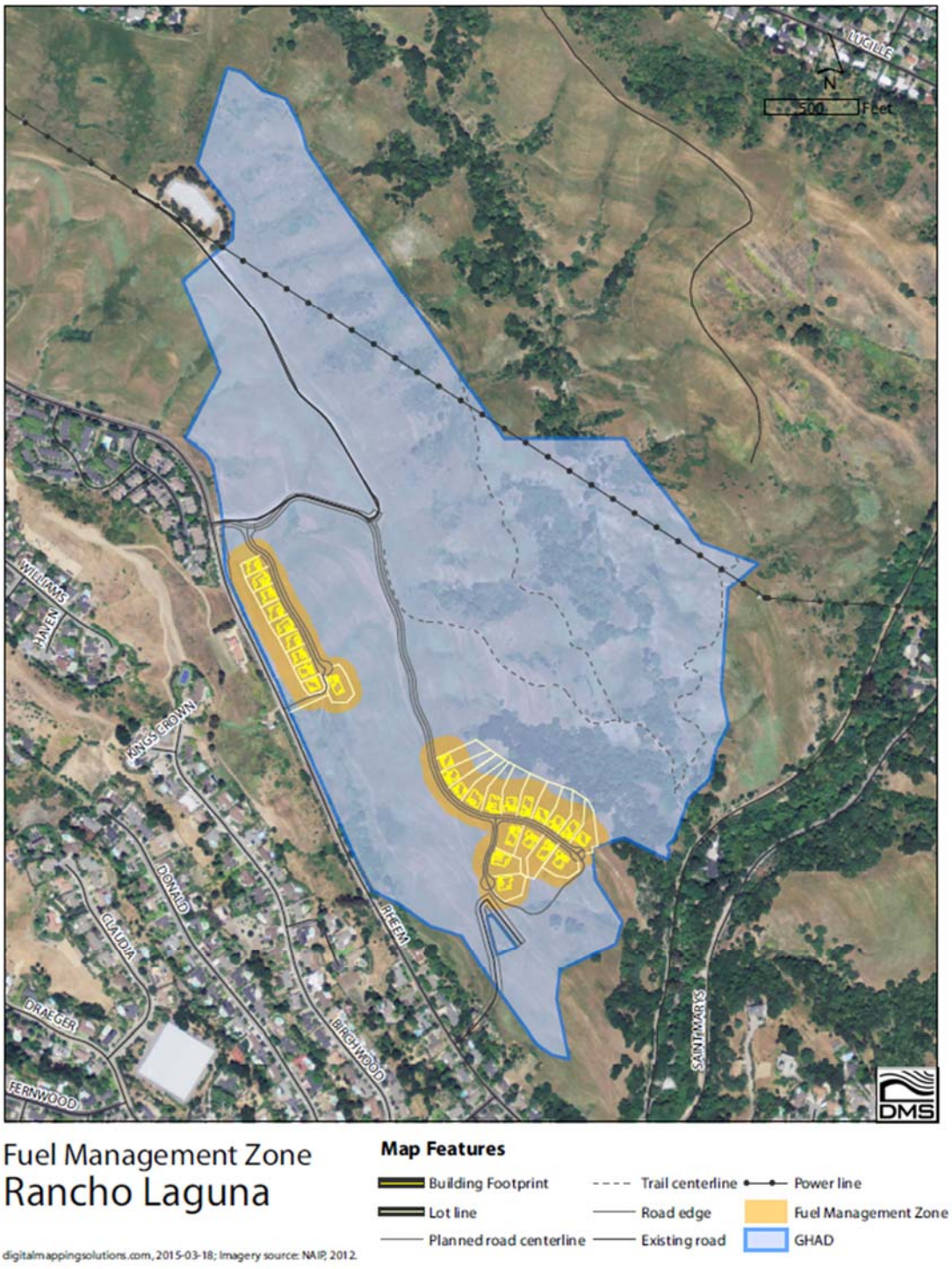


Figure 5. *Location of Defensible Space Fuel Management Zone*

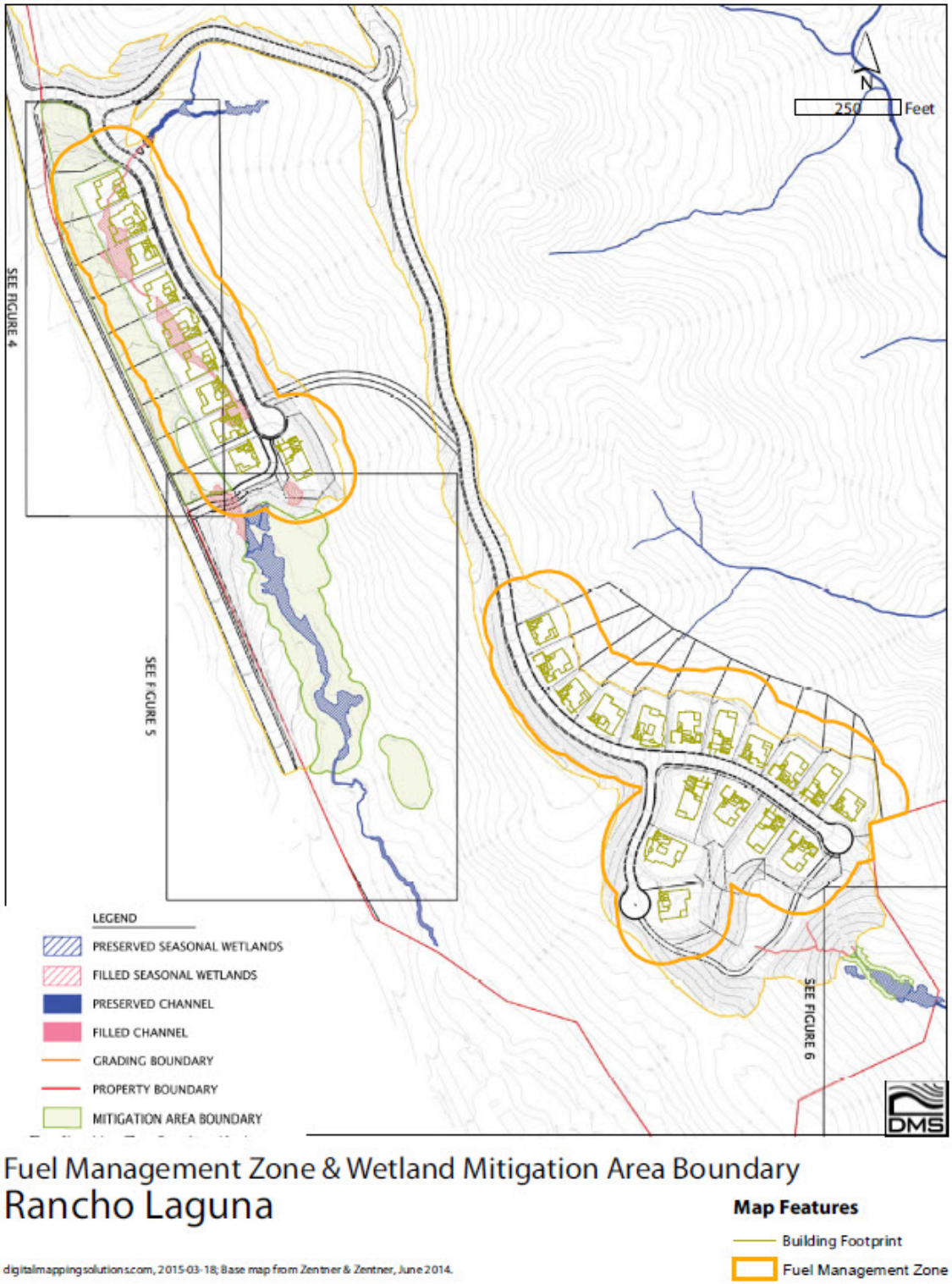


Figure 6. *Detail of Defensible Space Fuel Management Zone*

E. STANDARDS FOR DEFENSIBLE SPACE/LANDSCAPING ZONE (ZONE I)

The following maintenance standards are intended to direct maintenance activities by the Homeowner between 5 and 100 feet of any structure. If a structure is less than 100 from a property line, the maintenance standards shall apply to the portions of the adjacent properties that are within 100 feet of the structure. These vegetation management standards comply with the California State PRC 4291, the California Fire Code MOFD Exterior Hazard Control Standards dated 1-2014, and Ordinance 13-01.

1. Remove all dead plants and dry vegetation to establish and maintain a defensible space. The following actions will provide the same level of fire safety as removing all combustible material.
   a. Cut grass and weeds yearly to less than 4 inches in height when 30% of the grasses have turned brown. Beginning May 15, inspect the grass on a weekly basis to determine the state of grass curing. Cut the grass within the week when 30% of the grass cover is cured, and no later than June 15. Re-mow if late-season rains promote grass growth after the first cutting. Optionally, delay cutting of native grass and wildflowers until after seed set if they do not constitute a means of rapidly transmitting fire to any structure.
   b. Keep the ground, roofs, gutters, decking, and balconies free of dead leaves or other plant debris.
   c. Clear leaves, bark, and humus under trees and shrubs (including vines and semi-woody species) every year. At no time should a buildup of leaves and humus exceed 1 inch in depth anywhere in a landscaped area. However, do not expose bare earth in over 50% of the site.
   d. Remove dead material that drapes over ground cover (including leaves, bark, and branches) annually, before June 15.
   e. From mature trees, remove all vines, loose papery bark, dead branches, and live branches smaller than 3 inches in diameter to a height of 8 feet above the ground.
   f. Remove all dead branches from within live ground covers, vines, shrubs (including semi-woody species), and immature and landscape trees.

2. Prune trees and large tree-form shrubs (e.g. oaks, bay) that are being retained to provide clearance of three times the height of the understory plant material, or 8 feet, whichever is higher. Prune limbs that are smaller than 3 inches in diameter up to 8 feet above the ground; in young trees, prune these branches within the lower one-third of the height of the tree. (Thus, if a tree is 10 feet tall, prune the lower 3 to 4 feet and keep the understory plant material to less than 1 foot in height. Then as it grows to 24 feet in height, it can achieve the 8 foot distance from the ground, and the understory plant material can reach 2.5 feet in height.) Do not disturb or thin the tree canopy, because these actions promote growth of more flammable vegetation (see Figure 7). Remove all branches within 10 feet of any chimney, flue, or stovepipe. Maintain 5 feet of vertical clearance between roof surfaces and overhanging portions of trees.

3. Do not locate plants that are replacing ones that die, or oaks planted as a mitigation measure, under trees. To avoid creating "ladder fuel situations" (in which a fire can climb from one vegetation layer to the next higher one), do not plant any tall shrubs, vines, semi-woody species, or any chaparral species under trees. Low-growing shrubs and ground covers are suitable landscaping under trees.

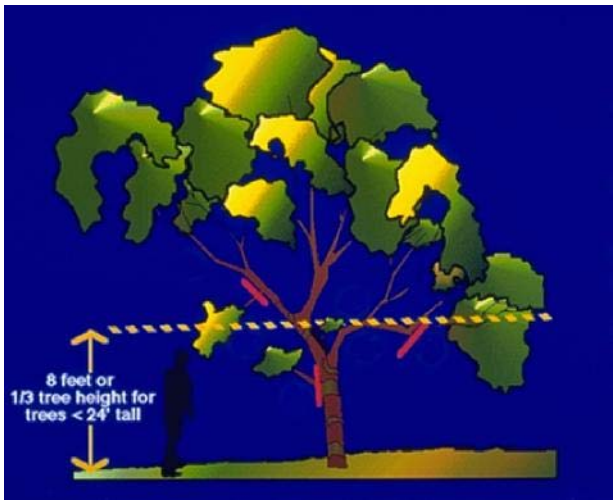


Figure 7 *- Prune branches to a height of 8 feet above the ground. In young trees, prune branches on the lower one-third of the height of the tree. Do not disturb or thin the tree canopy. This promotes growth in the understory, which is more easily ignited.*

4. Make sure that all landscaping and replacement plants are fire-resistant in nature. Prohibit planting of plants that are highly ignitable and burn with intensity. See http://www.diablofiresafe.org/tolerance.html for appropriate plants, Appendix C for features that make plants fire resistant and Appendix B for prohibited plants.

5. Manage individual plants or shrub masses to maintain horizontal spacing that will prevent fire from spreading between shrubs.

6. Remove and safely dispose of all cut vegetation and hazardous refuse.

7. Allow chipped materials to remain on the site, provided the mulch layer is no greater than 3 inches in depth.

8. Fences will be constructed of either noncombustible material or of timbers of at least one-inch nominal thickness. Typical fencing might include "view fencing", consisting of open wire-mesh with at least four-inch posts and stringers that have a minimum two-inch nominal thickness.

9. Garden structures, such as gazebos, spas, or other outbuildings, will comply with the same requirements as the main structure in terms of minimum standards for ignition-resistive materials, timber size, and non-combustible zones

10. Barbeques, fire pits and pizza ovens must be gas-only. Barbeques and fire pits must be surrounded by at least 100 square feet of noncombustible materials on the ground surface and be located 10 feet away from all overhanging trees, and 6 feet from a ceiling. Barbeques, fire pits and pizza ovens must not be left unattended when in use. Barbeques, fire pits and pizza ovens should be located no farther than 15 feet from a water source (including a garden hose) or be equipped with a fire extinguisher.

11. Built-in fireplaces should be either no farther than 15 feet from a water source or be equipped with a fire extinguisher. All associated chimneys will be fitted with a spark arrestor. Spark arrestors will be approved or listed per CBC or NFPA standards.

F. OPEN SPACE VEGETATION MANAGEMENT FOR FIRE HAZARD REDUCTION (ZONE II)

The land anywhere beyond 100 feet from any structure to the boundary of Rancho Laguna will be designated Open Space Management Zone (Zone II). The following standards apply to all lands in Zone II:

As stated in the Open Space Management Plan[2], "Fuel management on open space parcels "A" and "B" will most likely be accomplished through grazing operations." Fuel management on Parcel "D" will be accomplished through mechanical methods. On Parcel "D", the Moraga GHAD will follow the mechanical fuel management requirements of the 2014 Moraga-Orinda Fire District Exterior Hazard Control Standards for Vegetation Management or updated requirements as adopted. We anticipate that if mechanical fuel management methods are required on Parcels "A" and "B", it would be immediately adjacent to the planned residential parcels.

Parcel "D" would be covered by the Standards for Vegetation Management general requirements and additional requirements for parcels three acres or less in size. As provided in the Standards for Vegetation Management, selected tasks are to be maintained year around and seasonal standards are generally to be completed by June 15 of each year.

In addition, shrubs above the woodland east of structures on the eastern side of Sonora Road will be thinned to remove ladder fuels between the ground to the tree canopy.

If shrubs grow to cover 50 percent of the slope below any road or emergency vehicle access easement, the shrubs will be thinned so they cover less than 20% of the area within 100-ft of the road or emergency vehicle access easement. This requirement does not apply within the Mitigation Area shown in Figure 6, unless permitted by the Open Space Management Plan and the Wetland Mitigation Plan.

[2] Zenter and Zenter and ENGEO, Incorporated. 2014. Rancho Laguna Open Space Management Plan.

G. STANDARDS FOR TRAILSIDE FUEL MANAGEMENT ZONE (ZONE IV)

In any grassland areas adjacent to the emergency vehicle access easement and the access road to the detention basin south of Los Santos Court, a strip 15 feet in width on both sides of the trail will be mowed annual prior to June 15th. If the grass in this strip is already shorter than four inches in height, no further treatment is necessary. This requirement does not apply within the Mitigation Area shown in Figure 6, unless permitted by the Long-Term Open Space Management Plan and the Wetland Mitigation Plan.

H. STANDARDS FOR ROADSIDE VEGETATION MANAGEMENT

The standards for Defensible Space/Landscaping (Zone I) will apply to the strip of land within 30 feet of the pavement edge from both sides of the roadways, including Fay Hill Road, Sonora Road, and Los Santos Court. In the Roadside Vegetation Management Zone, there will also need to be an unobstructed vertical clearance of 15 feet along the entire length of the roadway. This requirement does not apply within the Mitigation Area shown in Figure 6, unless permitted by the Open Space Management Plan and the Wetland Mitigation Plan.

I. WETLAND MITIGATION FUEL MANAGEMENT (ZONE III)

Annual grasses will be cut annually once they are dry and maintained. Dead material will be inspected on a periodic basis, every three years, and if necessary, treated that same year. The Open Space Management Plan states, "Creating, enhancing, maintaining fuel modification zones in the wetlands (defined as a strip of mowed land or the planting of vegetation possessing low combustibility for purposes of fire suppression) will be prohibited in the wetland areas." However, using hand labor to remove flashy dry annual grasses and accumulated dead material smaller than three inches in diameter is not inconsistent with the restriction noted above.

J. STATEMENT REGARDING COMPLIANCE WITH FIRE SAFETY CODES AND REGULATIONS

With the approval of this Wildfire Hazard Assessment and Plan, the Rancho Laguna project complies with all fire safety codes and regulations relating to exterior risk mitigation

Once the fire-mitigation measures have been implemented, fire behavior in the area within 100 feet of any structure on the lot should exhibit less than two-foot flame lengths. Flame lengths of less than two feet typically do not threaten structure survival. Also, because available fuels will either be kept mowed or will be compact in nature, any ignited fire(s) should travel at easily containable speeds.

Flame lengths produced further away than 100 feet from a structure would be slightly greater but crowning and torching of trees is minimized; fires are expected to quickly subside in intensity in the Defensible Space Zone.

- Section Three -
IMPLEMENTATION MECHANISMS

A. HOMEOWNER AND HOMEOWNER ASSOCIATION RESPONSIBILITIES

The following requirements shall apply to homeowners, the Homeowner Association, and the GHAD:

- The Rancho Laguna GHAD shall be responsible for inspecting and maintaining the Open Space in compliance with the Plan, and each lot owner shall be responsible for maintaining the individual lot in compliance with the Plan.

- No owner or resident shall permit any condition to exist on his or her lot, including, within limitation, trash piles, or weeds, which creates a fire hazard or is in violation of local fire regulations.

- There shall be no outdoor storage of firewood, kindling, or compost material within 30-feet of any structure, unless the material is stored in an approved bin or enclosure.

- The Homeowner Association shall be responsible for the maintenance of all Open Space improvements within the Development Area from the edges of the streets up to the property line of the Homeowner Association.

- The GHAD will be responsible for maintenance of the portions of the following Fuel Modification Zones that are within the areas managed by the GHAD: Defensible Space Zone, Roadside Fuel Management Zone, Open Space Management Zone, Trailside Fuel Management Zone and the Wetland Mitigation Zone. Fuel management will be consistent with the conservation easement where the Fuel Modifications Zones fall within an area covered by the conservation easement.

- The Homeowner Association shall maintain all the landscaping within the common area as indicated on the Plan. The Homeowner Association shall also maintain the following: The landscaping improvements within common areas and fencing delineating the common areas.

- Homeowners shall be responsible for maintaining their private lots, with the exception of the private open space areas outside the rear fencing. The private open space areas outside the rear fencing will be managed by and the responsibility of the GHAD. The Homeowner Association and the Moraga Orinda Fire District shall have enforcement authority.

- If a homeowner fails to maintain and/or repair his lot as provided herein in a manner which the Homeowner Association reasonably deems necessary to preserve the safety,

appearance and/or value of the Project, the Homeowner Association may notify the homeowner of the work required and request that it be done within a reasonable and specific period. If the Owner fails to perform such maintenance and/or repairs within said period, the Board shall, subject to the notice and hearing requirements as set forth in the By Laws of the Homeowner Association, have the right to enter upon the lot to cause such maintenance and/or repair work to be performed. Costs of any such maintenance or repair shall be charged to the homeowner.

- Notwithstanding the foregoing, in the event of an emergency arising out of the failure of a homeowner to maintain and/or repair his lot, the Homeowner Association shall have the right, through its agents and employees, to immediately enter the Lot to abate the emergency and individually charge the cost thereof to the homeowner.

B. DELEGATION OF FUEL MANAGEMENT AND CONSTRUCTION RESPONSIBILITIES

The Developer will be responsible for the design and construction of all improvements of the project including site grading, roads, driveways, emergency access roads, fire roads, trails, homes, community facilities, landscape improvements, utilities and improvements in Rancho Laguna.

The Homeowners Association will maintain the common area facilities, landscaping and other common area management and maintenance functions within the project area.

C. PHASING OF MAINTENANCE RESPONSIBILITY AND FUEL MANAGEMENT

- Hydrants and an all-weather road approved by the Fire Marshal will be in place before framing begins, or as approved by the Fire Marshal.

- Initial fuel management actions will be completed before construction on the first lot begins. These actions include tree removal, tree pruning, and grass cutting (if construction takes place between June 15 and Nov. 1).

- All required clearing and grass cutting will be completed before June 15th of each year. Mowing must begin as soon as 30% of the grass has cured.

- Grass cuttings and clippings will be removed the day they are cut. No clippings are permitted to remain in piles or scattered, unless so approved by the MOFD Fire Marshal.

- All brush piles and tree clippings are to be removed within one week of cutting. No brush or clippings are permitted to remain in piles, unless so approved by the MOFD Fire Marshal.

- Annual fuel management measures include:

— Removal of all combustible vegetation along roadways, driveways, access roads, and trails according to stated standards

— Maintenance of the emergency-access easement

— Maintenance of the defensible space around structures according to stated standards for the various fuel management zones

D. MECHANISMS FOR COMPLIANCE

Long-Term Financial Assurances
All homeowners are responsible for the maintenance of the Non-Combustible and Defensible/Landscaping Zones inside their lot.

All homeowners within Rancho Laguna will be members of the Rancho Laguna Homeowner Association and will pay Homeowners Association assessments to fund the Rancho Laguna Homeowner Association's long-term management costs. These assessments will provide full funding of the long-term management and maintenance of the Roadside Fuel Management Zone, and any Open Space Management Zone in the area controlled by the Homeowner Association.

Long-term, the Moraga GHAD will be responsible for maintenance of the Open Space Management Zone, Roadside Fuel Management Zone and Trailside Fuel Management Zone and Wetland Mitigation Zone in the area controlled by the GHAD. The Moraga GHAD board of Directors shall approve a GHAD Plan of Control for maintenance of required facilities, including financing. The project shall fund the formation of the GHAD.

On or before June 15th of each year, the Homeowner Association (or the Developer, prior to the formation of the Homeowner Association) will obtain a certification from the GHAD that the site has been inspected and the wildfire management requirements have been met. The Homeowner Association (or the Developer, prior to the formation of the Homeowner Association) will forward a copy of the certification to the MOFD Fire Marshal within five business days of receipt.

E. FREQUENCY OF FUTURE MAINTENANCE

The frequency of vegetation management is linked to the vegetation type.

Grass will need to be mowed and maintained when 30% of the grass cover has cured. Should rains occur late in the season and produce more grass growth, the grass may need to be treated again.

The expected frequency of treatment of shrubs is estimated at every three years. Shrubs may need to be pruned of dead wood, shortened, shrub groupings minimized in size, or new shrubs removed under tree canopies. Shrub removal or pruning may be done any time of year. Application of an herbicide to prevent re-sprouting may be more effective in the spring, but will follow the PCA recommendation.

Initial pruning of lower small branches from trees will be a substantial effort. Because trees typically grow from the top and ends of branches, subsequent pruning needs to occur only every five years or so, depending on the rate of growth, and significant events which may cause dead wood to develop or breakage to occur. Pruning of oaks, other trees and tree-like shrubs can be done at any time of the year, depending on recommendations from a professional arborist.

APPENDIX A
FUEL TYPE AND FIRE BEHAVIOR IN DIFFERENT FUELS

The term "fuel" is used to describe any material that will burn, whether vegetative or structure component. A single fire may consume shrubs, grasses, trees, woodpiles, and homes as fuels.

Fire managers in virtually all US agencies (as well as in other countries where wildland fire hazards are significant) use fuel model systems for the various computerized fire behavior prediction systems (FBPS). Within the US, information regarding fuel volumes and fire-behavior descriptions is based upon fuel models described in *How to Predict the Spread and Intensity of Forest and Range Fires*, by Richard C. Rothermel (1983), published by the USDA Forest Service Intermountain Forest and Range Experiment Station, General Technical Report INT–143. Fuel models relevant to the Rancho Laguna project include grasslands (each with tall and short grass having different models), shrub lands, and oak woodlands (with and without understory vegetation). Each fuel model is given a number designation, which is interpreted by fire managers across the continent to mean the same thing.

Fuel models describe vegetation structure in addition to typical species composition. The most significant factor is the amount and distribution of smaller-diameter fuels, because these materials generally spread wildland fires.

Another important factor is the amount of dead biomass and the ratio of live-to-dead material in terrain with significant brush and numerous tree stands, since dead biomass contributes fine fuel litter as well as carry flames more readily. Fuel models include these considerations.

This section describes conditions that are planned and conditions that would develop over time without fuel management. For example, all of the existing vegetation, including the eucalyptus, with in the Development Areas will be removed by grading operations and thus is not discussed. However, shrubs can be anticipated in the grasslands on the open space hillsides and thus is addressed.

Annual Grasslands (FBPS Fuel Model #1)
The entire Project is currently covered with annual grasses. Grassland also covers the hill to the south of the project site and extends to the east of the Project.

Grass fuels do not produce much heat, but they produce a fire that travels quickly. Therefore, containment is the greatest challenge posed by these fuel types. In particular, grass can serve as a wick for more hazardous fuels whose ignition is apt to cause greater damage. Grass thus provides an avenue for fire to travel to densely vegetated areas, allowing it to build up enough of a "head of steam" to burn into landscaping or other types of fuels under conditions that would not otherwise be fire-sustaining.

Grassland fuels (both annual and perennial) are fairly uniform and homogeneous in comparison to other fuel types. Generally, grasslands have a light total fuel load, consisting entirely of fine

herbaceous material that cures in the summertime. This material responds markedly to changes in humidity and ignites easily in dry periods.

Oak Woodland (FBPS Fuel Model #8)
Oak woodlands do not occur on the project site, but on the adjacent lots to the west and north. The understory in most of the closed canopy woodland areas is relatively undeveloped, consisting primarily of leaf duff.

Fire intensity, flame lengths, and scorch heights are usually low in the oak woodlands that do not have a well-developed understory. Oak woodlands are characterized as follows in the USDA Forest Service Fire Behavior Prediction System:

"Slow-burning ground fires (carried in the compact litter layer) with low flame heights are the rule, although the fire may encounter an occasional "jackpot" or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidities, and high winds do the fuels pose fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and some twigs since little undergrowth is present in the stand."

The resulting fire behavior is rather benign. Rates of fire spread are slow, approximately 2 feet per minute. Flame lengths are predicted to be one foot. Leisurely spread rates, combined with the relatively short flame lengths of the predicted fire behavior demonstrate a manageable, moderate fire hazard in this fuel type.

Fuel conditions in the oak woodland vary with the slope, age, height, and canopy closure of the overstory, the depth of the litter and density of understory shrub cover. Ground-layer and understory fuel loads beneath dense canopy may be minimal (well under one ton per acre), but horizontal fuels may be continuous and ladder fuels present where the vertical distribution of foliage is continuous. The foliage of both bay and coast live oak is very flammable late in the fire season, should the fire reach the crowns.

North Coastal Scrub (FBPS Fuel Model # 5)
North Coastal Scrub occurs off the project site, on slopes to the south, southeast and east. However, as young shrubs scattered in the annual grasslands to the south of the project start to develop in size and cover (in approximately 10-15 years), this fuel model will become even more significant. All areas of annual grass will gradually (over a span of 15-25 years) convert into this fuel type without some sort of disturbance (which may be in the form of gophers, grazing animals, or mechanical mowers).

This fuel type can be characterized by the FBPS Fuel Model #5. Total fuel loads are approximately 5 ton/ac, with most of the fuels occurring in the smaller diameter fuels. A preponderance of dead fuels can be found in the smallest size class, those under 1/4 inch in diameter. The dead to live ratio of mature stands is usually quite high - an equal proportion of living and dead material is often found. Additionally, live foliage on the plants comprises over half of the total fuel load.

During the mid-1980s, the fuel volumes, structure, and distribution of size classes of 16 scrub sample sites from the East Bay Regional Park District were inventoried. Total fuel loading averaged 3.18 tons/acre, equally distributed between fine fuels (smaller than 1/4 inch in diameter), kindling (from 1/4 to 1 inch in diameter) and larger. Typically the amount of dead material in the scrub is almost one-half the total volume, and sometimes exceeds 50 percent.

Fire behavior is not normally explosive; however, it was this fuel type that fueled the Oakland Fire of 1991 on Saturday, October 19, and the morning of October 20th. Rates of spread are quite fast, but flame lengths are low (usually under five feet) and heat output minimal under normal conditions. Obviously, under extreme weather conditions erratic and explosive fire behavior can result.

Landscaped Areas (No FBPS #)
Landscaping will occur throughout the Project site. The site is currently bare of landscaping plants, plans call for screening plants and establishment of landscaping for visual appeal. Adjacent lots to the north and east have well-established, mature landscapes; those to the west are newer, with young, sparse landscaping. Because this type of vegetation is situated nearest structures and evacuation routes, this fuel type can be the most damaging or provide an additional layer of safety/protection.

Domestic landscapes typically incorporate fall into a spectrum of fire hazards:

1. Landscapes are moist, and therefore won't burn; or
2. They contain large amounts of fuel, which will burn with great intensity; or
3. They contain fire-resistant plants, and will burn slowly with little resistance to control, or
4. They are maintained to be of low fuel volume, so provide little heat when they do burn.

Problems to avoid in landscaped areas are poor maintenance, breakage in irrigation pipes, and unremoved dead plant material. These problems can result in a large dead-fuel component amounting to a large volume of fuel.

See also Appendix C for a discussion of the properties of fire resistant plants.

APPENDIX B
SPECIES LIST FOR PROHIBITED LANDSCAPING PLANTS

Due to their combustible nature, these plants shall be prohibited from the project area. These plants will not be allowed as replacement plants. This is a partial list; see also http://www.diablofiresafe.org/tolerance.html for more lists of fire resistance ratings of landscaping plants.

Botanical Name	Common name
Abies spp.	fir
Acacia spp.	acacia
Adenostoma fasciculatum	chamise
Adenostoma sparsifolium	red shanks
Artemsia californica	California sage
Baccharis *pilularis consanguinea*	coyote brush
Bamboo spp.	bamboo
Cedrus spp.	cedar
Cortaderia selloana	pampas grass
Cupressus spp.	cypress
Dodonaea viscosa	hopseed bush
Erigonom fasiculatum	California buckwheat
Eucalyptus cladocalyx	sugar gum
Eucalyptus globulus	blue gum
Eucalyptus viminalis	Manna gum
Hedera canariensis	Algerian ivy
Juniperus spp.	juniper
Pennisetum setaceum	fountain grass
Picea spp.	spruce
Pinus spp.	pines
Salvia mellifera	black sage
Schinus spp.	California pepper tree

In addition, plans should not be established which could invade the neighboring park and open spaces. Refer to the Vegetation Management Almanac for the East Bay Hills (published by the Hills Emergency Forum, and available from the Tilden Nature Center) for a list of species which should not be planted because of their invasive nature. The list includes:

Blackwood acacia
coyote bush
Pampas grass
cotoneaster
Italian hawthorn
eucalyptus
broom
mayten
ivy
holly
Monterey pine
pyracantha
blackberry
vinca major

APPENDIX C
SELECTION OF FIRE RESISTANT LANDSCAPING

Factors that must be considered in rating the fire performance of plants include:

- **Total volume**. The greater the volume of plant material (potential fuel) present, the greater the fire hazard.
- **Moisture content**. The moisture content of plants is an important consideration; high levels of plant moisture can both lower fire risk and act as a heat sink if a fire occurs, reducing its intensity and spread.
- **Amount and distribution of dead material**. The amount of dead material in a given plant influences the total amount of water in the overall plant; the dead material is usually much drier than living tissue. Whereas dead material rarely has a moisture content higher than 25%, live foliage moisture content ranges from 60 to 80% for chaparral species in xeric conditions to a high of 200 to 400% for succulent plants or plants under irrigation.
- **Size of leaves, twigs, and branches.** Materials with large surface areas (such as needles, twigs, or large flat leaves) dry more rapidly under fire conditions than materials with lower surface ratios (such as branches and fleshy leaves).
- **Geometry and arrangement of the plant (overall spatial distribution of the biomass).** The shape of a plant and the way in which the biomass is distributed throughout the plant is important because this bulk density affects the air flow and heat transfer through the plant. The arrangement of material within the plant affects its fuel continuity and its tendency to undergo preheating and promote fire spread.
- **Plant maintenance.** The significance of proper plant and landscape maintenance cannot be overemphasized. ***Poorly maintained landscapes can easily become fire hazards, even if many of the plants are favorably recommended for fire performance.***

All of the above-mentioned plant characteristics are related to maintenance issues. Plants with higher moisture content generally have a lower fire risk. For example, the moisture content of a plant is absolutely influenced by regular and proper irrigation, and large amounts of dead material lower the plant's overall moisture content. To increase the plant's overall moisture content, it is important to remove and properly dispose of dead material. In addition, regular fire-prevention maintenance should include thinning or pruning to reduce fuel volume and improve plant geometry.

The positioning of plants relative to each other and to structures is also very important. Design landscapes to discourage the creation of "fuel ladders"—a continuous fuel path by which a fire can climb from the ground to a shrub, to a tree, and ultimately to the structure. Continuous removal of any potential fuel ladders needs to be part of routine landscape maintenance.

An appropriately landscaped and maintained defensible space will reduce the fire hazard and the fire risk to structures. A landscape environment that is inconsistently or improperly maintained does not function as defensible space, and it contributes to the fire hazard. Consult a nursery or landscape professional for their recommendations on plant spacing, pruning, aeration, fertilization, irrigation, and other cultivation practices.

APPENDIX D
Key Terminology

defensible space – the area within the perimeter of a parcel, neighborhood or community that provides a key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires

fire intensity – the amount of heat released by a fire in an area in any given time period. Fire intensity is usually related to the flame lengths of a fire.

fuel break – an area in which flammable materials have been cleared away or thinned out to minimize fire spread to structures and/or natural resources

fuel – anything that will burn easily, such as vegetation or small woody material

topography – geographic elements on an area, such as slope steepness, aspect, existence of hills, canyons and rough terrain

wildland – areas which are not developed or farmed

wildland urban interface – a geographical area identified by the State as a "Fire Hazard Severity Zone" and other areas designated to be at a significant risk from wildfires

APPENDIX E
Hydrant/Fire Service Requirements

EBMUD

HYDRANT / FIRE SERVICE REQUIREMENTS

If you have questions about completing this form, please call (510) 287-1008

TO BE COMPLETED BY APPLICANT

PRINT NAME	E-MAIL ADDRESS	
SummerHill Homes	kebrahimi@shhomes.com	
MAILING ADDRESS	CITY	ZIP CODE
777 California Avenue	Palo Alto	94304
ATTENTION		PHONE NO.
Kevin Ebrahimi		
PROJECT ADDRESS / TRACT TITLE / LOT NO(S).		CITY
Rheem Blvd., Moraga, CA / 27 Lots		Moraga, CA

FOR DISTRICT USE

Est. No. _____

By _____

Date _____

Map No. _____

Before a water service estimate will be processed, the applicant must furnish fire hydrant information and fire flow requirements as specified by the fire protection agency.

Applicant Signature _____ Date 5-14-14

TO BE COMPLETED BY FIRE PROTECTION AGENCY

FIRE HYDRANTS (PUBLIC OR PRIVATE)

☐ NOT REQUIRED – (Skip to Private Fire Services.)

☒ REQUIRED: ☒ Public Number of hydrants 9 or ☐ Private Number of hydrants _____

A total of 1500 gallons per minute supplied by 1 hydrant(s) flowing simultaneously for a duration of 120 minutes. Each individual hydrant shall provide a minimum flow of 1500 gallons per minute.

Unless otherwise indicated, fire flow is calculated down to at a minimum residual pressure of 20 psi in the water main under normal operating design flow conditions. Fire flow is a design factor and is not guaranteed.

Remarks

_____

_____

PRIVATE FIRE SERVICES

New Residential: Single family premises, multi-family premises with two units and Townhomes

☐ NOT REQUIRED – Skip to bottom of page and sign.

☐ REQUIRED – Number of private fire services _____ – Skip to bottom of page and sign

All Water Service Applications for new single family premises, townhomes and multi-family premises of two units that require a combination standard/fire service must include a completed Application for Dual Service signed by the local fire protection agency.

Commercial, Residential Remodels, New Residential Multi-Family premises with greater than two units.

☐ NOT REQUIRED – Skip to bottom of page and sign.

☐ REQUIRED: Number of private fire services _____

Remarks MORAGA-ORINDA FIRE DISTRICT

_____

Fire Protection Agency KATHY LEONARD Phone No. _____

Signature for Protection Agency FIRE MARSHAL Date 5/12/14

Print Name kleonard@mofd.org Title _____

E-Mail Address 925-258-4520

E-139 • 6/13

VALID FOR ONE YEAR

Santos, Grace

From: Hickey, John <JHickey@shhomes.com>
Sent: Tuesday, July 07, 2015 5:23 PM
To: Santos, Grace; Leonard Kathy
Cc: Ebrahimi, Kevin
Subject: FW: Rancho Laguna - Wildfire Hazard Assessment & Plan
Attachments: WHAP - Ranch Laguna - 2015 06 05.pdf

Grace,

As we discussed this afternoon, I'm sending you the final draft of the Wildfire Hazard Assessment & Plan for Rancho Laguna. If Kathy is okay with the detail for the fencing shown below, we just need her to sign/stamp the cover of the WHAP tomorrow morning, and then I can come by and pick it up at about 11:30-noon.

If Kathy has any questions about the fence detail, please ask her to give me a call on my cell tomorrow, 650-303-0992.

Thanks again for your help.

John

John A. Hickey
SummerHill Homes • SummerHill Apartment Communities
(650) 842-2360 • jhickey@shhomes.com

From: Hickey, John
Sent: Monday, June 29, 2015 2:46 PM
To: 'Leonard Kathy'
Cc: Ebrahimi, Kevin; Grace Santos (gsantos@mofd.org)
Subject: RE: Rancho Laguna - Wildfire Hazard Assessment & Plan

Kathy,

Sorry for the delay in getting back to you. We reviewed the lattice design internally and came up with a better option that I think you will prefer. Rather than having a crossing lattice, the top 1' of the fence will have 1" nominal vertical posts supporting a top rail, such as in the example below:

Please let me know if this design works for you. We would use a design like this for all of the front yard fences (i.e., in the front yard locations shown as "Good Neighbor Wood Fence w/ Lattice" on the improvement plans).

Please give me a call if you have any questions.

Thanks.

John

John A. Hickey
SummerHill Homes • SummerHill Apartment Communities
(650) 842-2360 • jhickey@shhomes.com

From: Leonard Kathy [mailto:kleonard@mofd.org]
Sent: Wednesday, June 10, 2015 2:30 PM
To: Hickey, John
Cc: Ebrahimi, Kevin
Subject: RE: Rancho Laguna - Wildfire Hazard Assessment & Plan

John,
I have review the revised plan. I think everything looks good except for on page 6 at the end of the top paragraph referring to the lattice fence materials. I have not seen examples of wood lattice coming in 1" thickness as described. Can you provide more information on this please?
Thanks, Kathy

From: Hickey, John [mailto:JHickey@shhomes.com]
Sent: Tuesday, June 09, 2015 1:22 PM
To: Leonard Kathy

Cc: Ebrahimi, Kevin
Subject: RE: Rancho Laguna - Wildfire Hazard Assessment & Plan

Kathy,

Just wanted to follow up to see whether you've had a chance to review the revised Plan. Please let me know if you have any questions.

Thanks.

John

John A. Hickey
SummerHill Homes • SummerHill Apartment Communities
(650) 842-2360 • jhickey@shhomes.com

From: Hickey, John
Sent: Friday, June 05, 2015 4:59 PM
To: Kathy Leonard (kleonard@mofd.org)
Cc: Ebrahimi, Kevin (KEbrahimi@shhomes.com)
Subject: RE: Rancho Laguna - Wildfire Hazard Assessment & Plan

Kathy,

Attached please find a revised Plan addressing your comments. I've also attached a redline showing the changes from the April 15th draft.

Please let me know if you have any further questions or comments. If the revised Plan works for you, please sign the cover page and send or email us a copy.

Thanks very much for your help.

John

John A. Hickey
SummerHill Homes • SummerHill Apartment Communities
(650) 842-2360 • jhickey@shhomes.com

From: Hickey, John
Sent: Tuesday, April 28, 2015 12:23 PM
To: Kathy Leonard (kleonard@mofd.org)
Cc: Ebrahimi, Kevin (KEbrahimi@shhomes.com)
Subject: Rancho Laguna - Wildfire Hazard Assessment & Plan

Kathy,

Carol Rice of Wildland Resource Management prepared the attached Wildfire Hazard Assessment & Plan for our Rancho Laguna project. Based on the discussions you and I had last fall, I think this Plan should address the concerns you had about fire control at the site.

Please let me know if you have any questions.

Thanks.

John

John A. Hickey
SummerHill Homes • SummerHill Apartment Communities
777 California Avenue, Palo Alto, CA 94304
Tel (650) 842-2360 • Fax (650) 857-1077
jhickey@shhomes.com

EXHIBIT J

Rancho Laguna Public Trail System Plan
April 2015

EXHIBIT J

Rancho Laguna
Public Trail System Plan

April 2015

I. Introduction

This Public Trail System Plan (Trail Plan) provides a management plan for the public trail system within the Rancho Laguna Open Space area. The Trail Plan is guided by the Town of Moraga's requirements as set forth in the various approval documents for the Rancho Laguna project, as well as the requirements of the US Fish and Wildlife Service, the US Army Corps of Engineers, the California Department of Fish and Wildlife, the Regional Water Quality Control Board and the Moraga Orinda Fire District.

The purpose of the Trail Plan is to establish trail management measures that address recreational impacts to wildlife and wildlife habitat, including designation of trail access, informational signage, homeowner education, and restrictions on pet access.

The Moraga Geologic Hazard Abatement District (GHAD) will be responsible for implementing the Trail Plan in accordance with its Plan of Control.

For additional information regarding the Rancho Laguna Open Space, refer to the Rancho Laguna Long-Term Open Space Management Plan (March 2015).

II. Trails

The public trail system is located in the Open Space as shown on the Trail Map, attached as Figure 1. The unsurfaced trails will be 1 to 3 feet wide or on existing fire roads within a 20-foot-wide Public Trail Easement.

The primary access to the public trail system is from a trailhead on Sonora Road near the intersection with Fay Hill Road. Parking at the trailhead includes an informal gravel area adjacent to the roadway. The parking location is shown on the Parking Map, attached as Figure 2.

Secondary access to the public trail system is from two trails on the Palos Colorados site to the east of the Rancho Laguna site. The Palos Colorados site is under separate ownership from the Rancho Laguna site, and public access to the trails on the Palos Colorados site is subject to terms established by the owners of the site.

With the exception of access to the parking location shown on the Parking Map and the public trails shown on the Trail Map, public access is not allowed in the Open Space.

There is no direct public access to the public trail system from the Lafayette-Moraga Regional Trail.

III. Restricted Activities

In addition to the rules and regulations otherwise applicable, the following rules and regulations apply to the Public Trail System and the Open Space area:

- No public access to the Open Space area outside of the parking area and the public trails within the Public Trail Easement.
- Pets must be leashed and under the control of a handler at all times.
- Pet owners and handlers must clean up any feces from their pet and dispose of it appropriately outside of the Open Space area.
- The following prohibitions apply:
    - No littering
    - No bicycles
    - No horses or other saddle animals
    - No vehicles (except for emergency and maintenance vehicles)
    - No amplified noise
    - No alcoholic beverages
    - No smoking or vaping
    - No use of marijuana
    - No possession of drug paraphernalia
    - No nudity
    - No camping
    - No swimming
    - No fires
    - No fireworks
    - No firearms or dangerous weapons (except for on-duty law enforcement personnel)
    - No commercial activities
- The rules and regulations applicable to the Public Trail System and the Open Space area may be enforced by the Moraga Police Department and the GHAD. The GHAD may prohibit any person who violates the rules and regulations applicable to the Public Trail System and the Open Space area from using or entering upon the Public Trail System or the Open Space area, which prohibition may be temporary or permanent at the GHAD's reasonable discretion.
- No trash cans shall be provided in the Open Space area (including at the parking area and the trailhead) as they can become attractive nuisances for wildlife and require increased human activity.

IV. Signage

a) General Signage

Signs will be placed at appropriate locations, such as the primary trailhead, to inform the public of the location of the public trail system and highlight certain prohibited activities. Signage at the trailhead shall include statements that pets must be leashed, that bicycles are prohibited, and that off-trail foot travel is prohibited. The Developer of the Rancho Laguna subdivision will be responsible for designing and placing the signs, in consultation with the GHAD. The GHAD will be responsible for maintaining the signs.

A trail kiosk will be located at the parking area to provide general and interpretive information for the public.

Signs will be provided at appropriate locations to:

- Designate trail access and certain areas where access is prohibited
- Inform users about the sensitive nature of the native habitats and wildlife
- Provide homeowner education and notify users of restrictions on pet access

In addition, signage may be provided to inform the public about the limits of liability of the owner and manager of the Open Space and the public trail system and for other purposes determined by the GHAD.

b) Interpretative/Educational Signage

The GHAD may choose to use to educate the Rancho Laguna homeowners and the public about natural resources in the Open Space area. Educational signage may encourage stewardship and respect for the Open Space amongst visitors. Information may be included about sensitive habitats on-site, habitat restoration, native plants and animals, and contact information for the GHAD.

V. Fencing

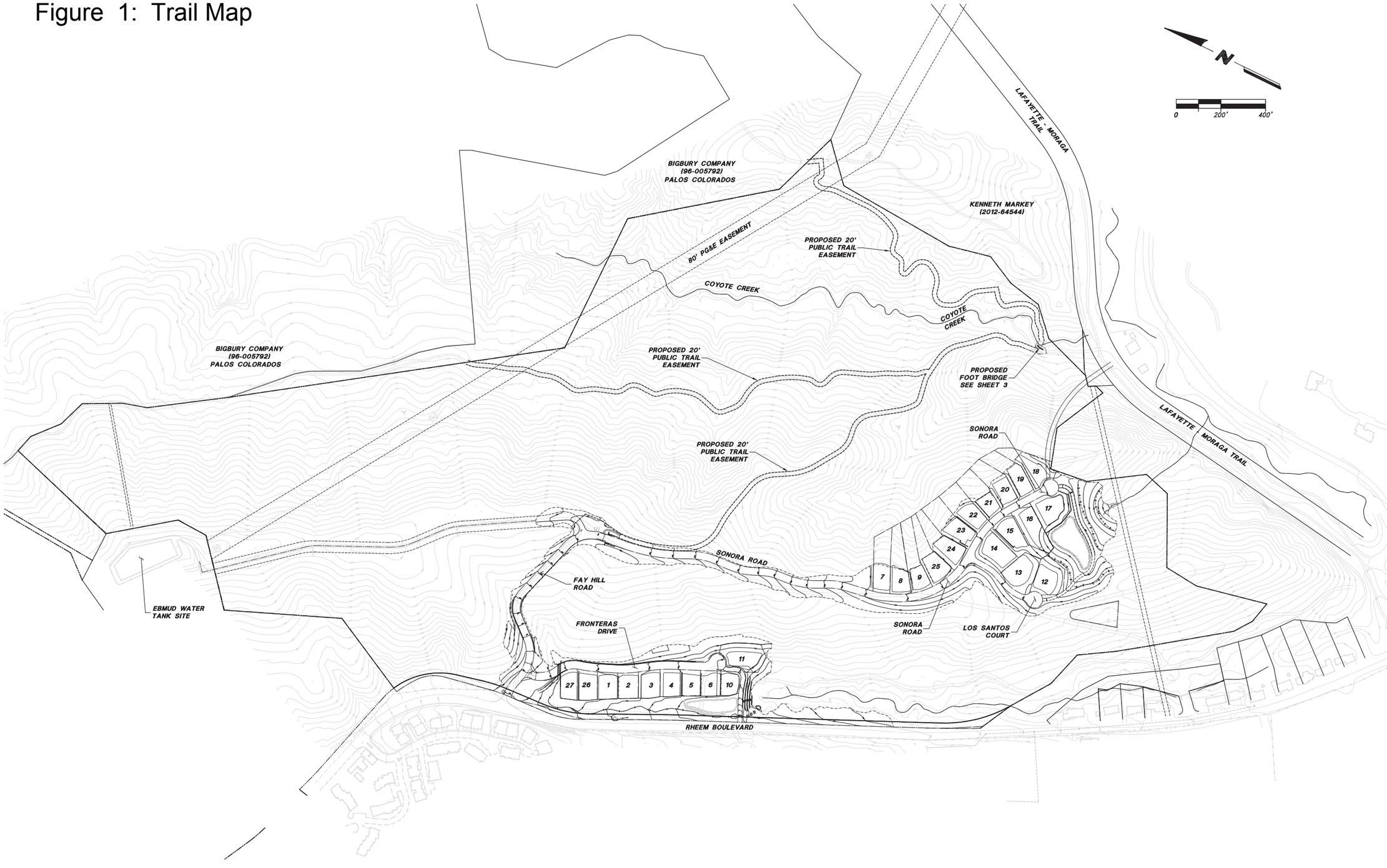
The Open Space area will be fenced at certain locations to delineate the perimeter, contain grazing animals, reduce vandalism, and limit unauthorized access. A substantial portion of the perimeter of the Rancho Laguna site is currently fenced. The GHAD may continue to maintain and/or supplement the fencing at its discretion.

In the event that livestock grazing occurs in the Open Space area, specific fencing will be installed to contain the animals. At a minimum, the fencing will be designed to exclude livestock from drainages and springs and the eastern edge of Coyote Creek.

VI. Figures

- **Figure 1: Trail Map**
- **Figure 2: Parking Map**

Rancho Laguna II
Public Trail System Plan
Figure 1: Trail Map



NO	BY	DATE	REVISIONS

SUBDIVISION 9330

RANCHO LAGUNA II

PEDESTRIAN PUBLIC TRAIL OVERALL

TOWN OF MORAGA, CONTRA COSTA COUNTY, CA

Design Resources, Inc.

Planning ■ Engineering ■ Surveying

3021 Citrus Circle, Suite 150
Walnut Creek, California 94598-2635 TEL (925) 210-9300

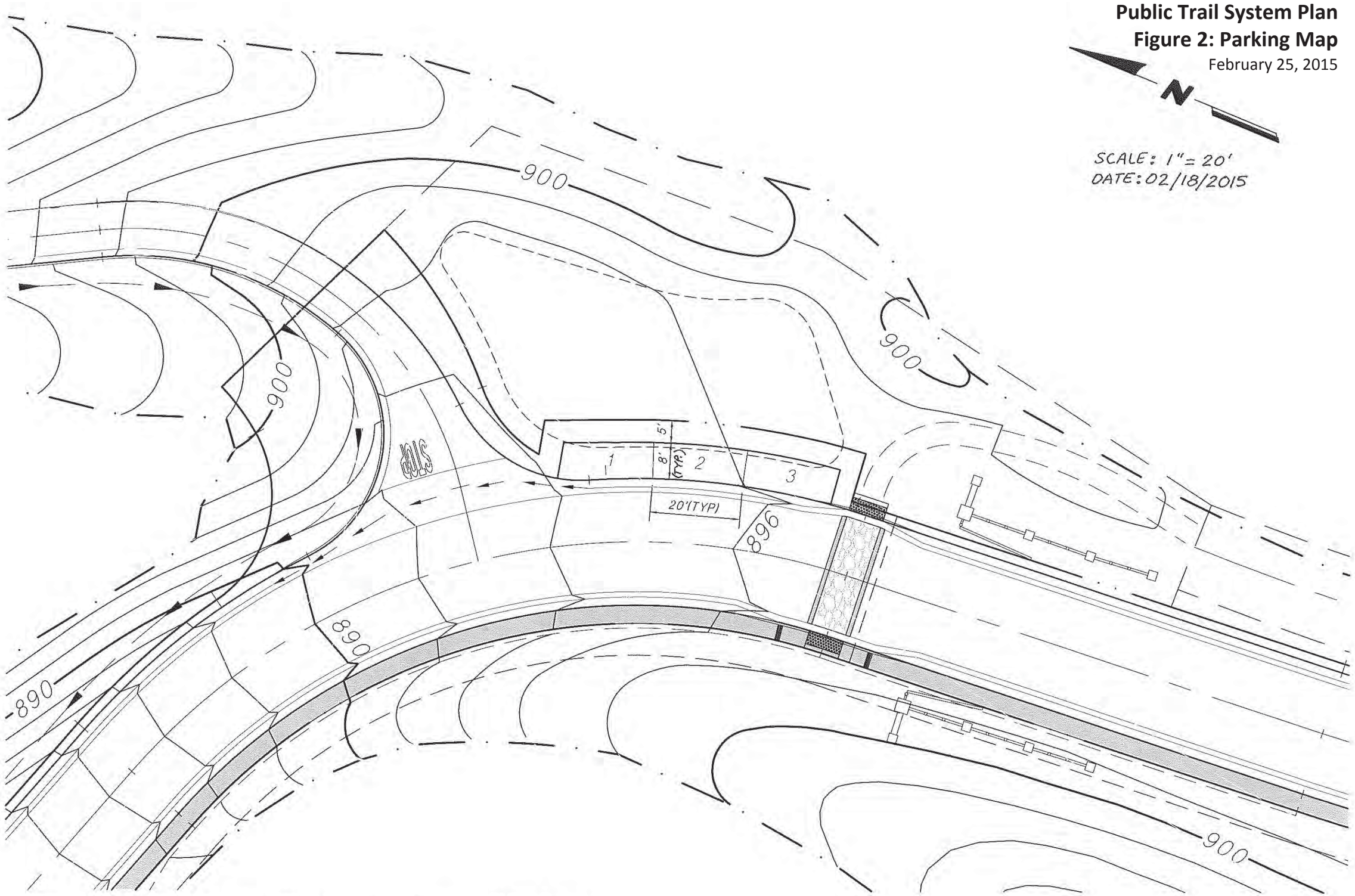
DATE:	02/12/2015
SCALE	SCALE:
	VERT.
DESIGN:	
CHECKED:	
SHEET	**GR-06**
	13 OF 15 SHEETS
PROJ. NO.	12009-20

P:\Drawings\12009-20-Rancho Laguna\Grading Plans\GR 6-8 Trail.dwg, 2/11/2015 3:27:49 PM, station h, 1:1, P/A Design Resources, Inc.

Rancho Laguna II
Public Trail System Plan
Figure 2: Parking Map
February 25, 2015

N

SCALE: 1"= 20'
DATE: 02/18/2015



P:\Drawings\12009-20-Rancho Laguna\parallel parking exhibit.dwg, 2/18/2015 5:59:53 PM, station r, 1:1, P/A Design Resources, Inc.

EXHIBIT K

Rancho Laguna Selected GHAD-Related Conditions of Approval

EXHIBIT K

COA No. 29 – *The seasonal wetland swale, drainage, landscape and open space easement adjacent to Rheem Boulevard shall be a separate parcel owned by the GHAD. However, for the purposes of calculating average lot size and allowable FAR for the project, Lots 1, 2, 3, 4, 5, 6, 10, 26, and 27 shall be considered to include the aggregate area of the private lot, and the adjacent parcel containing the easement (as stated in Exhibit A to these COAs and adjusted in accordance COA #30.c).*

COA No. 33 – *Invasive non-native plant species known to invade wetlands and natural areas, as described in Table 3.55-4 of the project EIR, shall not be used in either the subdivision or individual lot landscaping. Under no circumstances shall the revegetation of graded or filled areas include any species appearing on the California Invasive Plant Council's Invasive Plant Inventory (available at http://www.cal-ipc.org/ip/inventory/weedlist.php). A deed restriction to this effect shall be recorded on each lot prior to the recordation of the final subdivision map and its enforcement monitored and controlled by the HOA and GHAD. [Mitigation Measure 3.55 #22a (for "Invasive Species Impact" Storm Drain Treatment Measures)].*

COA No. 91 – The Project Sponsor shall request and the Town Council shall form or annex into, a *Geologic Hazard Abatement District (GHAD) or other Town designated entity, to be funded in perpetuity by the project owners within the project through district assessments, with initial funding by the Project Sponsor. The GHAD shall be formed prior to recordation of the Final Map. [Mitigation Measure 3.10 #2 (for "Conversion of Agricultural Land" impacts)]: [Mitigation Measure 3.35 #7 (for "Wetlands Restoration" impacts)].*

COA No. 92 – *The GHAD or other entity designated by the Town shall own and manage Parcel "A" (approximately 120.9 acres) and Parcel "B" (approximately 39.4 acres), both of which shall be preserved in a Conservation Easement (or other appropriate deed restriction) as open space (as defined in the Open Space Management Plan) in perpetuity as enforceable by the Town and shall be in the GHAD described in Condition 91 regardless of ownership. The form of the Conservation Easement shall be approved by the Town Manager and the Town Attorney, prior to approval of the precise Development Plan, and the Easement shall be recorded concurrently with the Final Subdivision Map. The term "GHAD" as used in these Conditions of Approval shall refer to the entity or entities designated by the town to either own and/or manage Parcel A and Parcel B. The Town may choose separate entities to perform management and ownership functions described herein. [Mitigation Measure 3.55 #23a (for "Habitat Loss and Fragmentation impact")]*

COA No. 93 – *The GHAD shall have its own district engineer and other qualified consultants including a qualified ecologist/biologist. The GHAD shall be responsible for the following management, monitoring and maintenance tasks: (i) geotechnical stability and erosion control; (ii) stormwater control and water quality basins; (iii) open space grazing, fire protection and control, and trails; and (iv) intermittent drainage, seasonal wetlands, seeps and biological resources.*

COA No. 94 – The above obligations shall include compliance with the final (i) Geotechnical Plan of Control, (ii) Drainage Plan, (iii) Open Space Management Plan, (iv) Public Trail System Plan, (v) Fire Protection Plan, (vi) Wetlands/Special Species Plan, (vii) Rheem Valley Revegetation Plan, and (viii) Conservation Easement (or other appropriate deed restriction), which are more fully described in other Conditions of Approval and the Mitigation Monitoring and Reporting Program. [Mitigation Measure 3.20 #5a (for Landslide Impact")]

COA No. 95 – The GHAD shall have sufficient permanent funding for the estimated costs of the following functions: (a) monitoring and annual reporting, (b) weeding, trail maintenance, erosion control and repair; grazing management and fence repair, and (c) a designated preserve manager and a designated biologist to periodically visit the site and report to the District, and (d) maintaining water quality and detention basins. Funding sources for the GHAD may include seed money provided by the Project Sponsor, annual contributions from homeowners, and income from grazing leases, and other sources as provided under GHAD law. The actions of the GHAD in meeting its responsibilities, including the adequacy of the permanent funding from the Project Sponsor and project homeowners, shall be subject to Town review, direction and control. All Town costs, if any shall be paid by the GHAD. Alternately, the Project Sponsor shall establish an endowment to provide for its maintenance and monitoring. No grading or building permits shall be issued by the Town until the funding sources have been agreeded upon and secured. [Mitigation measure 3.10 #2 (for "Conversion of Agricultural Land")] [Mitigation measure 3.20 #5a (for "Landslide Impacts")][Mitigation measure 3.55 #9b (for "Red-Legged Frog Impact")][Mitigation measure 3.55 #22a (for "Invasive Plant Species Impact")]

COA No. 97 – *Physical barriers shall be installed by the Project Sponsor to prevent vehicles and motorcycles from travelling off designated roadways to minimize future disturbance to grassland cover and other vegetation in the surrounding undeveloped lands and open space. The HOA and the GHAD shall be responsible for the maintenance and monitoring. ")] [Mitigation measure 3.55 #25 (for "Off-Road Vehicle Activity Impact")]*

COA No. 105 – *All of the storm drain system facilities including pipes, catchment, bioretention facilities, storm drain outfall and other structures are to be private, and will remain in the ownership of the HOA or GHAD.*

COA No. 132 – *The GHAD financial operation plan shall include provisions to insure that all costs associated with the Operation and Maintenance, administration and reporting of the water quality features (including costs associated with all Town required administration inspection and reporting) will be addressed in perpetuity. Cost estimates for the complete financing and perpetual maintenance of the water quality features proposed shall be provided for the review and approval of the Public Works department. The estimate shall include all long term costs associated with these water quality features including, but not limited to, Operation and Maintenance, financing, inflation indexing, and replacement costs.*

COA No. 237 – *The GHAD shall be responsible for open space management, which may include grazing. [Mitigation measure 3.10 #2 (for "Conversion of Agricultural Land")]*

COA No. 238 – *The Open Space Management Plan shall include a final Public Trail System Plan. The Public Trail System Plan shall include trail management measures that address recreational impacts to wildlife and wildlife habitat. Such measures shall include the designation of trail access, informative signage regarding the sensitive nature of the native habitats and wildlife, homeowner education, and restrictions on pet access to minimize human encroachment and predation by domestic pets. The GHAD shall be responsible for public trial maintenance and control. [Mitigation measure 3.35 #6 (for "Recreation & Trail Impact")] [Mitigation measure 3.55 #23b (for "Habitat Loss and Fragmentation Impact")]*

COA No. 239 (excerpt) – *...All restored jurisdictional and non-jurisdictional wetlands, along with an appropriate upland buffer, shall be placed in a permanent Conservation Easement, or similar deed restriction, in favor of the Town or appropriated third party entity, preserved in perpetuity, and GHAD.*

COA No. 242 – *The 2005 Wetland/Special Species Plan includes a grazing management plan intended to prevent over-grazing of the Conservation Easement or deed restricted lands, and a Fire Protection Plan. The GHAD shall pay for and administer these measures. Proper implementation of these measures shall be documented by the qualified biological and fire protection monitors for the GHAD and confirmed in reports submitted to the Town.*

COA No. 244 (e.) – *The Fire Protection Plan shall include policies and standards to keep fire risk at reasonable levels in open space areas subject to the approval of the Fire District. The plan shall identify vegetation mitigation and control, maintenance intervals and responsibility, restrictions on vehicle access, water supply and long-term risk management and other criteria as required by the Fire Marshal. Minimum standards for plan review are available from the Fire District. An annual inspection report for compliance shall be submitted to the Fire Marshal for approval. Annual inspection fees shall be paid by the GHAD. [MM 3.61]*

EXHIBIT L

Rancho Laguna Conservation Easement Deed Restriction

EXHIBIT L

DRAFT

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:

SummerHill RL LLC
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
Attention: Kevin Ebrahimi

Space Above Line for Recorder's Use Only

CONSERVATION EASEMENT DEED RESTRICTION

THIS CONSERVATION EASEMENT DEED RESTRICTION ("CEDR") has been executed as of _____, 2015, by SummerHill RL LLC, a California limited liability company ("Declarant"), with respect to that certain real property containing approximately 162.63 acres, located in the Town of Moraga, County of Contra Costa, State of California, more particularly described in Exhibit A attached hereto and incorporated herein by this reference (the "Property").

RECITALS

A. Declarant is the sole owner in fee simple of the Property. Declarant and the Moraga Geologic Hazard Abatement District, a political subdivision of the State of California ("District"), anticipate that Declarant will at a future time transfer Declarant's interest in the Property to the District in accordance with the Rancho Laguna II Approval Documents (defined below) and subject to this CEDR.

B. This CEDR is being executed, delivered, and recorded in the Official Records of Contra Costa County ("Official Records") to satisfy certain conditions of approval imposed by the Town of Moraga, and certain permit conditions imposed by certain federal and state resource agencies (U.S. Fish and Wildlife Service ("USFWS") and California Department of Fish and Wildlife ("CDFW")) (the Town and the resource agencies collectively referred to herein as the "Approving Agencies"), requiring the permanent preservation and management of the Property for open space and habitat purposes as part of the Rancho Laguna II subdivision development project, as set forth in the following documents (collectively, the "Rancho Laguna II Approval Documents"):

(i) Town of Moraga Planning Commission Resolution 05-2014, approving a General Development Plan, a Vesting Tentative Subdivision Map, a Hillside Development Permit and a Grading Permit for the Rancho Laguna II Project, and

(ii) USFWS Biological Opinion dated February 18, 2015; and CDFW Streambed Alteration Agreement, with an Effective Date of March XX, 2105.

C. This CEDR constitutes a Conservation Easement under California law, pursuant to California Civil Code Section 815.1 in that it imposes limitations in the form of a restriction or covenant, executed by the owner of the land, that is binding upon successive owners of such land, and that has as its purpose retaining land predominantly in its natural or open-space condition.

D. A management plan for the Property, entitled "Rancho Laguna Open Space Management Plan" and dated October 2014 has been developed in accordance with the applicable requirements of the Rancho Laguna II Approval Documents (the "Management Plan"). The Management Plan is included within the Plan of Control for the District, adopted in accordance with sections 26500–26654 of the Public Resources Code. The District will manage the Property in accordance with the requirements of this CEDR, the Management Plan and the Plan of Control.

E. The Property possesses open space, wildlife and habitat values (the "Conservation Values"), as further described in the Management Plan.

AGREEMENTS

NOW, THEREFORE, in consideration of the above and mutual covenants, terms, conditions and Restrictions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and pursuant to the laws of the State of California, Declarant hereby declares that the Property, and every part thereof or interest therein, is now held and shall hereafter, in perpetuity (subject to termination only pursuant to Section 5(b) below), be held, managed, occupied, transferred, sold, leased, and conveyed subject to the Restrictions (collectively, the "Restrictions") set forth herein. The Restrictions shall burden and run with the Property, and every part thereof or interest therein, and shall be binding on all persons or entities having or acquiring any right, title or interest in the Property, or any part thereof. The Restrictions are intended to be a covenant running with the land in accordance with California Civil Code Section 1461 *et seq.* and shall only be terminated in accordance with Section 5(b) below.

1. **Purposes**. The purposes of the Restrictions are to ensure that the existing open space, wildlife and habitat values of the Property will be forever protected by preventing any use of the Property that would significantly impair or interfere with the Conservation Values (the "Purposes").

2. **Prohibited Uses**. Any activity on or use of the Property inconsistent with the Purposes of the Restrictions is prohibited. Without limiting the generality of the foregoing, Declarant, and its personal representatives, heirs, successors, assigns, employees, agents, lessees, licensees and invitees are expressly prohibited from doing or permitting any of the following uses and activities on the Property, unless, and only to the extent that, a generally prohibited activity is specified as an approved management practice or permitted use in the Management Plan, as amended from time to time:

(a) Except as permitted in the Management Plan, unseasonal watering; use of fertilizers, pesticides, biocides, herbicides or other agricultural chemicals; weed abatement activities; incompatible fire protection activities; and any and all other activities and uses which may adversely affect the Purposes of the Restrictions;

(b) Except as permitted in the Management Plan, use of off-road vehicles and use of any other motorized vehicles;

(c) Grazing and agricultural activity of any kind, except for those grazing and/or other agricultural practices and uses consistent with the Management Plan;

(d) Except as permitted in the Management Plan, recreational activities including, but not limited to, hunting or fishing;

(e) Commercial or industrial uses;

(f) Any legal or de facto division, subdivision or partitioning of the Property or any fee transfer of less than the entire Property;

(g) Except as permitted in the Management Plan, construction, reconstruction or placement of any building, or any other structure or improvement of any kind;

(h) Depositing or accumulation of soil, trash, ashes, refuse, waste, bio-solids or any other materials;

(i) Except as permitted in the Management Plan, planting, introduction or dispersal of non-native or exotic plant or animal species;

(j) Except as permitted in the Management Plan, filling, dumping, excavating, draining, dredging, mining, drilling, removing or exploring for or extraction of minerals, loam, soil, sands, gravel, rocks or other material on or below the surface of the Property, and granting or authorizing any surface entry for any of these purposes;

(k) Except as permitted in the Management Plan, altering the surface or general topography of the Property, including building of roads, paving or otherwise covering the Property with concrete, asphalt, or any other impervious material;

(l) Removing, destroying, or cutting of native trees, shrubs or other vegetation, except as permitted in the Management Plan, and/or as required for fire breaks, maintenance of existing foot trails or roads, prevention or treatment of disease, utility line clearance, or control of non-native or exotic plants.;

(m) Except as permitted in the Management Plan, manipulating, impounding or altering any natural water course, body of water or water circulation on the Property, and activities or uses detrimental to water quality, including but not limited to, degradation or pollution of any surface or sub-surface waters; and

(n) Transferring or abandoning any water or air rights necessary to protect, sustain, maintain or restore the Conservation Values.

3. **Declarant's Reserved Rights.** Declarant reserves to itself, and to its personal representatives, heirs, successors, and assigns, all rights accruing from its ownership of the Property, including the right to engage in or to permit or invite others to engage in all uses of the Property that are not expressly prohibited or limited by, and are consistent with, the Purposes of the Restrictions and the terms and conditions of this CEDR.

4. **Required Notice to Future Lessees and Licensees.** Any lease, license, easement, or other rental or use agreement subsequently entered into or made with respect to any portion of the Property, whether written or oral, shall contain an express provision informing the lessee, tenant, licensee or other contracting party of the Restrictions and this CEDR and shall require such lessee, tenant, licensee or other contracting party to comply with all such Restrictions and the terms of this CEDR throughout the term of such lease, license or rental or use agreement.

5. **Conveyances of Property.**

(a) If Declarant conveys the fee interest in all or any portion of the Property to a governmental or quasi-governmental entity (specifically including the District), then upon such conveyance, the party receiving title to the Property, or portion thereof, shall confirm in writing the continued legal effectiveness of the terms and conditions this CEDR following such conveyance and shall cause to be recorded in the Official Records such instruments as Declarant may reasonably request to effectuate such confirmation or continue the effectiveness of the Restrictions following such transfer.

(b) Before Declarant conveys the fee interest in all or any portion of the Property to any party other than a governmental or quasi-governmental entity, Declarant shall first enter into, and record in the Official Records, a conservation easement that fully satisfies all the following requirements (the "Conservation Easement"): (i) the Conservation Easement will satisfy all of the requirements under California Civil Code Section 815 *et seq.* for creating a conservation easement interest thereunder; (ii) the Conservation Easement will be held by a nonprofit conservation organization or other entity that is qualified and authorized to hold a conservation easement under California Civil Code Section 815.3, has the financial and stewardship capacity and experience to hold conservation easements of this nature, and has been approved in advance by the Approving Agencies; (iii) the Conservation Easement will include terms and conditions consistent with the protection of the Conservation Values and the Purposes of the Restrictions; and (iv) the form of Conservation Easement shall be approved in advance of recordation by Approving Agencies. Effective automatically upon recordation of a Conservation Easement covering all or any portion of the Property, the Restrictions and this CEDR shall terminate with respect to the portion of the Property covered by such recorded Conservation Easement.

6. **Right of Inspection.** The Approving Agencies, through their employees and representatives, shall each be entitled to enter upon the Property on an annual basis for the limited purpose of confirming compliance with the terms and conditions contained in this CEDR. Prior to any such entry for inspection purposes, the Approving Agency exercising such inspection rights shall provide fourteen (14) days written notice to Declarant or subsequent fee title owner, and Declarant or the subsequent fee title owner shall have the right, through their employees and representatives, to accompany and observe such inspections. If the Approving Agency conducting such annual inspection, or such entity's employees or agents, prepare any reports, diagrams, charts, graphs, photographs, audio or visual recordings or other writings as a result of such inspections, copies of such CEDRs and recordings shall be provided promptly to Declarant or the subsequent fee title owner. The Approving Agency conducting such inspection, or such entity's employees or agents, shall agree to hold harmless Declarant or the subsequent fee title owner, and their officers, directors, agents, employees, invitees (each of which is an indemnitee) from and against any and all claims, losses, damages, demands, liabilities, suits, costs, expenses (including attorneys' fees), penalties, judgments, or obligations whatsoever for or in connection with injury (including death) or damage to any person or

the loss or damage of property to whomsoever belonging or pecuniary or monetary loss which Declarant or the subsequent fee title owner may sustain, incur, or suffer as a result of entry and activities upon the Property pursuant to the rights granted under this Section 6 or resulting from, arising out of, or in any way related to activity conducted by or the omission of such inspecting entity, unless the injury or damage resulted from the sole negligence or the intentional and willful misconduct of the Declarant or the subsequent fee title owner, or their officers, directors, agents or employees.

7. **Remedies.** If an Approving Agency determines there is a violation of the terms of this CEDR, written notice of such violation and a demand for corrective action sufficient to cure the violation shall be given to Declarant or the subsequent fee title owner. If Declarant or the subsequent fee title owner fails to cure the violation within fifteen (15) days after receipt of written notice and demand, or if the cure reasonably requires more than fifteen (15) days to complete and Declarant or the subsequent fee title owner fails to begin the cure within such fifteen (15) day period or fails to continue diligently to complete the cure, the Approving Agency providing the notice may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this CEDR, to recover any damages to which notifying agency may be entitled for such violation or for any injury to the Conservation Values, to enjoin the violation, *ex parte* as necessary, by temporary or permanent injunction without the necessity of proving either actual damages or the inadequacy of otherwise available legal remedies, or for other equitable relief, including, but not limited to, the restoration of the Property to the condition in which it existed prior to any such violation or injury.

If an Approving Agency determines that circumstances require immediate action to prevent or mitigate damage to the Conservation Values, such Approving Agency may pursue its remedies under this section without prior notice to Declarant or the subsequent fee title owner or without waiting for the period provided for cure to expire. Remedies described in this section shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity.

(a) **Costs of Enforcement.** Should proceedings be brought to enforce or interpret any of the terms of this CEDR, the prevailing party in any such proceedings shall be entitled to recover from the non-prevailing party its costs and expenses, including reasonable attorneys' and experts' fees and costs.

(b) **Enforcement Discretion.** Enforcement of the terms of this CEDR shall be at the respective discretion of the Approving Agencies, and any forbearance by any such party to exercise its rights under this CEDR in the event of any breach of any term of this CEDR shall not be deemed or construed to be a waiver by such entity of such term or of any subsequent breach of the same or any other term of this CEDR or of any of such entity's rights under this CEDR. No delay or omission by Approving Agencies in the exercise of any right or remedy upon any breach shall impair such right or remedy or be construed as a waiver.

(c) **Acts Beyond Declarant's or Subsequent Fee Title Owner's Control.** Nothing contained in this CEDR shall be construed to, or shall entitle, the Approving Agencies to bring any action against the Declarant or subsequent fee title owner for any injury to or change in the Property resulting from (i) any natural cause beyond the Declarant's or subsequent fee title owner's control, including, but not limited to, fire, flood, storm, and earth movement, or any prudent action taken by the Declarant or subsequent fee title owner under emergency conditions to prevent, abate, or mitigate significant injury to the

Property resulting from such causes; or (ii) acts by the Approving Agencies or any of their employees or agents.

8. **Public Access.** Nothing contained in this CEDR shall give or grant to the public a right to enter upon or use the Property or any portion thereof where no such right existed in the public immediately prior to execution and recordation of this CEDR.

9. **Liberal Construction.** It is the intention of Declarant that the Purposes of the Restrictions shall be carried out in perpetuity. Liberal construction is expressly required for purposes of effectuating this CEDR in perpetuity, notwithstanding economic hardship or changed conditions of any kind.

10. **Notices.** Any notice, demand, request, consent, approval, or communication that Declarant or the Approving Agencies desires or is required to give to the others shall be in writing and be served personally or sent by recognized overnight courier that guarantees next-day delivery or by first class mail, postage fully prepaid, addressed as follows:

To Declarant:

SummerHill RL LLC
3000 Executive Parkway, Suite 450
San Ramon, CA 94583
Attn: Kevin Ebrahimi

and

General Counsel
SummerHill Homes LLC
777 S. California Avenue
Palo Alto, CA 94304

To Town of Moraga:

Planning Director
Planning Department
329 Rheem Boulevard
Moraga, CA 94556

To U.S. Fish and Wildlife Service:

U.S. Fish and Wildlife Service
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, CA 95825-1846

To California Department of Fish and Wildlife:

California Department of Fish and Wildlife
Bay Delta Region
7329 Silverado Trail

Napa, California 94558
Attn: Lake and Streambed Alteration Program – Robert Stanley
Notification #1600-2014-0254-R3

or to such other address as any of the above entities shall designate by written notice to the others. Notice shall be deemed effective upon delivery in the case of personal delivery or delivery by overnight courier or, in the case of delivery by first class mail, five (5) days after deposit into the United States mail.

11. **Amendment.** This CEDR may not be amended, modified or otherwise changed in any manner, except by a written amendment executed by Declarant or subsequent fee title owner, or Declarant's or subsequent fee title owner's successors in interest, and approved in advance by the Approving Agencies. Any such amendment shall be consistent with the Purposes of the Restrictions and shall not affect the perpetual duration of this CEDR. Any such amendment must be in writing, must refer to this CEDR by reference to its recordation data, must be approved by the Approving Agencies, and must be recorded in the Official Records.

12. **Controlling Law.** The interpretation and performance of this CEDR shall be governed by the laws of the State of California, disregarding the conflicts of law principles of such state, and by applicable Federal law.

13. **Severability.** If a court of competent jurisdiction voids or invalidates on its face any provision of this CEDR, such action shall not affect the remainder of this CEDR. If a court of competent jurisdiction voids or invalidates the application of any provision of this CEDR to a person or circumstance, such action shall not affect the application of the provision to other persons or circumstances.

IN WITNESS WHEREOF Declarant has executed this CEDR on the day and year first above written.

SUMMERHILL RL LLC, a California limited liability company

By: SummerHill Homes LLC,
a California limited liability company, its manager

By: _____

Its: _____

EXHIBITS:

Exhibit A -- Legal Description of the Property

EXHIBIT A

to

Conservation Easement Deed Restriction

LEGAL DESCRIPTION

[Parcels A, B and D as shown on Subdivision Map 9330]