Appendix A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PLAN
(For Significant Impacts Only)

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
IMPACTS AND MITIGATION MEASURES IDENTIFIED IN THE ENVIRONMENTAL IMPACT REPORT (EIR)				
AESTHETICS / VISUAL RESOURCES				
3.1-1A: The existing tree screen shall be supplemented with similar native species on the site behind the houses at 1108 through 1116, 1140, 1144, and 1156 through 1164 Sanders Drive. Trees shall be planted on lower portions of the creek bank, protected from deer, and maintained prior to the start of site preparation. Tree size shall be no less than 15-gallon size and shall be a mix of native species; e.g., coast live oak, California buckeye, California laurel. The applicant shall submit a tree-planting plan for review and approval by the Town.	Applicant/Builder	Tree planting plans shall be submitted for design review. Town of Moraga shall review final planting plan prior to issuance of grading permit. Notify Town when trees have been planted. Conduct on-site inspection of new trees.	Town of Moraga Town of Moraga	Pre-construction. After trees have been planted.
3.1-1B: The applicant shall post a security bond to assure protection of existing and newly planted trees that are located along the north edge of the property. The term of the bond shall extend at least 36 months beyond the completion of the required subdivision improvements.	Applicant/Builder	Bond shall be posted prior to start of site preparation and grading.	Town of Moraga	Prior to issuance of grading permit.
3.1-1C: Newly planted trees shall be monitored for a period of ten years from the date of installation. Any trees lost during this period shall be replaced and monitored by the developer for the same length of time. Upon completion of the monitoring period, the property owners or a homeowner's association shall replace any trees that may require removal and shall be responsible for maintaining the trees.	Applicant/Builder	The applicant shall submit annual monitoring reports to the Town of Moraga for review and approval.	Town of Moraga	Reports filed yearly after first year of installation.

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3.1-2: Refer to Mitigation Measures 3.1-1A–C.	See above			
3.1-3A: The massing and stepping of the houses shall be as shown on Figures 2-2 through 2-4. The maximum building height shall be determined through the design review process, but shall not exceed 25 feet from existing grade.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
3.1-3B: House designs shall be compatible to the adjoining neighborhood; that is, low profile by incorporating low-pitched roofs and roof overhangs.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
3.1-3C: The final map shall reflect similar house plotting as shown on Figure 3-1 in Appendix B. A minimum distance between new and existing houses shall be no less than 180 feet.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
3.1-3D: Prior to final map approval, the applicant shall submit design guidelines to ensure that future homebuilders incorporate features in the design that are compatible with the adjoining neighborhood.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to final map approval.
3.1-3E: Individual landscape plans shall be submitted to the Town's Design Review Board at the time individual house plans are reviewed. The landscape plans shall reflect a mix of native vegetation that will help blend the structures with the natural setting.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
GEOLOGY / GEOTECHNICAL / SOILS				
3.2-1A: A design-level geotechnical and geologic investigation report shall be submitted to the Town of Moraga prior to recordation of the subdivision map. The report, which shall respond to the peer review letter by the Town's Engineering Geologist, shall provide specific criteria and standards to guide site grading, drainage and foundation design.	Applicant's geotechnical consultant	Submit final geotechnical report 45 days prior to recordation.	Review and approval of report by Town's Peer Review Geologist.	Prior to recordation

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In areas of proposed development (i.e., cells), existing landslides and slope repairs shall include (a) removal of slide debris, with the depth of excavation extending into underlying competent material; (b) installation of subsurface drainage measures, (c) replacement of slide debris with compacted engineered fill, (d) construction of surface drainage measures, and (e) planting disturbed areas with erosion-resistant vegetation, as recommended in the design-level geotechnical investigation.				
3.2-1B: Gradient criteria for engineered slopes as recommended by Engeo shall be required for development of the project site. Any conflicts between future grading plans and these criteria should be interpreted as evidence that special engineering is required (e.g., retaining walls, geogrid reinforcement). Those standards call for use of 3:1 fill slopes as a general standard for the project, with the exception that fill slopes less than 8 feet high may have a 2:1 gradient. Cut slopes are to be avoided.	Applicant's geotechnical consultant	Submit grading plan 45 days prior to recordation.	Review and approval of report by the Town's Peer Review Geologist.	Prior to recordation
3.2-1C: Grading and drainage plans shall be subject to review of the Town's Public Works Department and the Town's Peer Review Geologist. Appropriately licensed professionals shall prepare the plans.	Town of Moraga	Technical review of grading and drainage plans.	Review and approval of plan by Town's Peer Review Geologist.	Prior to issuance of grading permit.
3.2-1D: Buttressing, keying and installation of debris benches shall be provided in the transition areas between open space areas and development as recommended in the design-level geotechnical report.	Applicant/project engineering consultant	Technical review by town's Peer Review Geologist.	Town's Peer Review Geologist	Prior to issuance of grading permit.

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3.2-1E: The design-level geotechnical report shall evaluate all major graded slopes and open space hillsides whose performance could affect planned improvements. The slope stability analysis shall be performed for both static and dynamic conditions using an appropriate pseudo-static coefficient.	Applicant's geotechnical consultant	Technical review of design-level geotechnical report.	Review and approval of report by Town's Peer Review Geologist.	Prior to issuance of grading permit.
3.2-1F: During grading, the project geotechnical engineer shall observe and approve all keyway excavations, removal of fill and landslide materials down to stable bedrock or in-place material, and installation of all subdrains including their connections. Cut slopes and keyways shall be observed and mapped by the project-engineering geologist who will provide any required slope modification recommendations based on the actual geologic conditions encountered during grading. Written approval from the Town's Public Works Department shall be obtained prior to any modification. Placement of all fill shall be observed and tested by the representative of the geotechnical engineer, and the density test results and reports submitted to the Town to be kept on file.	Project engineering geologist	Observation and mapping throughout mass grading of sit.	Review and approval by the Town's Peer Review Geologist.	Submittal of a final grading report by applicant prior to "finalizing" grading permit.

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3.2-1G: Prior to recordation of the Final Map, the applicant shall provide a draft deed disclosure recorded against each lot. The disclosure shall provide a detailed citation of the Final Geotechnical Report, indicating that it is available from the developer and from the Town of Moraga; and it shall summarizing the potential geologic hazards and explain the maintenance responsibilities of the property owner, including maintenance of the debris bench and drainage facilities. The language in the draft deed disclosure is subject to review and approval of the Planning Director, and it shall be recorded concurrent with or prior to recordation of the final map.	Applicant	Review and approval of Deed Disclosure.	Town's Peer Review Geologist and Town of Moraga.	Prior to recordation of final map.
3.2-2: A structure setback zone that provides a building free corridor along the mapped fault shall be shown and labeled on the Final Map. The zone shall be 125 feet wide and extend 50 feet from the mapped fault on its northeast flank and 75 feet from the mapped fault on the southwest flank. An annotation of the map shall specify that within the structure setback zone, corrective grading of the landslides is allowed, including the installation of subdrains, debris benches and surface drainage facilities. Additionally, necessary maintenance of these improvements is allowed. Any other use shall require review and approval by the Planning Director.	Applicant	Review and approval of the setback zone.	Town's Peer Review Geologist and Town of Moraga.	Prior to recordation of final map.
3.2-3A: Grading activities shall be restricted to the summer construction season (15 April through 1 October). Any earthwork done after 1 October shall be limited to activities directly related to erosion control, unless the Town of Moraga Public Works Department authorizes additional work.	Applicant/builder	Town of Moraga to review requests for winter season work.	Planning Director may seek comments from Grading Inspector or Town's Peer Review Geologist.	Prior to authorizing any winter season work.

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3.2-3B: Provide an erosion control plan prior to approval of the grading plan. The following interim control measures shall be employed based on site-specific needs in the project area: • Grading to minimize areas of exposed, erodible material, and to avoid over-concentration of rapidly flowing runoff in unprotected, erodible areas. • The erosion control plans shall include water bars, temporary culverts and swales, mulch and jute netting blanks on exposed slopes, hydro seeding, silt fences, and sediment traps/basins. • Placement of salvaged topsoil on graded 3:1 slopes prior to the onset of winter rains. • Because the biggest problem with effective sediment control is lack of maintenance, the erosion control plan must have a comprehensive program for inspection and maintenance during the winter rainy season, including provisions for documenting maintenance activities. • Wherever feasible, isolate runoff from ungraded areas, thereby simplifying erosion control and sediment control measures within the graded area. • Monitor the effectiveness of the erosion control measures throughout the duration of construction.	Applicant's engineer	Technical review of erosion control plans.	Grading Technician Review	Prior to issuance of grading permit.

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3.2-3C: Provide a "Stormwater Control Plan" that is C.3 compliant, for review and approval of the Moraga Public Works Department. In order to reduce the potential impacts of long-term erosion and sedimentation, the project shall incorporate the appropriate design, construction and continued maintenance of one or more of the following long-term control measures: • The specific measures shall be based on the recommendations of the project geotechnical engineer and hydrologist. • Project plans shall incorporate drainage measures to collect and control surface runoff water on sloping lots, including lined ditches and closed downspout collection systems. • Concentrated runoff shall not be permitted to drain over engineered slopes. • The proposed location of lined drainage ditches shall be specified on the development plan accompanying the design-level geotechnical investigation report, which shall be reviewed by the Town's Peer Review Geologist.	Applicant's engineer	Technical review of the Stormwater Control Plan.	Town Engineer	Prior to issuing grading permit.
3.2-3D: Provide low retaining walls with subsurface and surface drainage facilities at the toe of the major fill slopes on the site (at rear of building pads).	Applicant's engineer	Technical review of improvement plans	Town Engineer and Town's Peer Review Geologist.	Prior to issuance of grading permit.

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3.2-4A: The design-level geotechnical investigation shall provide criteria for foundation and pavement design, developed in accordance with the 2007 California Building Code and Ordinance Code requirements on the basis of subsurface exploration and laboratory testing. The constraints on the use of expansive soil near finish grade shall be evaluated in the design-level geotechnical investigation report.	Applicant's engineer	Technical review of geotechnical report.	Town's Peer Review Geologist	Prior to issuance of building permits.
3.2-4B: The foundation recommendation shall include provision for measuring corrosivity of soils within area planned for buildings following grading but prior to the issuance of building permits. The ferrous materials and concrete that is in contact with the ground shall be engineered to minimize/ avoid damage from corrosivity.	Applicant's engineer	Technical review of geotechnical report	Town's Peer Review Geologist	Prior to issuance of building permits.
3.2-5: Prior to the issuance of the first residential building permit, the applicant shall submit a Grading Completion Report prepared by the project geotechnical engineer. The report shall include the following: • An as-graded geologic map of all cut slopes and keyways exposed during grading. This map shall not be generalized and diagrammatic; it shall show the details of observed features and conditions, and serve to document that all slide debris was removed from the graded areas. • Provide the results of compaction of fill, performed using an ASTM compaction test method. The documentation provided shall include reference to the date, location and elevation of the test.	Applicant/project geotechnical engineer	Technical review of the Grading Completion Report.	Town's Peer Review Geologist and Town Engineer	Prior to issuance of building permits.

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• Document any field changes made during construction (i.e., what unexpected condition was encountered, date; what consultation occurred with the Town's Public Works Department/Town Geologist, date; and what remediation was implemented). • Describe the conformance of the as-graded project with the recommendations in the approved geotechnical report.				
3.2-6: The GHAD Plan of Control for the proposed project shall make provision for the perpetual maintenance of the wetland mitigation ponds. Specifically, the Plan of Control shall provide the following details: • frequency of inspections/ timing of inspections, • outline the design elements of the ponds that are to be inspected by the GHAD Manager (e.g. holding capacity, outfall structure, etc.), • provide objective criteria for triggering the need for sediment removal or re-construction of ponds, • indicate the role of a wetlands biologist in any necessary maintenance operations that involve work within the ponds, • when the GHAD Manager determines the need for maintenance, outline the process to notice the GHAD Board of Directors and resource agencies of the proposed plan for maintenance, and	Applicant/geotechnical consultant	Technical review of GHAD Plan of Control.	Town Engineer and Town's Peer Review Geologist	Prior to recordation

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• provide the agencies a reasonable amount of time to comment on the maintenance plan.				
HYDROLOGY / DRAINAGE				
3.3-3: The V–ditches shall be designed to convey the surface runoff from the natural areas above the debris benches resulting from a 100-year, 12-hour storm with saturated soil conditions.	Applicant's engineer	Technical review of Improvement Plans	Town Engineer and Town's Peer Review Geologist	Prior to issuance of grading permit.
3.3-5A: Prior to submitting the final map, the applicant shall submit a Stormwater Facilities Operation and Maintenance Plan, including detailed maintenance requirements and a maintenance schedule.	Applicant's engineer	Technical review of the Stormwater Facilities Operation and Maintenance Plan.	Town Engineer and Town's Peer Review Geologist	Prior to submittal of final map.
3.3-5B: Joint Maintenance Agreement (JMA) shall be established for maintaining and cleaning the Hetfield Estates storm drain system, including subdrains, V–ditches, catch basins and gratings, storm drain pipelines, the detention basin, and the IMPs that are proposed in the Stormwater Control Plan for the proposed project (RMR, 2008a, Table 1). All facilities shall be cleaned prior to the rainy season (mid-October each year) and following every major storm. All Hetfield Estates property owners shall be required to contribute annually to fund the JMA. Potential buyers of Hetfield Estates properties shall be informed of their commitments to the JMA so that they can assess their ability to pay their annual contributions.	Applicant	The JMA shall be included with the property deeds at the time of sale for individual house sites. Copies of the agreements shall be provided to the Town for review and approval.	Town Engineer	Prior to issuance of occupancy permit.
3.3-7A: Lined ditches capable of collecting surface runoff shall be provided at the toe of the engineered slope to collect and transport runoff from the fills to the selected discharge points.	Applicant's engineer	Review and approval of Improvement Plans. On-site inspection upon installation.	Town Engineer Town Engineer	Prior to the issuance of grading permits. Upon installation.

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3.3-7B: During grading, the location and approximate depth of subdrains shall be established by field survey. At the conclusion of site grading, the project applicant shall submit an as-built drainage plan showing the location and elevation of the subdrains and cleanouts, as well as the surface drainage facilities.	Applicant's engineer	On-site inspection by Town of Moraga Engineer. Submittal of as-built drainage plan for review and approval by Town of Moraga.	Town Engineer	During grading activities. Upon completion of site grading.
3.3-8: The applicant shall contact the United States Corps of Engineers and the California Department of Fish and Game to obtain required permits and a Streambed Alteration Agreement for construction and operation of a storm drain discharge structure and access bridge over Larch Creek.	Applicant's engineer	Streambed alteration permit shall be obtained and submitted with improvement plans to Town of Moraga for review and approval.	Town of Moraga	Prior to issuance of grading permit.
PLANNING AND LAND USE				
3.4-2: The applicant shall revise the Conceptual Development Plan to include all of the area within Lot 1 in the MOSO Cell Analysis for both pre- and post-development conditions, prior to approval of the general development plan.	Applicant	A revised Conceptual Development Plan shall be submitted for review and approval by the Town of Moraga.	Town of Moraga	Prior to approval of general development plan.
IMPACTS AND MITIGATION MEASURES IDENTIFIED IN THE INITIAL STUDY / PROPOSED MITIGATED NEGATIVE DECLARATION (IS/MND)				
AIR QUALITY				
III-1: During grading and construction activities, the applicant shall implement the following measures to control dust: • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials, or require trucks to maintain at least two feet of freeboard.	Applicant/Builder	Grading plans shall include dust control measures approved by the Town of Moraga.	Town of Moraga	On-site inspection during grading activities.

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• Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. • Sweep off-site streets leading to the project site daily if soil, sand, or other loose materials are deposited on these streets. • Sweep daily all paved access roads, parking areas, staging areas and entrances at the construction site.				
BIOLOGICAL RESOURCES				
IV-1A: The applicant shall obtain all necessary permits from the Corps, USFWS, and the RWQCB as required by federal and State law to avoid, minimize or offset impacts to any species listed under either the State or federal Endangered Species Acts or protected under any other State or federal law as follows:				
• Before project implementation, a delineation of waters of the United States, including wetlands that could be affected by development, shall be made by a qualified wetland specialist through the formal CWA Section 404 process.	Applicant's Wetland Consultant/Juris-dictional Agencies	Verify Draft Wetland Delineation with Corps and provide copy to Town.	Town of Moraga	Provide Verification prior to issuance of Grading Permit.
• If based on the verified delineation, it is determined that fill of waters of the United States would result from project implementation, authorization for such fill shall be secured from the Corps through the Section 404 permitting process and from the RWQCB as part of the Section 401 water quality certification process.	Applicant's Wetland Consultant/Juris-dictional Agencies	Secure agency authorizations and provide evidence to Town	Town of Moraga	Provide copies of agency authorizations prior to issuance of Grading Permit.

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• Consultation or incidental take permitting may be required under the ESA. The applicant shall obtain all legally-required permits from the USFWS for the "take" of protected species under the ESA. • Evidence that the applicant has secured any required authorization from these agencies shall be submitted to the Town of Moraga prior to issuance of any grading or building permits for the project.				
IV-1B: Following a biological opinion issued by the regulatory agencies as discussed above, measures shall be applied to minimize take within the construction zone. The applicant shall follow the requirements of the biological opinion. Furthermore, a qualified biologist shall be retained by the applicant to oversee construction and ensure that no inadvertent take of Alameda whipsnake or California red-legged frog occurs as a result of development of the site. If no biological opinion is obtained from the regulatory agencies regarding the taking of an endangered species, the following mitigation shall apply:	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

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• Prior to any grading or grubbing of the site, the biologist shall conduct a preconstruction survey to confirm absence of any California red-legged frog or Alameda whipsnake on the site. During the construction phase of the project, a trained biologist or a trained on-site monitor (such as the construction foreman) shall check the site in the morning and in the evening of construction activities for the presence of California red-legged frog and Alameda whipsnake. This includes checking holes, under vehicles and under boards left on the ground. If any California red-legged frog or Alameda whipsnake are found, construction shall be halted until they disperse naturally, and the monitor shall immediately notify the biologist in charge and the USFWS. Construction shall not proceed until adequate measures are taken to prevent dispersal of any individuals into the construction zone, as directed by the USFWS.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• Subsequent recommendations made by the USFWS shall be followed. The monitor shall not handle or otherwise harass the animal. The biologist in charge and the on-site monitor shall be aware of all terms and conditions set by USFWS and CDFG on the project. The biologist in charge shall train the on-site monitor in how to identify California red-legged frog and Alameda whipsnake. The biologist in charge shall visit the site at least once a week during construction and confer with the trained on-site monitor.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

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• All construction workers shall be informed of the potential presence of California red-legged frog and Alameda whipsnake, that these species are to be avoided, that the foreman must be notified if they are seen, and that construction shall be halted until authorization to proceed is obtained from the USFWS and appropriate protocols for species protection shall be followed.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• During construction, all holes shall be covered at night to prevent California red-legged frog and Alameda whipsnake from becoming trapped in holes on the construction site.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
IV-1C: A qualified biologist shall be retained by the applicant to conduct a trapping and relocation program for any San Francisco dusky-footed woodrats located within the limits of proposed grading and development. A field survey shall be conducted by a qualified biologist to determine whether any woodrat nests occur within the anticipated limits of grading. Any nests within the construction zone shall be relocated to locations proposed as permanent open space on the site and individual woodrats released into their relocated nests.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

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If nest relocation is required, the trapping and relocation effort shall be conducted from August through February outside the breeding season to ensure any young are not inadvertently lost due to the destruction of the protective nest. The trapping and relocation effort shall preferably be conducted within a few days prior to grubbing and vegetation removal to prevent individual woodrats from moving back into the construction zone.				
IV-1D: Any active raptor or loggerhead shrike nests in the vicinity of proposed grading shall be avoided until young birds are able to leave the nest (i.e., fledged) and forage on their own. Avoidance may be accomplished either by scheduling removal of trees and shrubs during the non-nesting period, September through February. Provisions of the pre-construction survey and nest avoidance, if necessary, shall include the following:	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• If grading is scheduled during the active nesting period (March through August), a qualified wildlife biologist shall be retained by the applicant to conduct a pre-construction nesting survey no more than 30 days prior to initiation of grading to provide confirmation on the presence or absence of active nests in the vicinity.	Applicant's Biological Consultant/ Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	Applicant's Biological Consultant and Construction Contractor

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
• If active nests are encountered, species-specific measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent nest abandonment. Buffers and setback zones shall be established as required by CDFG and remain in place until young have fledged the zones. At a minimum, grading in the vicinity of the nest shall be deferred until the young birds have fledged. The perimeter of the nest-setback zone shall be fenced or adequately demarcated, and construction personnel restricted from the area.	Applicant's Biological Consultant/DFG	Provide required construction setback as negotiated with CDFG	Applicant's Biological Consultant and CDFG	As negotiated during construction.
• If permanent avoidance of the nest is not feasible, impacts shall be minimized by prohibiting disturbance within the nest-setback zone until a qualified biologist verifies that the birds have either (a) not begun egg-laying and incubation, or (b) that the juveniles from the nest are foraging independently and capable of independent survival at an earlier date. A survey report by the qualified biologist verifying that the young have fledged shall be submitted to the Town of Moraga prior to initiation of grading in the nest-setback zone.	Applicant's Biological Consultant/DFG	Provide copy of survey report to Town prior to initiation of grading in nest-setback zone.	Applicant's Biological Consultant and Town of Moraga	Provide copy of survey report prior to grading in nest-setback zone.

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IV-2: Native grass plants from the stand of creeping wildrye in the vicinity of proposed Lot 3 shall be salvaged and reused as part of revegetating graded slopes. Plants shall be salvaged before grubbing and initial grading, and stored until replanted on the site. The salvage and replanting program shall be prepared by a qualified biologist and incorporated into the Landscaping Plan for the project, preferably as part of the Wetland Mitigation Program specified in **Mitigation Measure IV-3A**.	Applicant's Biological Consultant/Landscape Architect	Provide salvage and replanting program as part of Landscape Plan	Applicant's Biological Consultant/Landscape Architect/Town of Moraga	Incorporate program prior to approval of Final Landscape Plan.
IV-3A: A Final Wetland Mitigation Program shall be prepared by a qualified wetland specialist to provide for the protection, replacement, and management of jurisdictional waters on the site affected by proposed development. The Final Wetland Mitigation Program shall include the following components and meet the following standards:	Applicant's Wetland Consultant	Provide Final Wetland Mitigation Plan	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• Proposed grading and development shall be redesigned to preferably avoid removal or adverse impacts on areas verified as jurisdictional wetlands, particularly the freshwater seep at the southeastern edge of the "Grading Daylight Limits" on proposed Lot 6. This freshwater seep appears to be larger than currently mapped by the applicant's consultant.	Applicant's Wetland Consultant and Civil Engineer	Refine Tentative Map and Grading Plan to minimize disturbance to wetlands.	Applicant's Biological Consultant/Town of Moraga	Demonstrate wetlands have been adequately avoided and provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.

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• Provide adequate mitigation for any direct or indirect impacts on jurisdictional waters as coordinated with the Corps and/or RWQCB where complete avoidance is infeasible. Replacement wetlands shall be at a minimum of 2:1 ratio and shall be established in suitable locations within undeveloped open space areas, preferably on-site. The wetlands replacement component of the Final Wetland Mitigation Program shall emphasize establishment of native freshwater marsh and seasonal wetlands to enhance existing habitat values.	Applicant's Wetland Consultant/Juris-dictional Agencies	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• The wetland replacement component of the Final Wetland Mitigation Program shall specify performance criteria, maintenance and long-term management responsibilities, monitoring requirements, and contingency measures. Monitoring shall be conducted by the qualified wetland specialist for a minimum of five years and continue until the success criteria are met.	Applicant's Wetland Consultant/Juris-dictional Agencies	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• The Final Wetland Mitigation Program shall be completed prior to approval of the Final Map for the project to demonstrate feasibility of wetland mitigation, and allow for possible major adjustments to the limits of proposed development, particularly on Lot 6.	Applicant's Wetland Consultant and Civil Engineer	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to approval of Final Map.

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IV-3B: The final trail alignment connecting to the cul-de-sac on proposed Lot 6 should be designed to avoid or minimize passing through the freshwater seeps and seasonal wetlands on this portion of the site. If complete avoidance is not feasible, potential impacts shall be addressed as part of the Final Wetland Mitigation Program outlined in **Mitigation Measure IV-3A.**	Applicant's Wetland Consultant and Civil Engineer	Adjust alignment of trail to avoid wetland resources and address any impacts as part of Final Wetland Mitigation Plan.	Applicant's Biological Consultant and Civil Engineer/Town of Moraga	Identify trail alignment and provide Final Wetland Mitigation Plan prior to approval of Final Map.
IV-4A: The portion of the site not proposed for development will be placed in permanent open space to preserve its function as permanent wildlife habitat. Any fencing proposed as part of development on individual lots shall be designed to allow for continued movement by wildlife, or shall be restricted to the vicinity of the building pads. Any fencing, which could obstruct wildlife movement, shall not extend beyond the limits of grading shown in the Conceptual Development Plan.	Applicant's Civil Engineer	Provide protective mechanism.	Applicant's Civil Engineer/Town of Moraga	Include r protective mechanism prior to approval of Final Map.
IV-4B: Signage shall be provided at the access points off the cul-de-sac on proposed Lot 6 which indicate that dogs shall be leashed.	Applicant's Civil Engineer	Include signage on Final Map. Conduct on-site inspection	Applicant's Civil Engineer/Town of Moraga Town of Moraga	Confirm signage include on plans prior to approval of Final Map. Prior to issuing occupancy permit.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
IV-5A: Grading shall be designed to avoid and minimize possible tree removal. This shall be accomplished by expanding the current tree mapping, adjusting the limits of grading to ensure adequate avoidance, and retaining a certified arborist to evaluate potential impacts and make specific recommendations to minimize tree loss or damage. The limits of tree mapping should be expanded to show all trees with trunk diameters of 5 inches or greater within 30 feet of the proposed "Grading Daylight Line" on the Conceptual Development Plan. All mapped trees shall be evaluated by a certified arborist consistent with Section 12.12.070 of the Town of Moraga Tree Preservation Ordinance, and a report shall be repaired to minimize short-term construction damage and long-term decline due to changes in root zone.	Applicant's Biological Consultant, Certified Arborist and Civil Engineer	Adjust limits of grading on the Final Map and Final Grading Plan.	Applicant's Certified Arborist and Town of Moraga	Confirm adjustments to Tentative Map and Grading Plan.
IV-5B: A construction fence shall be installed around all trees to be protected that will identify the limits of grading and disturbance.	Applicant's Biological Consultant and Construction Contractor	Install construction fencing to protect trees to be preserved.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
IV-5C: A Tree Replacement Program shall be prepared by the applicant's consulting biologist, and implemented as part of the mitigation program for the project. Replacement trees shall be provided at a minimum 3:1 ratio, shall be installed along the edge of the riparian corridor and other locations to be retained as undeveloped open space, and shall be maintained for a minimum of five years to ensure their successful establishment. Replacement tree plantings shall be irrigated for a minimum of two years following initial planting to ensure their survival, and shall be replaced on an annual basis to meet success criteria specified in the Tree Replacement Program.	Applicant's Biological Consultant	Prepare and implement Tree Replacement Program, and provide results of long-term monitoring	Applicant's Biological Consultant/Town of Moraga	Provide Tree Replacement Program prior to issuance of Grading Permit, and Annual Monitoring Reports.
CULTURAL RESOURCES				
V-1A: In the event of the discovery of human remains during construction, pursuant to Section 7050.5 of the Health and Safety Code and Section 5097.94 of the Public Resources Code of the State of California, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The Contra Costa County Coroner shall be notified by the developer and shall make a determination as to whether the remains are Native American. If the remains are not subject to his authority, he shall notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased Native American.	Builder/Contractor Builder/Contractor	Notify County Coroner and Town of Moraga if remains are uncovered. Notify Town of Moraga when cultural resources encountered.	Contractor/Town of Moraga Builder and/or Contractor and/Town of Moraga	During grading/ excavation activities. During grading/ excavation activities.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
V-1B: Should evidence of prehistoric cultural resources be discovered during construction, work in the immediate area of the find shall be stopped to allow adequate time for evaluation and mitigation. A qualified professional archaeologist will be called in to make an evaluation of the material; and if significant, develop a mitigation program that includes collection and analysis of the materials, preparation of a report, and curation of the materials at a recognized storage facility under the direction of the Planning Director. Collection and evaluation shall be completed prior to the resumption of grading.	Builder/Contractor	Notify Town of Moraga when cultural resources encountered.	Builder and/or Contractor and/Town of Moraga	During grading/ excavation activities.
PUBLIC SERVICES				
XIII-1: The six houses shall be equipped with security alarm systems subject to review and approval of the Town of Moraga Police Department.	Applicant/Builder	Building plans and specifications shall include security systems. Plans to be reviewed and approved by Building Inspection. Conduct on-site inspection.	Town of Moraga Town of Moraga	Prior to issuance of building permit. Prior to issuance of occupancy permit.
TRANSPORTATION/TRAFFIC				
XV-1: Both approaches of Hetfield Place shall be stop sign controlled.	Applicant's engineer	Submit improvement plans for review and approval by the Town of Moraga	Town of Moraga	Prior to issuance of grading permit.

Appendix B

Notice of Preparation

NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE HETFIELD ESTATES SUBDIVISION

AND

INVITATION TO A PUBLIC SCOPING MEETING ON MONDAY, MARCH 2, 2009, AT 7:30 PM AT LA SALA BUILDING, HACIENDA DE LAS FLORES 2100 DONALD DRIVE, MORAGA, CALIFORNIA

Project Title:	Hetfield Estates Subdivision
Project Location:	The 58.2-acre property is located in the southeast portion of the Town of Moraga, California, directly south of Sanders Drive. Access to the project site will be via Hetfield Place. Residential development and open space surrounds the property. (Refer to Figure 1).
Lead Agency:	Town of Moraga
County:	Contra Costa
Project Description:	The applicant is proposing a 7-lot subdivision with lots ranging in size from 41,826 square feet (.96 acre) to 51.45 acres. The largest parcel will be retained as permanent open space. A trail will be provided to allow public access into the open space and onto existing trails. Single-family houses will be constructed on the remaining six lots. A creek borders the northern property line, separating an existing residential neighborhood from the property. Hetfield Place will be extended across the creek to serve the six residences. This crossing will require a bridge. Grading will be required to create building pads, debris benches and to repair existing slides. Subdrains will be installed along the drainage benches to intercept runoff from upslope. A detention basin will be constructed to detain flows during a storm. The project site is currently vacant and was previously used for cattle grazing. It is designated as open space and must meet the criteria of the Moraga Open Space Ordinance (MOSO). An Initial Study/Mitigated Negative Declaration of the project was prepared and heard by the Planning Commission and subsequently appealed to the

Town Council. Based upon comments raised by the public and new information provided by neighbors, the Town Council felt that substantial information had been presented to deny the Mitigated Negative Declaration, thereby requiring an Environmental Impact Report.

Future development of the project site could have a significant effect on a range of environmental issues. Consequently an Environmental Impact Report (EIR) will be prepared to analyze these effects, as well as to explore alternatives to the Project and possible mitigation measures to avoid or lessen identified effects. The Town of Moraga will prepare an EIR for the project under the terms and requirements of the California Environmental Quality Act (CAL.PUB.RES.CODE §§ 21000, et seq.) (CEAQ) and the implementing CEQA guidelines (14 CAL. PUB. RES. CODE §§ 15000, et seq.) (CEQA Guidelines). The purpose of the EIR is to provide decision-makers, public agencies, the general public and other interested parties with an analysis of potential environmental impacts associated with the project, and feasible alternatives to the project.

The purpose of this notice is: (1) to serve as the NOP to potential "Responsible Agencies" as required by Section 15082 of the CEQA Guidelines; and (2) to advise and solicit comments and suggestions regarding the preparation of the EIR, environmental issues to be addressed in the EIR, and any related issues from interested parties other than potential "Responsible Agencies", including interested or affected members of the public.

A copy of the Hetfield Estates Initial Study is available online on the Town's website (http://www.ci.moraga.ca.us/moraga_planning_department) and is available for public review during normal business hours (Monday through Friday from 1 to 5 PM) at the Planning Department, 329 Rheem Blvd., Moraga.

The Town of Moraga will accept written comments regarding this NOP through the close of business, April 2, 2009. All comments or other responses to this NOP should be submitted in writing to:

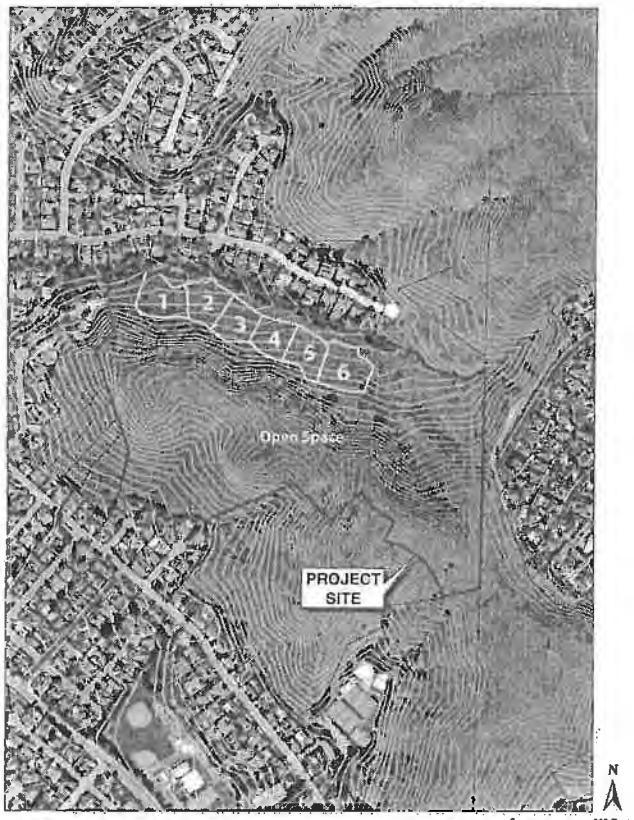
Town of Moraga Planning Department
329 Rheem Boulevard, Suite 2
Moraga, CA 94556

The town of Moraga will accept responses to this NOP by e-mail received through the close of business, April 2, 2009. If e-mail comments are submitted with attachments, the attachments should be delivered separately, in writing, and in person or by regular mail, to the address specified above. The virus protection measures of the town's e-mail system, and the variety of potential formats for attachments, limits the ability for the attachments to be delivered by e-mail. Responses to this notice may be sent to: planning@moraga.ca.us .

In accordance with CEQA and the CEQA Guidelines, the Planning Commission of the Town of Moraga will conduct one public scoping meeting on the EIR being prepared for the project. The Town of Moraga invites you to this meeting to help identify potential environmental issues to be addressed in the EIR. A brief presentation on the project will be provided at the beginning of the meeting by Town staff. The public will have the opportunity to provide formal comments at the scoping meetings either verbally or in writing.

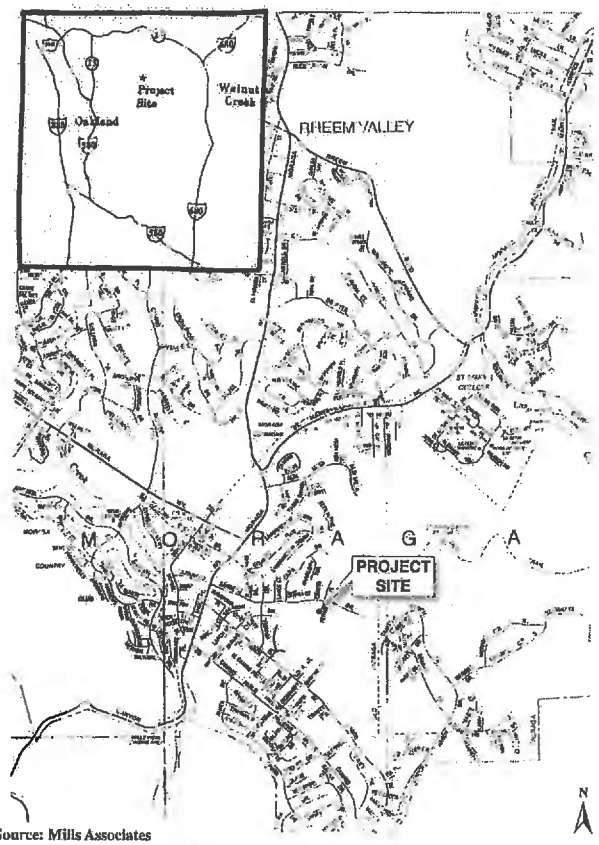
Please call Lori Salamack at (925) 888-7043 if you have any questions regarding the public meetings.

Notice Date: February 20, 2009



Source: Darwin Myers Associates, RMR

Figure 2-2 Aerial Photo with Project Overlay



Source: Mills Associates

Figure 2-1 Site Location Map and Regional Setting

Appendix C

Initial Study

ENVIRONMENTAL CHECKLIST

1.	Project title:	Hetfield Estates
2.	Lead agency name and address:	Town of Moraga
3.	Contact person and phone number:	Lori Salamack, Planning Director (925) 888-7043
4.	Project location:	Southwest Moraga off Sanders Drive at southern terminus of Hetfield Place
5.	Project sponsor's name and address:	The Wyro Company 40 Valley Drive Orinda, CA 94563
6.	General plan designation:	OS-M (Open Space/M.O.S.O.)
7.	Zoning:	OSM-DT (Open Space Moraga – Density Transfer)

8. Description of project: The proposed project consists of subdividing the property into seven lots with lot sizes ranging in size from .96 acre to 51.45 acres. The conceptual site plan was revised in response to staff concerns regarding individual maintenance of debris basins within the previous scenic easements, and protection of the wetland areas. The lots were reconfigured to create an additional lot that is designated permanent open space. The private scenic easements have been eliminated and consolidated into one lot (Lot 7) that will be designated as permanent open space. No grading or structures will be allowed within the open space.

   Access to the subdivision will be from Hetfield Place, located near the end of Sanders Drive. Access will require crossing the existing creek. A private single street will serve the six lots, ending in a cul-de-sac at Lot 6 in the eastern portion of the site. The revised site plan shows the area extending between the six lots and the creek as open space. Within this area is the private roadway and a 5-foot wide public trail. The open space will provide a buffer between the subdivision and the residences of Sanders Drive, as well as provide protection of the creek corridor. The open space ranges in a width from 70 feet to 140 feet. The 5-foot-wide public trail will extend east to the edge of the property, eventually following the northwest/southeast ridge. The trail will split off to access two separate knolls. Trail users will be able to exit the property on the south side of the ridge on Vista Encinos, or through a 100-foot equestrian right of way in the southeast corner of the property.

   The six residential lots will front on the uphill side of the street. There will be a mix of one- and two-story houses with Lots 3 and 6 containing one-story houses and lots 1, 2, 4 and 5 containing two-story houses. The houses will be located along the flatter portion of the site, stepping up the hill where necessary. Plans show the houses ranging in size from 5,110 gross square feet to 6,500 gross square feet (including garage).

The ordinance restricts development to a maximum density of one (1) dwelling unit per 20, 10, or 5 acres, as well as prohibits development on slopes with grades of 20 percent or greater. The minimum required lot areas, dimensions and setbacks will conform to the applicable zoning standards.

9. Surrounding land uses and setting: Residential and open space.

10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement): Moraga-Orinda Fire District, State Water Quality Control Board—San Francisco Bay Region, United States Army Corps of Engineers, State of California Department of Fish and Game.

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

√	Aesthetics		Agriculture Resources		Air Quality
√	Biological Resources	√	Cultural Resources	√	Geology / Soils
	Hazards & Hazardous Materials	√	Hydrology / Water Quality		Land Use / Planning
	Mineral Resources		Noise		Population / Housing
√	Public Services		Recreation	√	Transportation / Traffic
	Utilities / Service Systems		Mandatory Findings of Significance		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

____ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

√ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

____ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

____ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

____ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Lori Salamack — April 18, 2008

Signature Lori Salamack, Planning Director — Date

EVALUATION OF ENVIRONMENTAL IMPACTS:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. **AESTHETICS** — Would the project:				
a) Have a substantial adverse effect on a scenic vista?				√
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?		√		
c) Substantially degrade the existing visual character or quality of the site and its surroundings?		√		
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			√	

Setting

The project site is located in a small valley that is bisected by Sanders Drive and surrounded on three sides by hills. The project site is located on the south-facing slope of an east-west trending ridge on the south side of Sanders Drive. The slope rises at its lowest elevation of 531 feet in the northwest corner of the property to an elevation of 853 feet at the southeast corner. A creek separates the site from the Sanders Drive residential neighborhood. Numerous oaks, bays, willows and Monterey pines provide a buffer along the north edge of the property, adjacent to the creek. A few residents of Sanders Ranch Drive, located to the east, overlook the project site as shown in Photo 1.

Photo 1: View looking east towards Sanders Ranch Drive – creek and tree screen located on left side of photo.

Photo 2: View of backyards on Sanders Drive from proposed Lot 6

Most of the houses on Sanders Drive that back up to the project site have partially blocked views due to the extensive tree screen. However, three of the residences have direct views of the site as shown in Photo 2. Photo 3 depicts the residence located on Ross Drive that is located adjacent to Lot 1 in the northwest corner of the project site.

Photo 3: View looking west from Lot 1 of structure on Ross Drive.

Discussion:

a) Have a substantial adverse effect on a scenic vista?

The project site is not designated as a scenic vista in the Town's General Plan. It has served as open space to the residents of Sanders Drive who have enjoyed the bucolic setting and the sense of privacy that the site affords. The development would be clustered along the flatter portion of the site, closest to the existing residences. As required by the General Plan, the remaining portions of the property must remain as dedicated open space. Neighboring residents would have the opportunity to utilize the trails and be able to connect to other trails. This is considered a less-than-significant impact.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Scenic resources on the project site are limited to the numerous trees located along the northern edge of the property and interspersed on the slope outside the development area. The proposed grading would require the removal of several regulated trees as defined by the Town's Tree Preservation Ordinance. These include two willows, an oak and a buckeye on Lot 1 and several smaller oaks at the Hetfield Place bridge crossing. A complete discussion of the trees is found in IV. Biological Resources.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Residents of Sanders Drive will lose the open space that has been an extension of their backyards. Rather than viewing through a tree screen of a vacant hillside that has been utilized for cattle grazing and frequented by wildlife, they will view six houses. Unlike the existing neighborhood where lots are less than one-half acre, the smallest lot in the proposed development will be .96 acre. As shown in Figure 2-3, Conceptual Development Plan, two or more of the existing residences will look out on an individual house because the proposed lots span the width of two or more existing residences. No one existing resident is going to be able to view all of the houses from his/her house or backyard in one glance, due to the space between the new houses and the existing tree screen that will remain. However, where there is a partial existing tree screen, particularly behind 1108 through 1116 Sanders Drive and 1156 through 1164 Sanders Drive, residents will have direct views of the house on Lots 1 and 2 and on Lot 6. Residents of 1140 and 1144 Sanders Drive will also have a partial direct view of the house on Lot 4 due to limited screening.

The houses are sited as such that they will be located on the flatter portion of the lot, closest to the creek and stepped up the hill. As plotted on the site plan shown in Figure 3-1, the distance between the existing houses on Sanders Drive and the new houses would range from 180 feet to 225 feet. General Plan policies call for ~~n~~new developments to conform to the site's natural setting; retaining the character of existing landforms; preserving significant native vegetation; and with respect to ridgelines, encourage location of building sites so that visual impacts are minimized." The backdrop of the upper portion of the slope and the ridge would not change, and neighbors who currently view the ridge would continue to be able to do so. The following figures (Figures 3-1 through 3-3) depict cross sections for each lot to illustrate the siting of the house in relation to the slope and the ridge. Figure 3-1 is a key to the cross sections.

Figures 2-4 through 2-6 provide conceptual house designs as viewed from the private street in the development. Each lot will be custom designed and go through the Town's design review process. The conceptual plans demonstrate how the structures can fit on the hillside as well as protect the ridgeline visibility.

Impact I.1: The proposed project will substantially degrade the existing visual character of the site.

Mitigation Measure I.1a: The existing tree screen shall be supplemented with similar native species on the site behind the houses at 1108 through 1116, 1140, 1144, and 1156 through 1164 Sanders Drive. Trees shall be planted on lower portions of creek bank, protected from deer, and maintained prior to issuance of building permits. Tree size shall be no less than five-gallon. The applicant shall submit a tree-planting plan for the review and approval by the Town.

Mitigation Measure I.1b: The applicant shall post a security bond to assure protection of existing and newly planted trees that are located along the north edge of the property. The

term of the bond shall extend at least 36 months beyond the completion of the required subdivision improvements.

Mitigation Measure I.1c: Newly planted trees shall be monitored for a period of ten years from the date of installation. Any trees lost during this period shall be replaced and monitored by the developer for the same length of time. Upon completion of the monitoring period, the Homeowner's Association shall replace any trees that may require removal and shall be responsible for maintaining the trees.

Mitigation Measure I.1d: The massing and stepping of the houses shall be as shown on Figures 2-4 through 2-6. The maximum building height will be determined through the design review process, but shall not exceed 28 feet.

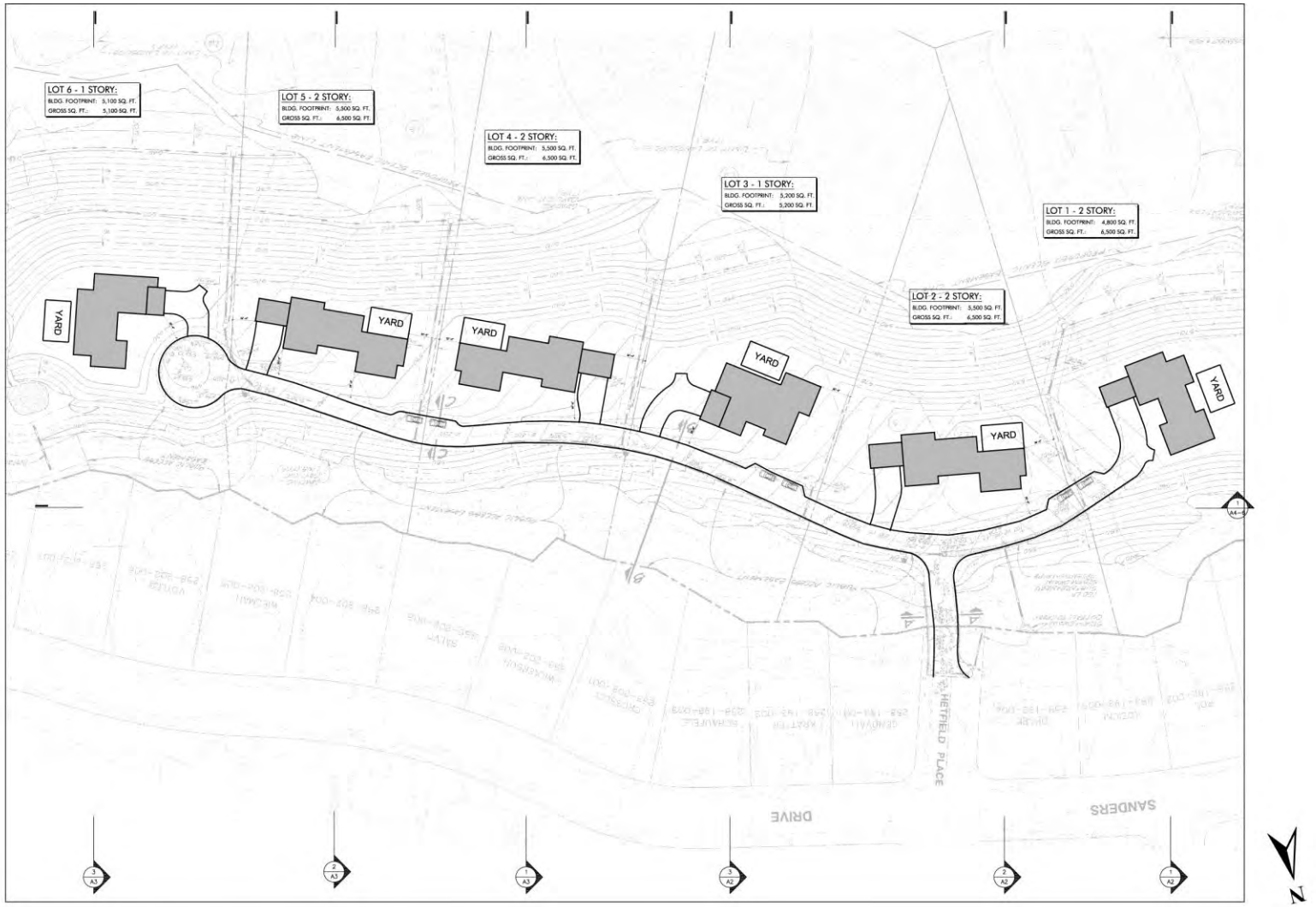
Mitigation Measure I.1e: The final map shall reflect similar house plotting as shown on Figure 3-1. A minimum distance between new and existing houses shall be no less than 180 feet.

d) *Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?*

A new source of light will be created by the proposed six houses; however, the light/glare of these houses would be comparable to the existing lighting in the neighborhood. This is considered a less-than-significant impact.

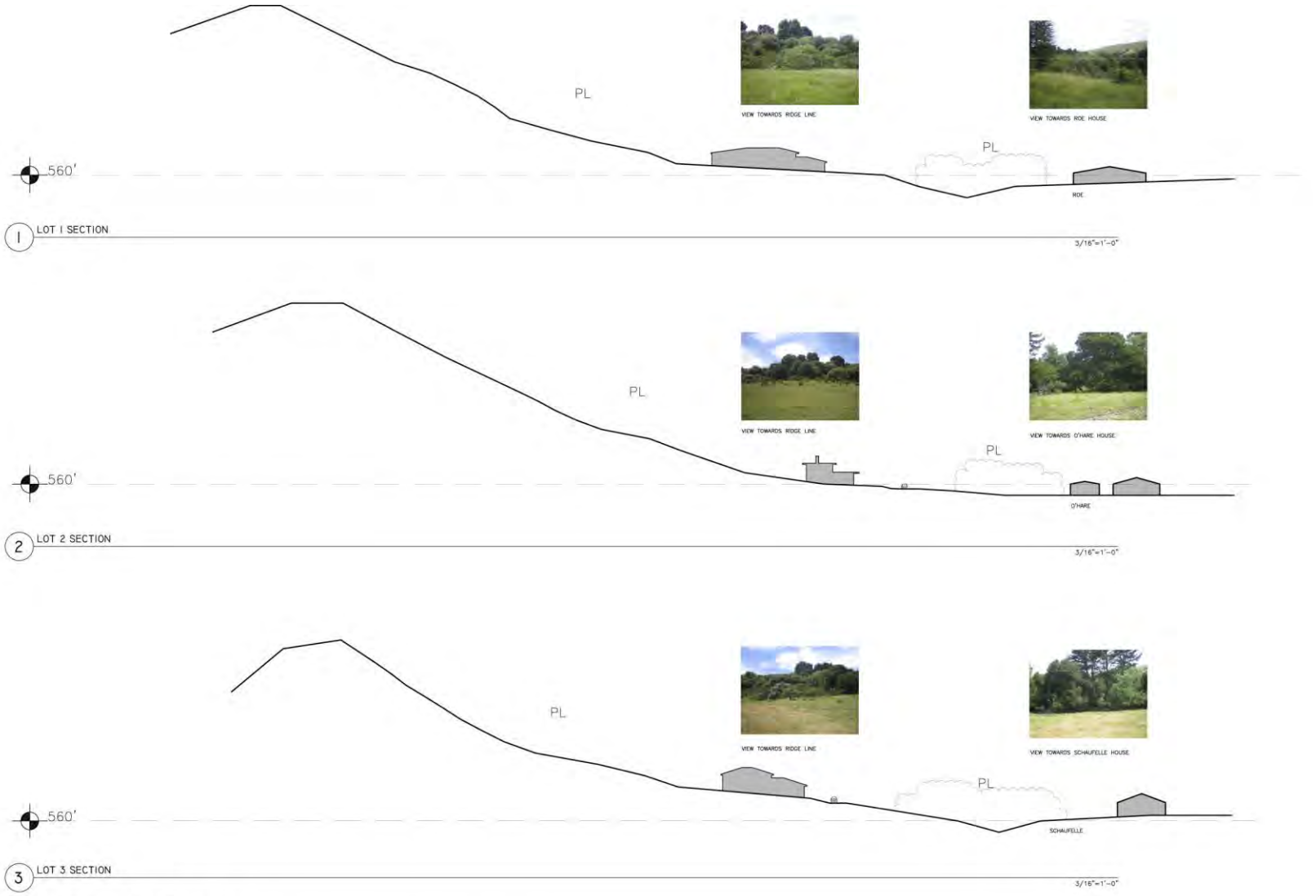
SOURCES OF INFORMATION

Swatt Architects, Inc., 2007. Street Elevations Hetfield Estates Development, March 31.



Source: Swatt Architects

Figure 3-1 Cross Section Key



Source: Swatt Architects

Figure 3-2 Sections Through Lots 1 - 3

Source: Swatt Architects

Figure 3-3 Sections Through Lots 4 - 6

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
II. **AGRICULTURE RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				√
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				√
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				√

Setting:

The proposed project site is an undeveloped parcel of land surrounded by existing residential neighborhoods and open space. The site was previously used for cattle grazing but has not been grazed for several years.

Discussion:

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The proposed project would not convert prime or unique farmland or farmland of statewide importance to non-agricultural use. There would be no impact.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The proposed project site in not zoned for agricultural use and is not in a Williamson Act contract area. There would be no impact.

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

The project site is an island of undeveloped land located between residential neighborhoods. Development of the six lots would not result in the conversion of farmland to non-agricultural use. There would be no impact.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
III. **AIR QUALITY** — Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				√
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?			√	
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			√	
d) Expose sensitive receptors to substantial pollutant concentrations?		√		
e) Create objectionable odors affecting a substantial number of people?				√

Setting:

The proposed project is located within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD) whose various plans, guidelines and regulations would apply to the project. Pursuant to the California Clean Air Act, the California Air Resources Board designates areas of the state as attainment, non-attainment, or unclassified with respect to applicable standards. The Bay Area (including the Town of Moraga) is currently a marginal non-attainment area for Federal ozone standards and a non-attainment area for ozone and particulate matter. Stationary sources and motor vehicle emissions associated with suburban neighborhoods influence the current air quality within the project area.

Discussion:

a) Conflict with or obstruct implementation of the applicable air quality plan?

Implementation of the proposed project would not conflict with or obstruct implementation of an applicable air plan; there would be no impact.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Refer to discussion for Item c) below. In addition, the project would generate construction, motor vehicle, and other air emissions (from fireplaces, barbecues, 2-cycle engine leaf blowers, etc.) similar to existing residential neighborhoods in the Town of Moraga. Since only six houses would be constructed, the long-term emission of air pollutants would be less than significant impact on ambient conditions.

A long-term increase in air pollutants from project-related traffic would occur, but the small number of vehicle trips (approximately 60 per day) would not increase pollutants to levels exceeding BAAQMD air quality standards. The BAAQMD considers 2,000 vehicle trips to be the threshold of significance requiring project review for air quality mitigation (BAAQMD CEQA Guidelines, 1996).

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?

The San Francisco Bay Area is a non-attainment area for 8-hour ozone levels although there are days when attainment has been met (Richardson, 2007). However, since the propose project consists of only six houses that would generate approximately 60 vehicle trips per day, the contribution to Bay Area ozone levels would be less than significant.

d) Expose sensitive receptors to substantial pollutant concentrations?

During construction of the proposed project, the closest sensitive receptors are the residents directly adjacent to the project site. Diesel fuel emissions from trucks and equipment are unavoidable, but temporary. Temporary construction dust can be mitigated through appropriate dust control practices.

Impact III-1: Construction of the proposed project could create potentially significant dust impacts that could affect nearby residents.

Mitigation Measure III-1: During grading and construction activities, the applicant shall implement the following measures to control dust:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials, or require trucks to maintain at least two feet of freeboard.
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep off-site streets leading to the project site daily if soil, sand, or other loose materials are deposited on these streets.

- Sweep daily all paved access roads, parking areas, staging areas and entrances at the construction site.

e) Create objectionable odors affecting a substantial number of people?

The proposed residential project will not create objectionable odors to residents on adjoining properties; there would be no impact.

SOURCES OF INFORMATION

Burch, David. 2007. Bay Area Air Quality Management District. Telephone communication with Robert Mills, Mills Associates, October 10.

Mills Associates. 2001. *Los Encinos Subdivision Expanded Initial Study and Proposed Mitigated Negative Declaration*, February 21. This document is on file with the Town of Moraga Planning Department at 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

Richardson, Erin. 2007. Bay Area Air Quality Management District. Telephone communication with Carolyn Mills, January 16.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. **BIOLOGICAL RESOURCES** — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		√		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?		√		
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		√		

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?		√		
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		√		
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				√

Setting:

A field reconnaissance survey of the site was conducted on January 11, 2007, by the Initial Study/MND biologist to confirm information presented in the applicant's reports and determine the potential impacts of the project on sensitive resources.

VEGETATION AND WILDLIFE HABITAT

Vegetation on the project site supports a matrix of non-native grassland, stands of native grassland, coastal scrub, woodland, freshwater seeps, and riparian woodland. Non-native grassland forms the predominant cover on the site, with coastal scrub and coast live oak woodland occurring on the upper elevations of the north-facing slope. Dense riparian woodland occurs along Larch Creek on the northern edge of the property.

The site continues to provide important foraging and possibly breeding habitat to a number of wildlife common in the Moraga area. The grasslands most likely support species common to non-native grasslands, such as pocket gopher, meadowlark, sparrows, and finches, and may occasionally be used by raptors for foraging. However, existing development to the north and west prevents opportunities for movement across the site by larger wildlife species, including black-tailed deer, coyote, and other predatory mammals. As shown in Figure 3-4, the seasonal nature of the drainage along the northern edge of the site limits its value to wildlife, but the dense riparian woodland provides important foraging, perching, and possibly nesting locations for numerous species of birds, deer mouse, and grey squirrel. The coastal scrub and woodland on the north-facing slopes along the upper elevations of the site also provide protective cover for numerous species of birds, black-tailed deer, and dusky-footed woodrat.

SPECIAL-STATUS SPECIES

Species of particular concern include the state and federally-threatened Alameda whipsnake, California red-legged frog, San Francisco dusky-footed woodrat, big-scale balsam root, and fragrant fritillary. The applicant's *Biological Resources* report concludes that Larch Creek, located along the

northern boundary of the site, is unsuitable as potential breeding habitat for the California red-legged frog, and that the areas of coastal scrub and open woodland on the north-facing slopes provide only marginally suitable habitat for Alameda whipsnake. The site is outside the designated critical habitat units for the California red-legged frog, and outside the proposed critical habitat unit for Alameda whipsnake. The report also concludes that areas of scrub and woodland provide suitable habitat for San Francisco dusky-footed woodrat.

WETLANDS

The applicant's *Biological Resources* report and preliminary wetland delineation identify potential jurisdictional and non-jurisdictional features on the site. Figure 3-4 shows the location of mapped features on the site. These consist of freshwater seeps, seasonal wetlands, presumed non-jurisdictional gullies, and the ephemeral drainage (Larch Creek) along the northern edge of the site. Collectively, the preliminary wetland delineation estimates that a total of 0.53 acre of jurisdictional seasonal wetlands, and 0.28 acre of jurisdictional other waters associated with the ephemeral drainage occur on site, representing a total estimate of 0.81 acre of potential jurisdictional waters. In addition, a large seep area supporting a cover of Santa Barbara sedge was observed by the Initial Study/MND biologist during the field reconnaissance. This seep occurs just outside the ~~"G~~rading Daylight Line" on proposed Lot 6, at elevations from 640 to 660 feet. This is shown in Figure 3-4.

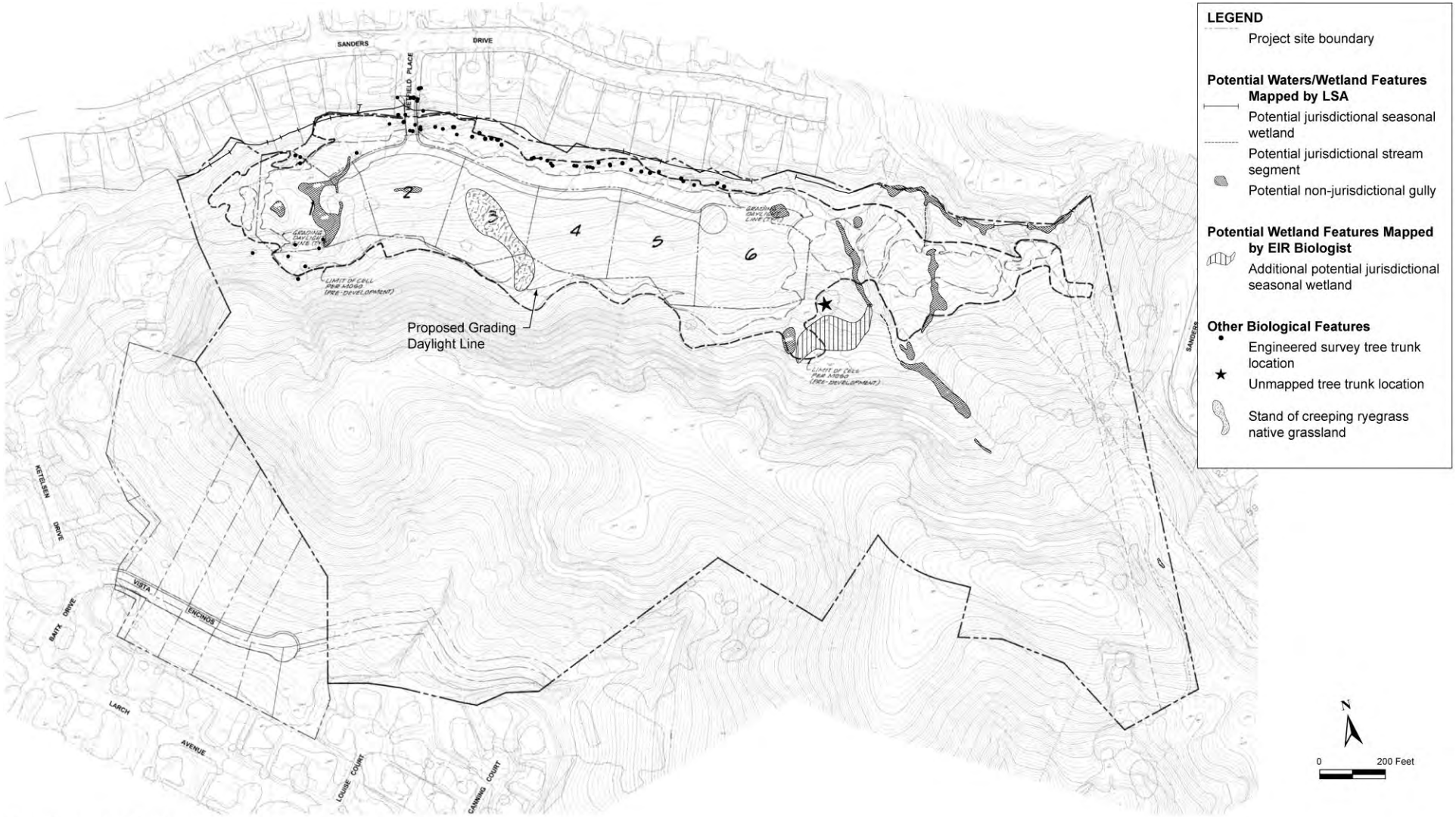
The entire Biological Resources setting is included as Appendix B.

Discussion:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

It is unlikely that the site provides habitat for any special-status species. No special-status plant species have been detected during systematic surveys conducted in 2000, 2001, and 2005, and none suspected to occur on the site. The proposed drainage crossing and grading at the edge of the coastal scrub and woodland on the north-facing slope of the site could affect suitable habitat for California red-legged frog, Alameda whipsnake, San Francisco dusky-footed woodrat, and potential nesting habitat for raptors. Although the potential for occurrence of Alameda whipsnake and California red-legged frog on the site appears remote, further consultation with trustee agencies would be required as part of the authorization process for proposed fill and modifications to wetlands on the site. Preconstruction surveys and on-going monitoring would generally serve to ensure no inadvertent take of California red-legged frog, Alameda whipsnake, and nesting raptors, in the remote possibility they disperse onto the site prior to construction.

Proposed grading could affect a number of San Francisco dusky-footed woodrat nests, particularly in the scrub and woodland on the north-facing slope. However, most of the suitable habitat would remain undisturbed and most nests would not be directly affected. A preconstruction survey and relocation effort would be necessary to ensure no inadvertent take of dusky-footed woodrats.



Source: LSA, 2005; RMR, 2006; and Environmental Collaborative, 2007

Figure 3-4 Biological and Potential Wetland Features

Impact IV-1: The proposed project will have an adverse effect on biological resources.

The following measures are recommended to mitigate potential impacts on special-status species to less-than-significant levels:

Mitigation Measure IV-1a: The applicant shall obtain all necessary permits from the Corps, USFWS, and the RWQCB as required by federal and State law to avoid, minimize or offset impacts to any species listed under either the State or federal Endangered Species Acts or protected under any other State or federal law as follows:

- Before project implementation, a delineation of waters of the United States, including wetlands that could be affected by development, shall be made by a qualified wetland specialist through the formal CWA Section 404 process.
- If based on the verified delineation, it is determined that fill of waters of the United States would result from project implementation, authorization for such fill shall be secured from the Corps through the Section 404 permitting process and from the RWQCB as part of the Section 401 water quality certification process.
- Consultation or incidental take permitting may be required under the ESA. The applicant shall obtain all legally-required permits from the USFWS for the ~~"t~~take" of protected species under the ESA.
- Evidence that the applicant has secured any required authorization from these agencies shall be submitted to the Town of Moraga prior to issuance of any grading or building permits for the project.

Mitigation Measure IV-1b: Following a biological opinion issued by the regulatory agencies as discussed above, measures shall be applied to minimize take within the construction zone. The applicant shall follow the requirements of the biological opinion. Furthermore, a qualified biologist shall be retained by the applicant to oversee construction and ensure that no inadvertent take of Alameda whipsnake or California red-legged frog occurs as a result of development of the site.

If no biological opinion is obtained from the regulatory agencies regarding the taking of an endangered species, the following mitigation shall apply:

- Prior to any grading or grubbing of the site, the biologist shall conduct a preconstruction survey to confirm absence of any California red-legged frog or Alameda whipsnake on the site. During the construction phase of the project, a trained biologist or a trained on-site monitor (such as the construction foreman) shall check the site in the morning and in the evening of construction activities for the presence of California red-legged frog and Alameda whipsnake. This includes checking holes, under vehicles and under boards left on the ground. If any California red-legged frog or Alameda whipsnake are found, construction shall be halted until

they disperse naturally, and the monitor shall immediately notify the biologist in charge and the USFWS. Construction shall not proceed until adequate measures are taken to prevent dispersal of any individuals into the construction zone, as directed by the USFWS. Subsequent recommendations made by the USFWS shall be followed. The monitor shall not handle or otherwise harass the animal. The biologist in charge and the on-site monitor shall be aware of all terms and conditions set by USFWS and CDFG on the project. The biologist in charge shall train the on-site monitor in how to identify California red-legged frog and Alameda whipsnake. The biologist in charge shall visit the site at least once a week during construction and confer with the trained on-site monitor.

- All construction workers shall be informed of the potential presence of California red-legged frog and Alameda whipsnake, that these species are to be avoided, that the foreman must be notified if they are seen, and that construction shall be halted until authorization to proceed is obtained from the USFWS and appropriate protocols for species protection shall be followed.

- During construction, all holes shall be covered at night to prevent California red-legged frog and Alameda whipsnake from becoming trapped in holes on the construction site.

Mitigation Measure IV-1c: A qualified biologist shall be retained by the applicant to conduct a trapping and relocation program for any San Francisco dusky-footed woodrats located within the limits of proposed grading and development. A field survey shall be conducted by a qualified biologist to determine whether any woodrat nests occur within the anticipated limits of grading. Any nests within the construction zone shall be relocated to locations proposed as permanent open space on the site and individual woodrats released into their relocated nests. If nest relocation is required, the trapping and relocation effort shall be conducted from August through February outside the breeding season, to ensure any young are not inadvertently lost due to the destruction of the protective nest. The trapping and relocation effort shall preferably be conducted within a few days prior to grubbing and vegetation removal to prevent individual woodrats from moving back into the construction zone.

Mitigation Measure IV-1d Any active raptor or loggerhead shrike nests in the vicinity of proposed grading shall be avoided until young birds are able to leave the nest (i.e., fledged) and forage on their own. Avoidance can be accomplished by scheduling removal of trees and shrubs during the non-nesting period, August through February. Provisions of the pre-construction survey and nest avoidance, if necessary, shall include the following:

- If grading is scheduled during the active nesting period (March through August), a qualified wildlife biologist shall be retained by the applicant to conduct a pre-construction nesting survey no more than 30 days prior to initiation of grading to provide confirmation on the presence or absence of active nests in the vicinity.

- If active nests are encountered, species-specific measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent nest abandonment. At a minimum, grading in the vicinity of the nest shall be deferred until the young birds have fledged. The perimeter of the nest-setback zone shall be fenced or adequately demarcated, and construction personnel restricted from the area.
- If permanent avoidance of the nest is not feasible, impacts shall be minimized by prohibiting disturbance within the nest-setback zone until a qualified biologist verifies that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from the nest are foraging independently and capable of independent survival at an earlier date. A survey report by the qualified biologist verifying that the young have fledged shall be submitted to the Town of Moraga prior to initiation of grading in the nest-setback zone.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?

Sensitive natural community types on the site include areas of potential jurisdictional seeps and seasonal wetlands, and well-developed stands of native grassland. Proposed development would affect an estimated 0.21 acre of potential jurisdictional seeps, springs, and seasonal wetlands, and would eliminate the approximately 0.5 acre stand of native creeping wildrye grassland on proposed Lot 3. These impacts would be significant impacts on sensitive biological resources. The *Biological Resource* report acknowledges that the loss of potential jurisdictional wetlands would require agency authorization and mitigation. The applicant's consultant has prepared a Conceptual Wetland Mitigation Plan to address anticipated impacts and provide for replacement mitigation, as described further under Item c. The *Biological Resource* report also acknowledges that the loss of native grasslands in the proposed development area would occur, but simply recommends that preserving other stands of native grasslands in the undeveloped open space lands would serve as adequate mitigation. Plants from the stand of native grassland could be salvaged prior to grubbing and initial grading, and stored until used as part of revegetation in wetland and habitat mitigation for the project, which would serve to further reduce the potential loss of this resource.

Impact IV-2: The proposed project could impact riparian habitat.

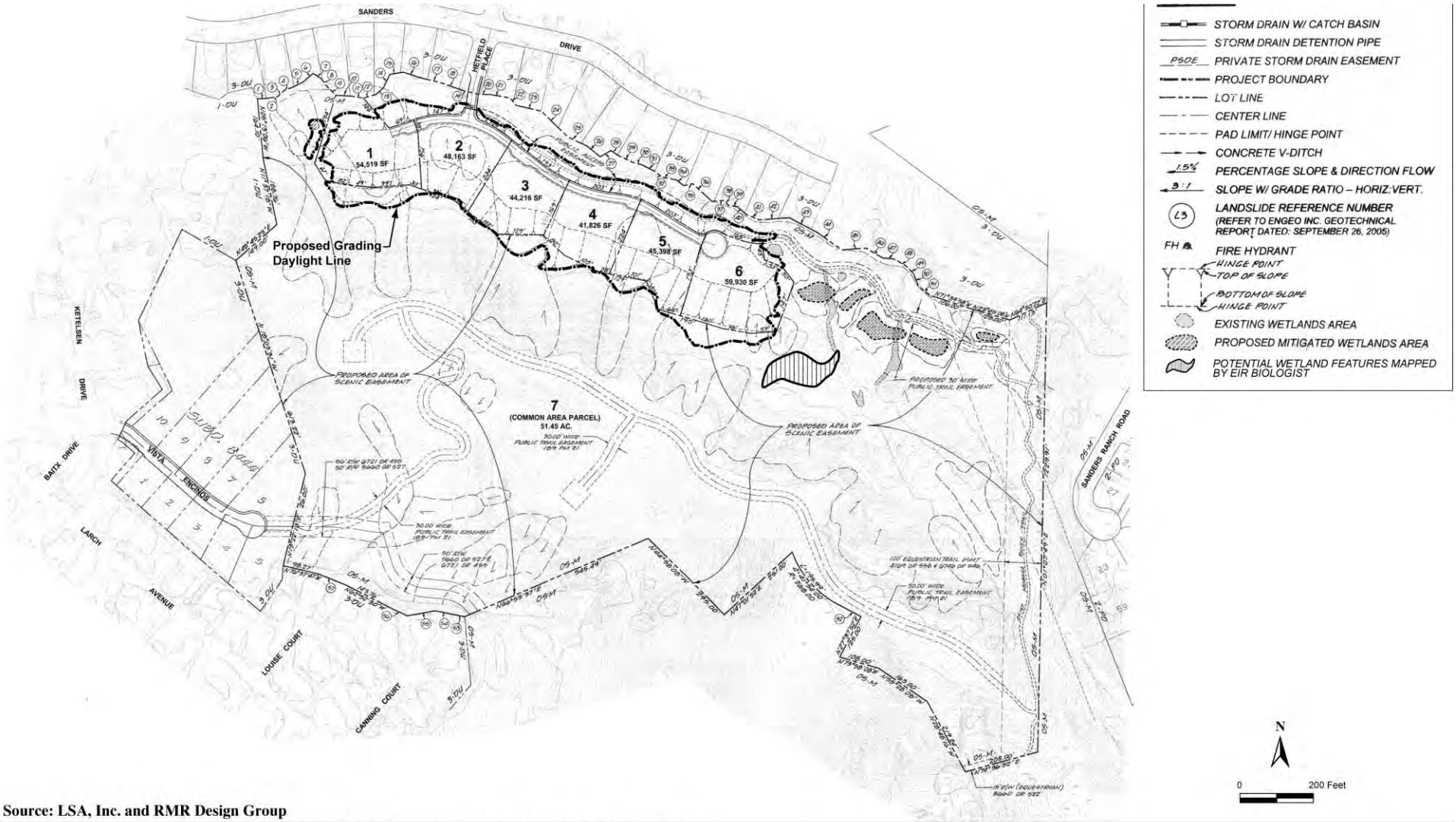
Mitigation Measure IV-2: Native grass plants from the stand of creeping wildrye in the vicinity of proposed Lot 3 shall be salvaged and reused as part of revegetating graded slopes. Plants shall be salvaged before grubbing and initial grading, and stored until replanted on the site. The salvage and replanting program shall be prepared by a qualified biologist and incorporated into the Landscaping Plan for the project, preferably as part of the Wetland Mitigation Program specified in **Mitigation Measure IV-3a**.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Proposed development would require filling and modification to a minimum of 0.23 acre of potential jurisdictional wetlands, as estimated in the *Biological Resources* report. Existing potential jurisdictional waters on proposed Lots 1, 2 and 6 would be directly affected by proposed development, and modifications to the drainage along the northern boundary of the site would be required to accommodate the new bridge crossing from Hetfield Place. This loss of potential jurisdictional waters would be a significant impact, requiring authorization from the Corps, RWQCB, and CDFG.

Several aspects of the project could affect potential jurisdictional wetlands outside the limits of proposed grading and development shown in the Conceptual Development Plan. Of particular concern is the possible landslide repair, which may extend further upslope from the "Grading Daylight Line", shown in the Conceptual Development Plan. It is difficult to predict the actual limits of grading necessary to rebuild and stabilize these landslide features, which could have major implications on wetland impacts, feasibility of on-site wetland mitigation, and extent of potential development, particularly on proposed Lot 6. Considerable grading and long-term repairs may be required given the extent of landslide instability in the area. In addition, the proposed trail from the cul-de-sac across proposed Lot 6 would pass through this complex of seasonal wetlands and would require careful siting to avoid these potential jurisdictional wetland features. Further review and approval by the Corps and other jurisdictional agencies would ensure that the limits of jurisdictional wetlands is verified and that the wetland mitigation program proposed by the applicant would adequately address all impacts of the project, including landslide repair.

The applicant's *Conceptual Wetlands Mitigation Plan* provides a description of the proposed approach to mitigation, which involves creation of five seasonal wetlands with a total net area of 13,854 square feet (0.32 acre) and one pond with a surface area of 850 square feet (0.02 acre). Approximately 2,116 square feet (0.05 acre) of existing seasonal wetlands would be removed to accommodate the new seasonal wetlands in two locations in the mitigation area. In addition, non-native Monterey pine would be removed from the drainage corridor and replaced with native coast live oak and California buckeye. The seasonal wetland would be created on Lot 6 by excavating shallow (6 to 2 inches) basins. Retention of direct rainfall and detention of surface runoff from upgradient slopes would sustain seasonal saturation and ponding. The pond area would be created on the northwest the existing pond on Lot 1. Monitoring would be provided for a minimum of five years until all performance criteria are met.



Source: LSA, Inc. and RMR Design Group

Figure 3-5 Conceptual Development Plan Illustrating Wetland Mitigation Areas

The proposed approach to mitigation was reviewed by the IS/MND biologist and generally appears acceptable. However, the created seasonal wetlands on Lot 6 would be constructed in an area of coalescing landslide deposits, which raises questions about the long-term stability of the created wetlands. To address this concern, the proposed approach to mitigation was evaluated by the applicant's geotechnical consultant who concluded that the potential for slope movement in landslide areas is greater than for adjacent non-landslide areas, and recommended a number of measures which are intended to reduce the potential for inducing landslide movement but would not improve the stability of the existing landslides (ENGEO, 2007). The applicant's geotechnical consultant concludes that ~~"D~~epending on the location and size of possible landslide movements in the future, the functionality of the existing and proposed wetlands ponds could be improved or impaired as a result of slope movements over the long term." If slope instability affects the created wetlands during the required monitoring period, corrective measures may be necessary, or alternative mitigation could be required by jurisdictional agencies. Maintenance and monitoring of the wetland mitigation would be required, with annual monitoring reports submitted to the jurisdictional agencies, during which time the performance of the created wetlands would be evaluated. The entire approach to wetland mitigation must still be reviewed and approved by jurisdictional agencies following verification of the extent of actual jurisdictional wetlands and other waters on the site.

Impact IV.3: Development of the site would affect federally protected wetlands.

Mitigation Measure IV-3a: A Final Wetland Mitigation Program shall be prepared by a qualified wetland specialist to provide for the protection, replacement, and management of jurisdictional waters on the site affected by proposed development. The Final Wetland Mitigation Program shall include the following components and meet the following standards:

- Proposed grading and development shall be redesigned to preferably avoid removal or adverse impacts on areas verified as jurisdictional wetlands, particularly the freshwater seep at the southeastern edge of the ~~"G~~rading Daylight Limits" on proposed Lot 6. This freshwater seep appears to be larger than currently mapped by the applicant's consultant as indicated in Figure 3-5.

- Provide adequate mitigation for any direct or indirect impacts on jurisdictional waters as coordinated with the Corps and/or RWQCB where complete avoidance is infeasible. Replacement wetlands shall be replaced at a minimum 2:1 replacement ratio and shall be established in suitable locations within undeveloped open space areas, preferably on-site. The wetlands replacement component of the Final Wetland Mitigation Program shall emphasize establishment of native freshwater marsh and seasonal wetlands to enhance existing habitat values.

- The wetland replacement component of the Final Wetland Mitigation Program shall specify performance criteria, maintenance and long-term management responsibilities, monitoring requirements, and contingency measures. Monitoring shall be conducted by the qualified wetland specialist for a minimum of five years and continue until the success criteria are met.

- The Final Wetland Mitigation Program shall be completed prior to approval of the Final Map for the project to demonstrate feasibility of wetland mitigation, and allow for possible major adjustments to the limits of proposed development, particularly on Lot 6.

Mitigation Measure IV-3b: The final trail alignment connecting to the cul-de-sac on proposed Lot 6 should be designed to avoid or minimize passing through the freshwater seeps and seasonal wetlands on this portion of the site. If complete avoidance is not feasible, potential impacts shall be addressed as part of the Final Wetland Mitigation Program outlined in **Mitigation Measure IV-3a.**

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The site provides suitable habitat for common wildlife species associated with grasslands in the southeast Moraga area. Due to the extent of residential development to the north and west of the site, proposed development would not substantially interfere with the movement of wildlife species or impede use of native wildlife nurseries. The remainder of the property would continue to provide access to wildlife. There are currently no specified restrictions on installation of fencing along private lots which could disrupt local movement of wildlife across large portions of Lots 1 through 6. The proposed trail system would provide for informal open space use of the undeveloped portion of the property, but it appears that this already occurs based on several existing informal trails. Use of the property may increase harassment of wildlife by dogs unless they are controlled by their owners.

Impact IV.4: Development could potentially interfere with the movement of wildlife species.

Mitigation Measure IV-4a: The portion of the site not proposed for development will be placed in permanent open space to preserve its function as permanent wildlife habitat. Any fencing proposed as part of development on individual lots shall be designed to allow for continued movement by wildlife, or shall be restricted to the vicinity of the building pads. Any fencing, which could obstruct wildlife movement, shall not extend beyond the limits of grading shown in the Conceptual Development Plan (Figure 2-3).

Mitigation Measure IV-4b: Signage shall be provided at the access points off the cul-de-sac on proposed Lot 6 which indicate that dogs shall be leashed.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Project implementation would not significantly conflict with any local policies or ordinances protecting biological resource, such as the Town's tree preservation or creek protection ordinance. Measures recommended to mitigate potential impacts on special-status species, wetlands, and wildlife habitat would serve to address potential conflicts with Town policies related to protection of sensitive biological resources.

The Town of Moraga Tree Preservation Ordinance No. 182 calls for the recognition of trees with a trunk diameter of 5 inches or greater and requires that a permit be obtained where a regulated tree is to be removed. Section 12.12.070 of the ordinance requires that an arborist report be prepared where encroachment into the dripline of any regulated tree is required. Section 12.12.110 of the ordinance pertains to proposed subdivision approval, which requires that the location of trees be shown on the grading plan, and that approval of the subdivision map constitutes a permit to remove any designated trees on the grading plan.

The proposed Conceptual Development Plan for the project generally shows the location of regulated trees in the vicinity of proposed improvements, consistent with the requirements of Section 12.12.110 of the Town's Tree Preservation Ordinance. One exception to this is the location of two coast live oaks (estimated trunk diameters of 16 and 24 inches) and a willow (estimated trunk diameter of 22 inches) located just outside the southeast edge of the mapped "Grading Daylight Line" on Lot 6, at about an elevation of 640 feet (see trunk locations in Figure 3-4). Numerous other oaks, buckeyes, and elderberry trees grow on the north-facing slope south of the "Grading Daylight Line" to all six lots.

Proposed grading would require the removal of several regulated trees, including two willows, and oak, and buckeye on Lot 1, and several smaller oaks at the Hetfield Place bridge crossing. Of particular concern is a 30-inch-diameter coast live oak at the west side of the proposed creek crossing. This tree is not indicated for removal on the Conceptual Development Plan and the footing of the proposed bridge appears to be intentionally designed to avoid this large tree. However, the west edge of the bridge would be sited within just a few feet of the tree trunk, and proposed construction and disturbance to the tree root zone could adversely affect this tree. Similarly, proposed landslide repairs could affect a number of currently unmapped trees, if the grading limits must be expanded beyond those shown on the Conceptual Development Plan. The *Biological Resource* report acknowledges the likely loss of trees in the riparian corridor and recommends replacement by protecting natural seedlings from cattle grazing and deer browse.

Impact IV.5: The proposed project may be in conflict with Town policies.

Mitigation Measure IV-5a: Grading shall be designed to avoid and minimize possible tree removal. This shall be accomplished by expanding the current tree mapping, adjusting the limits of grading to ensure adequate avoidance, and retaining a certified arborist to evaluate potential impacts and make specific recommendations to minimize tree loss or damage. The limits of tree mapping should be expanded to show all trees with trunk diameters of 5 inches or greater within 30 feet of the proposed "Grading Daylight Line" on the Conceptual Development Plan. All mapped trees shall be evaluated by a certified arborist consistent with Section 12.12.070 of the Town of Moraga Tree Preservation Ordinance, and a report shall be repaired to minimize short-term construction damage and long term decline due to changes in the root zone.

Mitigation Measure IV-5b: A construction fence shall be installed around all trees to be protected that will identify the limits of grading and disturbance.

Mitigation Measure IV-5c: A Tree Replacement Program shall be prepared by the applicant's consulting biologist, and implemented as part of the mitigation program for the project. Replacement trees shall be provided at a minimum 3:1 ratio, shall be installed along the edge of the riparian corridor and other locations to be retained as undeveloped open space, and shall be maintained for a minimum of five years to ensure their successful establishment. Replacement tree plantings shall be irrigated for a minimum of two years following initial planting to ensure their survival, and shall be replaced on an annual basis to meet success criteria specified in the Tree Replacement Program.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

There are no adopted Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plans encompassing the site and vicinity, so no impacts are anticipated. No mitigation measures are required.

SOURCES OF INFORMATION

LSA, 2005, Preliminary Wetland Delineation. This document is on file with the Town of Moraga Planning Department at 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

LSA, 2006. *Biological Resources* report. This document is on file with the Town of Moraga Planning Department at 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

LSA, 2007. *Conceptual Wetlands Mitigation Plan*. This document is on file with the Town of Moraga Planning Department at 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

Sproul, Malcolm, 2007. LSA. Telephone communication with Jim Martin, February and September.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
V. **CULTURAL RESOURCES** — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				√
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	√			
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	√			
d) Disturb any human remains, including those interred outside of formal cemeteries?	√			

Setting:

The project site has historically been used for cattle grazing and was part of a much larger ranch that was subsequently subdivided and developed. It is possible that early Native Americans hunted throughout the site and on adjoining lands; however, given the steep terrain and the landslide activity, the site is not conducive as an early settlement site.

Discussion:

a-d) There are no known historical or cultural resources on the project site. However, there is a possibility that unknown subsurface cultural resources may exist on site so appropriate mitigation measures are recommended.

Impact V-1: Potential subsurface cultural resources may exist on the site.

Mitigation Measure V-1a: In the event of the discovery of human remains during construction, pursuant to Section 7050.5 of the Health and Safety Code and Section 5097.94 of the Public Resources Code of the State of California, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The Contra Costa County Coroner shall be notified by the developer and shall make a determination as to whether the remains are Native American. If the remains are not subject to his authority, he shall notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased Native American.

Mitigation Measure V-1b: Should evidence of prehistoric cultural resources be discovered during construction, work in the immediate area of the find shall be stopped to allow adequate time for evaluation and mitigation. A qualified professional archaeologist will be called in to make an evaluation of the material; and if significant, develop a mitigation program that includes collection and analysis of the materials, preparation of a report, and curation of the materials at a recognized storage facility under the direction of the Planning Director. Collection and evaluation shall be completed prior to the resumption of grading.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VI. **GEOLOGY AND SOILS** — Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				√
ii) Strong seismic ground shaking?			√	
iii) Seismic-related ground failure, including liquefaction?			√	
iv) Landslides?		√		
b) Result in substantial soil erosion or the loss of topsoil?		√		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?		√		
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?		√		
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				√

Setting:

BEDROCK GEOLOGY

The site is located within an area of faulted and tightly folded bedrock formations. In the Moraga area these formations consist chiefly of Pliocene and Miocene bedrock units. The interpretation of geology in the Moraga area is based chiefly on the mapping of Dibblee, which was based on field mapping and photointerpretation. According to the Dibblee map, the site is within the outcrop belt of non-marine sedimentary rocks of Pliocene age (Tps). The bedrock is tightly folded. The potential building sites are on the west limb of a northwest-trending synclincal fold.

The property is not located in an Alquist-Priolo Earthquake Fault Zone, which is a zone along earthquake faults in which ground rupture could occur and maximum structural setbacks are required. Structures built within the zone are subject to stricter building codes. The nearest faults considered active by the California Geological Survey (CGS) and United States Geological Survey (USGS) are the Hayward and Calaveras faults, which pass approximately

5 miles to the southwest and 8 miles to the southeast of the site, respectively. The most recent USGS Geologic Map shows a west-northwest trending fault passing tangent to the north property boundary. This fault is not considered active.

LANDSLIDE DEPOSITS

According to the USGS mapping (Figure C-2 in Appendix C), two landslide complexes are mapped within the portion of the property that is planned for residential development. On this north-facing hillside, approximately 20 acres are mapped as landslide deposits. They encompass nearly 100 percent of the lands being proposed for grading and development. This map does not classify slides according to type of slide, activity status or depth of slide plane. The intent of this map is to "red flag" sites that require detailed, site-specific investigations.

SLOPE MAP

The Moraga General Plan gives consideration to slope gradients in evaluation of the relative development potential of properties, recognizing the cost and engineering difficulties of grading in areas of steep slopes. The applicant has identified a "cell" on each proposed parcel. The cell is that portion of the parcel proposed for grading and development. The map indicates that the average slope within each cell is less than 20 percent.

SOILS

On-site soils consist of claystone bedrock which have moderate to high plasticity and a high expansion potential. The logs of test pits and borings conducted by the applicant's geotechnical engineer, (Engeo, Inc.) indicate that the slide debris consists of stiff, silty clay with embedded clasts of sandstone. Landslides range up to as much as 40 feet thick. They are classified as "slumps," which move slowly as a relatively coherent mass.

The relatively flat area along the south side of the creek consists of a combination of alluvial and colluvial soils. They are dry to moist, stiff to very stiff silty clay, and are considered to have a high expansion potential.

Bedrock within the development "cells" was found to consist of claystone that is described as friable to weak, highly fractured to crushed, and thin to thick bedded. The claystone is considered to be highly expansive. The ridgeline above the "cells" consists primarily of hard, erosion-resistant sandstone.

GROUNDWATER

Groundwater levels were variable across the site. A small spring was observed within the slide on Lot 1 with groundwater at a depth of approximately 10 and 20 feet. No free water was encountered in the other borings and test pits.

GEOLOGIC AND GEOTECHNICAL HAZARDS

The risk of fault rupture is considered nil, and Engeo states that ground shaking damage is mitigated by compliance with the seismic design standards of the Uniform Building Code. The potential for liquefaction and lurch cracking during a seismic event are rated low and very low, respectively. With effective implementation of the recommended grading solutions, Engeo considers the risk of seismically induced landsliding to be low. Moreover, Engeo recommends subdrains in all keyways and in swales, as well as debris benches

between the areas proposed for grading/development and the ungraded (potentially unstable) upslope, private open space area.

An expanded geology/soil analysis is found in Appendix C.

Discussion:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The nearest fault considered active by the California Geological Survey (formerly the Division of Mines & Geology) are the Hayward and Calaveras faults. The Hayward fault A-P Zone passes approximately 5 miles to the southwest of the site; the Calaveras fault A-P Zone passes 8 miles to the southeast, thus there would be no impact.

ii) Strong seismic ground shaking?

According to the Safety Element of the County General Plan (p. 10-13) the site is in an area rated "moderately low damage susceptibility". The risk of structural damage from ground shaking is regulated by the building codes and Contra Costa County/Town of Moraga Grading Ordinance. The Uniform Building Code (UBC) requires use of seismic parameters which allow the structural engineering analysis for buildings to be based on soil profile types (see UBC, 2001, Volume 2, Div. 5, page 2-23). Compliance with building and grading regulations can be expected to keep risks within generally accepted limits. This is considered a less-than-significant impact.

iii) Seismic-related ground failure, including liquefaction?

According to the Safety Element of the County General Plan, the site is rated "generally low" liquefaction potential. This preliminary finding is supported by the subsurface data presented in the report issued by Engeo, Inc. (2005). Specifically, soils and colluvium on the property have consistently high clay content, and were found to be "stiff" to "very stiff." Liquefaction is a potential hazard for loose, sandy soils. Typically, 15 percent clay content by weight will yield a cohesive soil that is not a candidate for liquefaction; and stiff/dense soils are able to withstand even violent ground shaking without liquefaction. This is considered a less-than-significant impact.

iv) Landslides?

Landslides (primarily slumps and earthflows) were mapped in the project area by previous published and unpublished site-specific studies (Nilsen, 1975; Majmundar, 1996; Engeo, 2005). Mapping for these studies indicate landslides are extensive in the lands being considered for residential use. Previous reconnaissance mapping supplemented by limited subsurface exploration (Engeo, 2005) confirmed six landslides within the area proposed for residential development. Subsurface data presented in the Engeo report indicates that the

landslide debris consists primarily of surficial materials and severely weathered claystone bedrock, but the depth to bedrock may range up to 40 feet below the existing ground surface.

Earthflows and slumps are slow moving slides. Within the development area, slides would be removed/stabilized. The details of the repairs would be a part of the design level geotechnical and geological investigation. The cross-sections in the Engeo report indicate conceptually how slope stabilization would be accomplished (see Figure B-4). Slides in open space do not pose an injury or loss of life hazard and would be retained as ungraded open space.

The preliminary geotechnical report prepared by Engeo is not explicit regarding the design of buttresses, retaining walls, foundations and landslide repairs. Those detailed design recommendations are not needed for environmental review, but are needed for construction. The Town of Moraga routinely requires the design-level studies as a Condition of Approval.

Impact VI.1: Landslides have the potential to cause significant damage to improvements and, in extreme cases, loss of life.

Mitigation Measure VI-1a: A design-level geotechnical and geologic investigation report shall be submitted to the Town of Moraga prior to recordation of the subdivision map. The report, which shall respond to the peer review letter of CEG, shall provide specific criteria and standards to guide site grading, drainage and foundation design.

In areas of proposed development (i.e., cells), existing landslide slope repairs shall include the following: 1) removal of unstable or compressible slide debris; 2) excavation into underlying competent bedrock; 3) construction of subsurface drainage measures; 4) replacement with compacted engineered fill; 5) construction of surface drainage measures; and 6) planting with erosion-resistant vegetation, as recommended in the design-level geotechnical investigation. Surface drainage control measures shall be incorporated for any areas of remedial work associated with slope repairs.

Mitigation Measure VI-1b: Gradient criteria for engineered slopes as recommended by Engeo shall be required for development of the project site. Any conflicts between the future grading plans and these criteria should be interpreted as evidence that special engineering is required (e.g., retaining walls, geogrid reinforcement). Those standards call for use of 3:1 fill slopes as a general standard for the project. Cut slopes are to be avoided.

Mitigation Measure VI-1c: In conformance with the grading provisions of the Town Grading Ordinance, drainage terraces and drainage benches are not required on engineered slopes with gradients of 3:1 or flatter.

Mitigation Measure VI-1d: All grading and drainage plans are subject to review of the Town's peer geologist and the review and approval of the Town of Moraga. Appropriately licensed professionals shall prepare the plans.

Mitigation Measure VI-1e: Unstable soils and landslides shall be removed within graded areas. Buttressing, keying and installation of debris benches shall be provided in the transition areas between open space areas and development as recommended in the final reports of the project geotechnical engineering (~~"a~~pproved geotechnical reports").

Mitigation Measure VI-1f: Prior to issuance of the grading permit, provide a grading remediation plan and report for the approval of the Building Inspection Department (BID). The report shall evaluate all major graded slopes and open space hillsides whose performance could affect planned improvements. The slope stability analysis shall be performed for both static and dynamic conditions using an appropriate pseudo-static coefficient.

Mitigation Measure VI-1g: During grading, the project engineering geologist shall observe and approve all keyway excavations, removal of fill and landslide materials down to stable bedrock or in-place material, and installation of all subdrains including their connections. Cut slopes shall be observed and mapped by the project geotechnical engineering who will provide any required slope modification recommendations based on the actual geologic conditions encountered during grading. Written approval from the Town's representatives shall be obtained prior to any modification. Placement of fill shall be observed and tested by the project geotechnical engineer, and the density test results and reports submitted to the Town to be kept on file.

Mitigation Measure VI-1h: The grading plans for the project shall identify proposed maintenance access to the debris benches. The proposed access shall be subject to review and approval by the Town's Engineering Geologist and Town Engineer.

Mitigation Measure VI-1i: Prior to recordation of the Final Map, the applicant shall provide a deed disclosure for each lot that provides a detailed citation of the Final Geotechnical Report, summarizing the potential geologic hazards and providing details of the maintenance responsibilities of the property owner, including maintenance of the debris bench. The language in the draft deed disclosure shall be subject to review and approval of the Town of Moraga.

b) Result in substantial soil erosion or the loss of topsoil?

There are multiple facets to the subject of erosion and sedimentation. Erosion control requires implementation of measures after major earthmoving activities are completed. Sediment control requires working in a situation where the soil is continually being disturbed.

A Storm Water Pollution Prevention Plan (SWPPP) and Erosion Control Plan are a routine requirement of projects requiring grading permits. The SWPPP identifies the "best management practices" that are most appropriate for the site, and the "Erosion Control Plan," which is required for the grading permit, provides the details of the erosion control measures to be applied on the site and maintained throughout the winter rainy season.

Erosion control requires use of techniques, which prevent displacement of soil particles by raindrops, moving water or wind. These techniques include erosion control blankets, mulching and establishing vegetation. Sediment control requires the removal of particles, which remain suspended in moving water, along with having knowledge of drainage control. Neither of these potential impacts is easily mitigated, and both require an understanding of the limitations of Best Management Practices (BMPs). Erosion and sedimentation are natural geologic processes, which do not conflict with protection of resource values. The problem arises when grading activities result in increased sediment yields that exceed historic conditions. Techniques to reduce sediment from runoff waters include the following:

- restrict the amount of land disturbance;
- keep graded slopes as flat as possible;
- restrict grading to the dry summer season;
- implement BMPs to control erosion and minimize the discharge of sediment into the creek channel.

There is a mistaken belief that placement of barriers (silt fences, straw bales) is an efficient method to control sediment from exiting the graded area and entering a natural drainage channel. These barriers are ineffective when runoff waters overtop, tunnel under or flow around the barriers, which is an all too often occurrence. As a result, drainage control is important and sediment traps/basins are a vital component of sediment control. To be effective, they must be designed in accordance with the principles of physics (i.e., viscosity, terminal velocity, Stokes Law). The following criteria shall be used to size sediment traps/basins:

- Design the basin using peak runoff from a 5- or 10-year storm.
- Design the containment system around a specific size soil particle to be removed from moving waters. EPA recommends that particles .02 mm or larger be trapped.
- Provide a long flow path length to ensure the greatest possible opportunity for sedimentation to occur (e.g., baffles).
- Calculate the anticipated sediment yield from a 10-year storm, and provide sufficient storage capacity in the basin to accommodate this volume of sediment.
- Include a gravel filter in the sediment trap/basin to allow waters to flow through and drain the structure.
- Design the depth of the sediment trap/basin a minimum of at least 2 feet.
- Provide for maintenance of facilities throughout the winter rainy season to ensure effective sediment control measures.

Since the proposed project would involve significant grading, mitigation measures are required for both: (1) construction-related, short-term erosion and sedimentation; and (2) long-term erosion and sedimentation.

Impact VI-2: The proposed project involves engineered fill slopes in an area of moderately steep terrain, with a potential to cause significant erosion of unprotected slopes, and downslope sedimentation both on- and off-site.

Mitigation Measure VI-2a: Grading activities shall be restricted to the summer construction season (15 April through 15 October). Any earthwork done after 15 October shall be limited to activities directly related to erosion control, unless the Town of Moraga authorizes additional work in writing.

Mitigation Measure VI-2b: Provide an erosion control plan prior to approval of the grading plan. The following interim control measures shall be employed based on site-specific needs in the project areas:

- Grading to minimize areas of exposed, erodible material, and to avoid over-concentration of rapidly flowing runoff in unprotected, erodible areas.
- The erosion control plans shall include water bars, temporary culverts and swales, mulch and jute netting blanks on exposed slopes, hydroseeding, silt fences, and sediment traps/basins.
- Placement of stripped topsoil on graded 3:1 slopes prior to the onset of winter rains.
- Because the biggest problem with effective sediment control is lack of maintenance, the erosion control plan shall have a comprehensive program for inspection and maintenance during the winter rainy season, including provisions for documenting maintenance activities.
- Wherever feasible, runoff shall be isolated from ungraded areas, thereby simplifying erosion control and sediment control measures within the graded area.
- The Town of Moraga shall monitor the effectiveness of the erosion control measures throughout the duration of construction.

Mitigation Measure VI-2c: In order to reduce the potential impacts of long-term erosion and sedimentation, the project shall incorporate the appropriate design, construction and continued maintenance of one or more of the following long-term control measures:

- The specific measures shall be based on the recommendations of the project geotechnical engineer and hydrologist.
- Project plans shall incorporate drainage measures to collect and control surface runoff water on sloping lots, including lined ditches and closed downspout collection systems.
- Concentrated runoff shall not be permitted to drain over engineered slopes.

- The proposed location of lined drainage ditches shall be specified on the development plan accompanying the design-level geotechnical investigation report shall be subject to the review and approval of the Town's peer review geologist.

Mitigation Measure VI-.2d: V-ditches shall be constructed at the top of slope to intercept surface drainage. Ditches shall be designed to allow for entry and exit of small wildlife subject to Town approval. Provide low retaining walls with subsurface and surface drainage facilities at the toe of the major fill slopes on the site (at rear of building pads).

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

The Town's peer review geologist, Cal Engineering and Geology (CEG), reviewed the Engeo report. Their comments are provided in a letter-report to the Town staff and are on file at the Planning Department. Additionally, the CEQA consultant's geologist, Darwin Myers Associates, reviewed the documents and plans for the project. These peer reviews indicate that the bedrock on the site is weak and prone to landsliding. A U.S. Geological Survey study of bedrock units in hillside areas (Ellen & Wentworth, 1995) indicates that as the rock unit on the site is subject to deep weathering, and there is substantial loss of strength associated with weathering. Sandstone on the site can be weathered to depths of 30 feet below the ground surface, and claystone is typically weathered to depths of 5 to 10 feet.

The approach to corrective grading of the property proposed by Engeo is to over-excavate landslides within the areas being planned for development; and at the rear of the potential building sites a buttress fill with subdrains is proposed. This fill is to have a 3:1 slope gradient, and at the top of the proposed fill slope a debris bench is be provided. The purpose of the bench is to intercept surface runoff, mud and slide debris originating higher on the slope within the ungraded/open space area of the site. Where the development concept conflicts with use of the 3:1 slope gradient, special engineering would be required (e.g., reinforced earth). The evaluation of the CEG is summarized in Appendix C, Table C-2.

Impact VI-3: Bedrock units on the site are prone to landsliding.

Mitigation Measure VI-3: Refer to Mitigation Measures VI-1a-i.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Expansive soils (those with a high shrink-swell potential) are described and mapped in the project area by the Soil Survey of Contra Costa County (Welch, 1977), and confirmed by Engeo, Inc. (2000). The Engeo report permits use of expansive native soils as fill, but does not provide specifications and standards for the soils placed to achieve finished grade. Moreover, the occurrence and distribution of expansive bedrock within the building area and its effect on foundation design is not described.

Damage from expansive soils and/or bedrock is one of the most widespread and costly problems in the San Francisco Bay Region. The significant effects of expansive soils and/or bedrock can be mitigated by recognition of the condition and appropriate design. Mitigation measures involving the use of adjustable foundation systems are not generally effective against the effects of regional wet/drought cycles, and are considered undesirable because the systems require periodic maintenance. Subsurface drainage alone is also not generally effective against the effects of regional wet/drought cycles. Highly expansive soils have severe limitations for use in engineered fill.

Expansive soils shrink and swell as a result of moisture changes that can cause heaving and cracking of slabs-on-grade, pavements and structures founded on shallow foundations. Building damage due to volume changes associated with expansive soils can be reduced by use of pier-and-grade beam foundations, placing slabs on select, granular fill, and/or use of rigid mat or post-tensioned slabs. Detailed foundation design standards and criteria are to be provided by the design-level report called for by Mitigation Measure VI-1a.

> **Impact VI-4: Expansive soils and/or bedrock has the potential to cause significant damage to foundations, slabs and pavements.**
>
> **Mitigation Measure VI-4a**: The design-level geotechnical investigation shall provide criteria for foundation and pavement design, developed in accordance with the Uniform Building Code (UBC) and Ordinance Code requirements on the basis of subsurface exploration and laboratory testing. The constraints on the use of expansive soil near finish grade shall be evaluated in the design-level geotechnical investigation report that will be subject to the review and approval of the Town's peer review geologist.
>
> **Mitigation Measure VI-4b**: Foundation design shall include drilled pier-and-grade beam foundations, reinforced slabs placed on select fill and/or post-tensioned slabs; and thicker pavement sections designed using criteria provided by the design-level geotechnical investigation. The design shall be subject to the review and approval of the Town's peer review geologist.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Public sewers will serve the project.

SOURCES OF INFORMATION

Dibblee Jr., T.W., 1980. Preliminary Geologic Map of the Las Trampas Ridge Quadrangle, Contra Costa County, California. U.S. Geological Survey Open File Map 80-545.

Engeo, Inc., 2000. *Preliminary Geotechnical Exploration, Lipson Property, Northern Parcel, Moraga California.*

Engeo, Inc., 2007. *Wetland Mitigation Areas and Maintenance Access Easements, Hetfield Estates, Moraga, California.*

California Engineering and Geology, 2006. *Geologic/Geotechnical Review, Preliminary Geotechnical Exploration, Conceptual Development Plan, Hetfield Estates, Tract 9051, Moraga, California.*

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VII. **HAZARDS AND HAZARDOUS MATERIALS** — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				√
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				√
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				√
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				√
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				√
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				√

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				√
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			√	

Setting:

The proposed project site is an undeveloped parcel of land surrounded by existing residential neighborhoods and open space. The site has been used for cattle grazing in the past. There are no known hazardous materials or waste at the site. There is no record of the use of pesticides or herbicides at the site.

Discussion:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

There would be no hazardous materials at the proposed project other than common household hazardous wastes (aerosol sprays, paint, oil, solvents, pesticides, weed killers, etc.). The Central Contra Costa Solid Waste Authority has established a Household Hazardous Waste Collection Facility in Martinez where residents can dispose of these wastes. The proposed project would not create a significant hazard to the public or the environment. There would be no impact.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Since the proposed project consists of only houses, there would be no foreseeable upset or accident conditions that would release hazardous materials. There would be no impact.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Refer to the discussion for Item b) above. There would be no hazardous material impacts on schools.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The proposed project site is not included on lists of hazardous materials sites compiled pursuant to any government code. There would be no impact.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

The proposed project is not located within an airport land use plan or within two miles of an airport. There would be no impact.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Refer to discussion for Item e) above. There would be no impact.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project would not impair implementation or interfere with any emergency plan. There would be no impact.

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

The threat of wildfires exists for most East Bay residential neighborhoods in hilly areas as demonstrated by the 1991 Oakland hills fire. The proposed project is in no greater threat than other residential areas in Moraga. The Moraga-Orinda Fire District (MOFD) issues instructions to homeowners to maintain a 100-foot-wide, weed-free space around their homes to protect them from wildfires, and property owners are required to comply with MOFD requirements for exterior fire hazard control. The MOFD has an off-road Type III engine stationed in Moraga that is specifically designed to fight off-road fires before they become out-of-control wildfires. The MOFD also has mutual aid agreements with other fire fighting agencies for support in case a wildfire breaks out in or near Moraga.

A biological study submitted by the applicant proposes mitigation measures to reduce any potential impacts of the proposed project relative to wildfire hazards. The houses would be constructed with Class B or better fire retardant roofing and be equipped with smoke detectors. All houses would be equipped with built-in, automatic fire sprinkler systems, as a result of recent changes to the fire code. In addition, roofing and attic ventilation would have to comply with Chapter 47, *Requirements for Wildland-Urban Interface Fire Areas*, of the 2007 Fire Code. Construction of the access road and the trail connecting the access road to the Old Moraga Ranch Trail could improve access for the MOFD.

The applicant would be required to submit a Fire Protection Plan to mitigate the risk and threat of a wildland-urban interface fire. This plan would be prepared in accordance with the MOFD requirements, and the homeowners would be required to maintain the plan and report compliance annually to the MOFD (Hoover, 2007). Given the public awareness of the risk of

wildfires, the actions homeowners can take to protect their lives and homes, and the mutual aid available to the MOFD, the risk of loss, injury or death from wildfires can be reduced.

SOURCES OF INFORMATION

Hoover, Tonya, Fire Marshall, Moraga-Orinda Fire District. 2007. Telephone communication with Robert Mills, Mills Associates, January 24.

RMR Design Group. 2008. *Hetfield Estates, Subdivision 9051, Conceptual Development Plan,* August 27.

The Wyro Company. 2006. *Analysis of the Project in Relation to the General Plan.* Attachment to letter to Ms. Samantha Haschert, Assistant Planner, Town of Moraga, April 4. This document is on file with the Town of Moraga Planning Department at 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
VIII. **HYDROLOGY AND WATER QUALITY** — Would the project:				
a) Violate any water quality standards or waste discharge requirements?				√
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			√	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?		√		
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?			√	
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			√	

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
f)	Otherwise substantially degrade water quality?			√	
g)	Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				√
h)	Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				√
i)	Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				√
j)	Inundation by seiche, tsunami, or mudflow?				√

Setting:

SURFACE HYDROLOGY

The proposed project site is a relatively steep, undeveloped parcel of land that slopes down to the north to Larch Creek, a seasonal stream. The average slope in the area to be graded is 18.4 percent (The Wyro Company, 2006), but the upper portion of the site is considerably steeper. The site was used for cattle grazing in the past. The average rainfall is 29 inches per year with most of the rainfall occurring between November and April.

PREVIOUS STUDIES

In 1998, KCA Engineers, Inc., prepared a drainage study for the watershed that included the project site. This study was undertaken because of flooding problems in the gently sloping area between Larch Avenue and Camino Pablo. This study recommends improvements to increase the hydraulic capacity of Larch Creek to 300 cubic feet per second. A second 72-inch-diameter culvert has been installed under Camino Pablo. However, the stretch of Larch Creek between Camino Pablo and Larch Avenue has not been lined as recommended in the study. Larch Creek is overgrown with weeds and is partially filled with silt upstream of Camino Pablo and at its confluence with Moraga Creek. Therefore, the capacity of the creek may not be sufficient to convey flows from a 100-year storm event.

APPLICABLE REGULATIONS

1. Contra Costa County's National Pollutant Discharge Elimination System (NPDES) C.3 permit requirements for a long-term Stormwater Control Plan to reduce the discharge of pollutants and control flow from the storm drain system to the maximum extent practicable and protect water quality in the receiving waters. RMR Design Group, the applicant's civil engineer, has prepared a Stormwater Control Plan for the proposed project (RMR Design Group, 2008).

2. State General Construction Permit Program, under which developers of projects that disturb one acre or more of land, are required prepare a Storm Water Pollution Prevention Plan to implement Best Management Practices to reduce the off-site impacts of sediment-laden runoff.

3. United States Corps of Engineers (USCOE) permit under Section 404 of the federal Clean Water Act for construction of the detention basin outlet structure in Larch Creek.

4. California Department of Fish and Game (CDFG) Streambed Alteration Agreement for construction of the detention basin outlet structure in Larch Creek.

5. Town of Moraga Municipal Code Chapter 13.04, Storm Water Management and Discharge Control.

Discussion:

a) Violate any water quality standards or waste discharge requirements?

Wastewater (i.e., sewage) from the subdivision would be conveyed by sanitary sewers to the Central Contra Costa Sanitary District (CCCSD) pump station located off of School Street in Moraga. From there, the wastewater would be conveyed to the CCCSD Wastewater Treatment Plant in Martinez for secondary treatment and disposal into Suisun Bay. The CCCSD plant operates under a NPDES permit issued by the San Francisco Bay Regional Water Quality Control Board that establishes discharge requirements that reduce pollutants in the plant's effluent to acceptable levels.

Storm runoff from the six houses in the subdivision would generate minor amounts of pollutants such as oil, other automotive fluids, particulates and litter associated with residential development that would reach Larch Creek. These pollutants would be similar to those generated at the existing neighboring houses in the area of the proposed project. The total pollutant load from the proposed subdivision would be small because only six houses would be constructed. The applicant proposes to install roadside biofiltration swales and a detention basin in the project's storm drainage system. The swales are designed to provide biological treatment to reduce the level of pollutants in stormwater runoff before it enters Larch Creek. In addition, the detention basin would capture some of the pollutants in the runoff that would settle out in the basin. The applicant will also prepare a Storm Water Pollution Prevention Plan (SWPPP) for construction activities. With installation of the roadside biofiltration swales and detention basin and implementation of the SWPPP, the proposed project would not violate any water quality standards or waste discharge requirements, so there would be no impact.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

The groundwater aquifer in the area of the proposed project is not used for a water supply, and there are no active wells in the area**.** The six houses would have a total footprint of 29,700 square feet (Swatt Architects, 2006). The road system and driveways would cover approximately 27,600 square feet. Thus, the total new impervious area would be approximately 1.32 acres or 2.6 percent of the total site area. Most of the groundwater recharge in the area of the proposed project comes from seasonal flow in Larch Creek, which fronts the project site. The project would not significantly reduce recharge to the groundwater table, and the impact would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

PROPOSED STORM DRAIN IMPROVEMENTS

A privately maintained storm drain system would be installed to serve the six-unit subdivision. This system would extend uphill to the top of the area of the project site that would be steeply graded where catch basins would be installed to collect water from east-west concrete drainage ditches. These ditches would intercept runoff from above and prevent the water from running down the graded slopes. This storm drain system would discharge to Larch Creek. Larch Creek drains into Moraga Creek that, in turn, drains into Upper San Leandro Reservoir located southwest of Moraga.

A subterranean detention basin under the access road on the project site would be constructed as part of the storm drain system. The detention basin would be sized to ensure that runoff from the subdivision during a storm with a 100-year recurrence interval (i.e., a storm with a one-percent chance of occurring each year) and a 12-hour duration would not exceed the runoff from the existing undeveloped site (RMR Design Group, 2007). The access bridge crossing Larch Creek would completely span the creek (i.e., no intermediate supports) so that it would not interfere with the flow channel of the creek.

The existing, undeveloped project site drains to the north via overland flow to Larch Creek along the northern boundary of the site. Since the storm drain system proposed for the project would include a detention basin that would discharge through a pipe to Larch Creek, the drainage pattern would be slightly altered because some of the flow from the site would be concentrated at one point along the creek. The course of the creek would not be altered. However, the concentrated flow from the storm drain system could erode the northern bank of the creek unless this portion of the creek channel is lined, or the outlet structure on the detention basin outlet pipe is designed to dissipate the energy of the discharge. The applicant proposes an energy dissipation structure at the discharge point to Larch Creek (RMR Design Group, 2007). The detention basin would capture some sediment that settles to the bottom of the basin, so siltation in the creek would decrease providing creek erosion is prevented.

Impact VIII-1: Construction of a storm drain discharge structure and access bridge could impact Larch Creek and the vegetative canopy covering the creek.

Mitigation Measure VIII-1: The applicant shall contact the United States Corps of Engineers and the California Department of Fish and Game and obtain required permits and a Streambed Alteration Agreement for construction and operation of a storm drain discharge structure and access bridge in Larch Creek.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map for the southern part of the Town of Moraga (Panel 0606370007A, dated May 19, 1981), shows that the water surface in Larch Creek would be at elevation 516 near Carr Drive (downstream from Hetfield Place) during a 100-year storm. The elevation of the Sanders Drive/Carr Drive intersection is approximately 560 feet, so the water would be below street level. Larch Creek was not studied upstream of this point. However, portions of Larch Creek between Sanders Drive and Larch Avenue are overgrown with weeds and are partially full of silt. Therefore, the capacity of the creek may not be sufficient to convey flows from the 100-year storm. The applicant is not responsible for maintaining creeks to be free of weeds and silt that could reduce hydraulic capacity. Either the Town of Moraga or the property owners abutting the creeks are responsible for maintaining hydraulic capacity.

Construction of the proposed project would result in new impervious surfaces (e.g., roofs and paving). The decrease in pervious surfaces would result in less infiltration of rainfall into the ground, causing peak flows as well as total runoff volumes to increase. A detention basin would be installed under the access road. The basin would be sized to ensure that the rate of runoff from the subdivision during a 100-year storm event will not exceed the rate of runoff from the existing undeveloped site (RMR Design Group, 2007). Storms with more frequent recurrence intervals would generate smaller rates of flow and volumes of runoff.

The amount of runoff discharged to Larch Creek would increase above existing conditions. However, since the Larch Creek watershed upstream of the project site is relatively small, this additional amount would be discharged to the creek following subsidence of the peak storm flows in the creek at the detention basin discharge location. The impact of the proposed project on the rate or amount of off-site surface runoff would be less than significant.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed project would not contribute runoff to any existing or planned stormwater drainage system since the project would have its own independent storm drain system that would discharge to Larch Creek. The Stormwater Control Plan for the proposed project shows 11 vegetated swales and one bioretention area (RMR Design Group, 2008). Five vegetated swales would be located along the property lines between the six houses. Runoff from roofs and yards would be conveyed by pipelines to the swales. Six vegetated swales

would be located along the project's access road. Curb cuts (i.e., openings in the curbs) would allow runoff to flow into the swales. The bioretention area would serve the entrance/exit bridge over Larch Creek. These Integrated Management Plan facilities are designed to provide biological treatment to reduce the level of pollutants in stormwater runoff before it enters Larch Creek. The increase in runoff pollutants would less than insignificant.

f) Otherwise substantially degrade water quality?

Refer to discussions for Items a), c), d) and e) above. The impact of the proposed project on water quality would be less than significant.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

The FEMA Flood Insurance Rate Map for the southern part of the Town of Moraga (Panel 007A, dated May 19, 1981), shows the project site in Zone C, and it is not within a 100-years flood hazard area. No impact would occur.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

Refer to discussion for Item g) above. No impact would occur.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

Refer to discussion for Item g) above. The project site is not downstream of any levee or dam. No impact would occur.

j) Inundation by seiche, tsunami, or mudflow?

The proposed project would not be subject to a seiche or tsunami because the project site is not located near any oceans, bays, or large lakes. The project site is in the same watershed as Upper San Leandro Reservoir located southwest of Moraga. It is located 150 feet above the surface of the reservoir. Refer to Section VI, Geology and Soils, for discussion of the potential for landslides and mudflows. There would be no impact.

SOURCES OF INFORMATION

RMR Design Group. 2008. Hetfield Estates, Subdivision 9051, Conceptual Development Plan, August 27.

RMR Design Group. 2007. Subdivision 9051, Hetfield Estates, Preliminary Drainage Study, March.

RMR Design Group. 2008. Stormwater Control Plan, Hetfield Estates, Subdivision 9051, January 18.

Rourke, Robert. RMR Design Group 2006. Telephone communication with Robert Mills, Mills Associates, January 16.

Swatt Architects, Inc. 2006. Hetfield Estates Development (Site Plan, Site Sections, Site Elevations), March 31.

The Wyro Company. 2006. Analysis of the Project in Relation to the General Plan. Attachment to letter to Ms. Samantha Haschert, Assistant Planner, Town of Moraga, April 4.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
IX. **LAND USE AND PLANNING** — Would the project:				
a) Physically divide an established community?				√
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?			√	
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?			√	

Setting:

The project site is located within a narrow valley, surrounded on four sides by residential development. A ridge separates the development site from the single-family neighborhood located to the south. The General Plan designation for the property is Open Space subject to the Moraga Open Space Ordinance (MOSO) requirements which governs private open space. The MOSO requirements call for the applicant to provide development standards for each lot and restrict the development area within each lot.

Discussion:

a. Physically divide an established community?

The proposed project would not divide an established community. The project site is vacant and Hetfield Place is an existing street that stubs out at Larch Creek located adjacent to the north boundary of the property. This street will provide access to the development.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

The project site is currently zoned OSM-DT (MOSO Open Space District – Density Transfer). As such, the proposed project is subject to the MOSO requirements and densities. The MOSO zoning district allows the following conditional uses: single-family residential dwelling; public or private park or nonprofit recreational facility, playground, trail and related facility; public or private school; and accessory uses and structures incidental to conditional uses (Ord. 173 § 1 (part), 1998). The densities in the district are determined by the planning commission based upon site constraints of the property and in compliance with the applicable goals and policies of the general plan (Ord. 173 § 1 (part), 1998). The General Plan Diagram also limits the maximum density of one dwelling unit per 20, 10 or 5 acres and in no case shall density exceed one unit per 5 acres. In areas of high risk the density is restricted to one unit per 20 acres. The MOSO guidelines state that if an area is classified as a high-risk area, the classification could be changed. This can be done providing the Town is satisfied that the characteristics making the site high risk may be abated by appropriate remedial efforts which are consistent with CEQA and the Goals and Policies of the General Plan. As stated in the MOSO Ordinance, (Ord. 173 § 1 (part), 1998) the precise site standards for the development of property within the district that requires a conditional use permit, are prescribed at the time the reviewing authority approves the issuance of a conditional use permit. The standards fix the lot area, frontage, front, side and rear setbacks, building height and site coverage requirements.

MOSO provides criteria to determine whether the density can be increased. However, the Town must determine that the project is not high risk to make the findings to increase density. The following points summarize the risk factors to make the density determination:

a. whether the area has the potential to be adversely impacted by a landslide, unstable soil, soil with a history of slippage or a slope subject to severe surface erosion or deterioration;

b. whether the site serves as a natural drainage way or swale, with a drainage basin of 50 acres or more or crossed by a perennial or ephemeral (intermittent) drainage channel;

c. whether the project is within 50 feet of a known active or dormant fault trace;

d. whether the site contains a regular or intermittent spring or adverse ground water conditions;

e. whether the site is located within 1900 yards upstream or 500 yards downstream of a reservoir , detention basin or pond of one acre or more in surface area;

f. whether the site is located within an area subject to enhanced seismically induced ground shaking or a seismically induced ground failure such as a landslide, lateral spread, rockfall, ground lurching, liquefaction, soil settlement, differential compaction and compression; and

g. whether the site is located within an area subject to the effect of seismically induced flooding and/or dam or stock pond failure. MOSO open space density is defined in Section 8.52.140 of the MOSO Ordinance.

As stated above, development on MOSO land is limited. Areas identified as "high risk" areas are limited to a maximum density of one dwelling unit per twenty (20) acres. Development is prohibited on slopes with grades of twenty (20) percent or greater and on the crests of minor ridgelines (defined as where the crest is 800 feet above mean sea level). The town council can reduce the allowable densities on slopes of less than twenty (20) percent through appropriate means such as requiring proportionally larger lot sizes or other appropriate siting limitations. Development is also prohibited on minor ridgelines immediately adjacent to and extending into MOSO open space lands if slopes exceed twenty (20) percent and elevation of the ridge is greater than 800 feet above mean sea level. The densities in MOSO open space lands are determined appropriate by the planning commission after a review of the site constraints and in compliance with applicable goals and policies of the Moraga general plan and the requirements of the open space ordinance.

As discussed in VI. Geology/Soils and in Appendix C, two landslide deposits have been mapped on the property within the portion that is planned for development. In response to Risk Factor a., the high risk areas of the site are the landslide deposits located in the open space. These areas are approximately 80 to 150 feet from the portion of the site planned for residential use and are located within the open space area. The intervening area is a buttress fill that is to be keyed into bedrock and the design includes subdrains to ensure that the fill does not become saturated. (Refer to photo illustrating the use and placement of subdrains.) The debris benches are equipped with concrete-lined V-ditches on their outboard edge, which will intercept surface runoff (and mud) originating in the open space. The 3:1 slope gradient will allow salvaged topsoil to be track-walked onto the slope, which will facilitate revegetation of the graded area. The effect of the corrective grading would buttress that portion of landslides located within the open space. The applicant's geotechnical consultant provided a report with the application, which has been analyzed by the Town's consulting geologist and the geotechnical consultant for this document. Implementation of the engineering recommendations as recommended by all of the geotechnical consultants would provide appropriate remedial efforts that would remove the high-risk designation and would not increase the risk to the public health, safety and welfare of future residents. When considering the Tentative Map, the recommendations of the geotechnical engineers will be considered by the decision-makers to determine whether the site is no longer a high-risk area.

Risk Factor b. pertains to natural drainage ways or swales, with a drainage basin of 50 acres or more or crossed by a drainage channel. As discussed in VIII. Hydrology/Water Quality, Larch Creek is an ephemeral (i.e., intermittent) creek that flows along the north boundary of the proposed project. The creek does not cross the project site, but as shown on the site plan in Appendix D, the centerline of

the creek is located primarily in the backyards of most of the existing houses along Sanders Drive. The creek corridor is located within the open space area, outside the individual property lines.

The applicant provided four cross-sections (RMR Design Group, 2008), that show the surface elevation, depth and lateral extent of creek flow along the creek during a storm with a 100-year recurrence and a 12-hour duration (i.e., a storm with a one-percent chance of occurring each year). Because the applicant is proposing to detain the flows on the project site, the project would not alter the course of the creek. The applicant's civil engineer prepared calculations using creek cross-section survey data to determine the levels of flow in the creek at the four cross-sections along the frontage of the proposed project cited above during a 100-year storm event [RMR Design Group, 2008]). The results are shown on the cross-sections of the site. These cross-sections show that the water level would be confined to the stream channel and would be well below any existing or proposed structures as well as the structural fill for the proposed project (refer to Appendix D).

The volume of runoff discharged to Larch Creek would increase above existing conditions because of the impervious surfaces (roofs, roadways, etc.) that would be constructed as part of the proposed project. However, since the detention basin is designed to limit the rate of flow from the proposed project to be no greater than the runoff from the existing undeveloped site, and since the upstream flow would decrease following the peak of the storm, the water levels in the creek would subside when this additional volume of storm water is discharged from the detention basin. Implementation of the drainage improvements will not increase risk to the public health, safety and welfare.

In response to Risk Factor d. regarding adverse ground water conditions, the grading concept is designed to create stable building sites. The areas proposed for construction would be underlain by engineered fill constructed with subdrains as illustrated in the photograph.

Runoff intercepted by drainage facilities on the debris benches is to be conveyed to the intermittent stream channel and to the wetland; both located in the open space. The intent of these improvements is to create stable/usable-building areas, retain the portion of the site (upslope of the grading limits) as undisturbed permanent open space, retain the natural creek channel, and provide an on-site seasonal wetland that is located in the open space. The installation of the underground drainage system abates the risk to public health, safety and welfare.

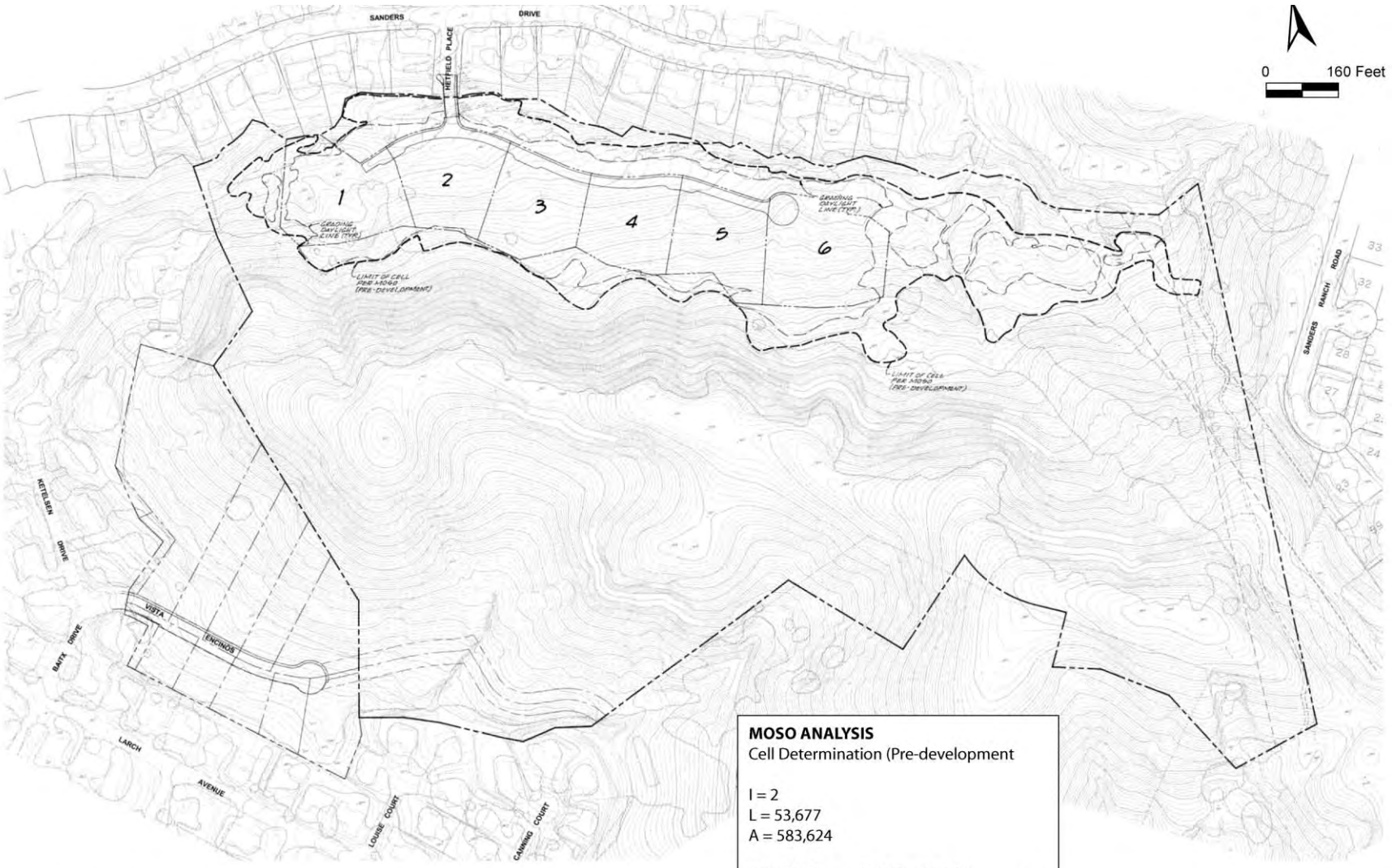
In regard to the remaining risk factors, the site is not located within a.) 50 feet of a known active or dormant fault trace; b.) located within 100 yards upstream or 500 yards downstream of a reservoir, detention basin or pond of one acre or more in surface area; c.) located within an area subject to enhanced seismically induced ground shaking or a seismically induced ground failure; or d.) located within an area subject to the effect of seismically induced flooding and/or dam or stock pond failure. Therefore, these factors do not result in a high risk. The site contains 58.2 acres and under the density requirements, the site could yield a maximum of 11 dwelling units and a minimum yield of 2 or 3. The applicant is proposing a density of one dwelling unit per 9.5 acres, yielding 6 units. MOSO requirements call for a minimum lot size of no less than 15,000 square feet under certain conditions, whereas the applicant is proposing a minimum lot size of .96 acre and a maximum lot size of 1.38 acres for the six residential lots. Lot 7 will contain the remaining portions of the project site and designated as open space. This lot will contain 51.45 acres. The remaining portion of the site will remain as open space in perpetuity, as well as provide recreational opportunities through the use of connecting pedestrian/equestrian trails.

MOSO requirements also state that no lot shall exceed a slope gradient of 20 percent and that applicant's must provide an individual ~~"e~~ell" (development area) analysis to confirm that individual lots do not exceed 20 percent. The applicant has provided a MOSO Cell Analysis that indicates Lot 4 has the greatest slope of 18.40 percent and Lot 2 with the least slope of 15.57 percent. Figure 3-6 illustrates the MOSO Cell Analysis.

In summary the proposed project complies with the MOSO requirements. The development plan proposes fewer lots than the maximum allowed. Engineering recommendations will reduce the risk factor and individual lots fall under 20 percent slope. The development provides for recreational opportunities; 88 percent of the property will remain in permanent open space; visual impacts will be reduced by locating the houses on the lower portions of the slope which retains the visibility of the ridge; and the development will be zoned as a Planned Development. All development within MOSO designated lands is zoned as a planned development. Such a designation allows diversification in the relationship of various uses, buildings, lot sizes and open spaces while ensuring substantial compliance with the general plan.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

Project implementation would not significantly conflict with local policies or ordinances protecting biological resources, such as the Town's tree preservation or creek protection ordinances. Measures recommended in IV. Biological Resources to mitigate potential impacts on special-status species, wetlands, wildlife habitat and trees, would serve to address potential conflicts with Town policies related to protection of these resources. This is considered a less-than-significant impact.



Source: RMR Design Group

Figure 3-6 Moso Cell Analysis

SOURCES OF INFORMATION

The Wyro Company, 2006. Analysis of the Project in Relation to the General Plan. April 4.

RMR Design Group, 2008. Conceptual Development Plan MOSO Cell Analysis. August 27.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
X. **MINERAL RESOURCES** — Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				√
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				√

Setting:

The proposed project is located in a residential and open space area of southwestern Moraga where there are no known mineral resources (Contra Costa County, 1996).

Discussion:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Since there are no known mineral resources at the project site, the proposed project would have no impact.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

There are no locally important mineral resource recovery sites delineated on local plans. The proposed project would have no impact.

SOURCES OF INFORMATION

Contra Costa County. 1996. General Plan, 1995-2010 (Figure 8-4, Mineral Resource Areas), July.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XI.	**NOISE** — Would the project:				
	a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				√
	b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				√
	c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			√	
	d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			√	
	e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				√
	f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				√

Setting:

The proposed project site is an undeveloped parcel surrounded by existing residential neighborhoods and open space in the Town of Moraga. Therefore, existing noise sources and levels are typical for suburban neighborhoods in a semi-rural setting.

APPLICABLE REGULATIONS

Town of Moraga Municipal Code, Chapter 7.12, Noise Control.

Discussion:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

The generation of noise from a variety of sources is controlled under Chapter 7.12, Noise Control, of the Town of Moraga Municipal Code. The Code regulates noise levels that do not "disturb the peace or quiet of any neighborhood or which cause discomfort or annoyance to a reasonable person of normal sensitiveness residing in the area in the quiet and peaceful enjoyment of his property." As stated in the Town's Municipal Code, construction activities are prohibited between the hours of 5

p.m. to 8 a.m., and construction equipment cannot be operated in ~~a~~ manner that a reasonable of normal sensitiveness residing in the area is caused discomfort or annoyance." The Code does not establish the days of the week that construction activities can occur. This is established as a condition of approval when the Planning Commission reviews the project. Construction contractors and residents of the proposed project would be required to comply with Chapter 7.12 of the Municipal Code. Violations of the code are infractions that are punishable by penalties including restraining orders and injunctions. In addition, the Town of Moraga would dictate maximum noise levels for construction equipment as a condition of approval as the Town has done for other recent development projects. Therefore, proposed project would not expose persons to noise levels in excess of the Town of Moraga Municipal Code, and there would be no impact.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

There would be no sources of groundborne vibration (other than from earthquakes) or groundborne noise levels at the project site. Compaction equipment would not be felt outside the construction site. Pneumatic tampers for compacting trench backfill would not be felt more than ten feet from the trench. No noise impact would occur from these sources.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

The proposed project would result in six new houses on property that is now vacant. There would be a permanent increase in ambient noise levels in the project vicinity from normal residential activities such as vehicular traffic, leaf blowers, etc. Noise levels from the proposed project are anticipated to be about the same as those in the adjacent residential neighborhood along Sanders Drive. The Town of Moraga Municipal Code as stated in Item a) above controls noise levels. Therefore, the impact would less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Construction of six new houses would generate a substantial temporary increase in ambient noise levels in the project vicinity from construction equipment. However, construction would be limited to the hours of 8 a.m. and 5 p.m., and equipment mufflers would limit noise levels. There would be no blasting or pile driving during construction. Nevertheless, construction noise would impact nearby sensitive receptors (e.g., residents of the adjacent neighborhood along Sanders Drive). The Town of Moraga Municipal Code controls construction noise levels as stated in Item a) above. Therefore, the impact would less than significant.

d) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The project site is not located within an airport land use plan or within two miles of a public airport. There would be no impact from excessive airport noise.

e) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The project site is not located in the vicinity of a private airstrip, so there would be no noise impact.

SOURCES OF INFORMATION

RMR Design Group. 2008. Hetfield Estates, Subdivision 9051, Conceptual Development Plan, August 27.

Town of Moraga. 2006. Municipal Code, Chapter 7.12, Noise Control, August 9.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XII. **POPULATION AND HOUSING** — Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			√	
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				√
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				√

Setting:

The Town of Moraga currently has an estimated population of 16,165 persons (California Department of Finance, 2007). The town's housing stock is comprised primarily of single-family dwellings, with a mix of apartments and condominiums.

Discussion:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed project is anticipated to generate 21 persons at 3.5-persons per dwelling unit. This represents a 0.13 percent increase on the Town's population and is considered a less than significant impact.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

and

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

The project site is vacant; therefore no persons would be displaced.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIII. **PUBLIC SERVICES —**				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?			√	
Police protection?			√	
Schools?			√	
Parks?			√	
Other public facilities?			√	

Setting:

The proposed project, consisting of six estate homes, would be located within the corporate limits of the Town of Moraga. The Town would provide police protection and parks and recreation services. The Moraga Orinda Fire District (MOFD) would provide fire protection. The Moraga School District would provide elementary and intermediate school services, and the Acalanes Union High School District would provide high school services at Campolindo High School in Moraga. The County of Contra Costa would provide library services.

The costs for public services are generally paid through property taxes, sales taxes, gasoline taxes, local fees such as business license fees, development impact fees, franchise fees, and vehicle license fees collected by the State of California. The exceptions are the East Bay Municipal Utility District (EBMUD), which supplies domestic water, and Pacific Gas and Electric Company (PG&E), which supplies electricity and natural gas. Both EBMUD and PG&E install meters to measure consumption and bill their customers directly by mail every month. The Town of Moraga Police Department, the Moraga Orinda Fire District, the Town's parks and recreational facilities, the East Bay Regional Parks District, the Central Contra Costa Sanitary District (which provides wastewater collection,

treatment, and disposal service), the Moraga Unified School District, the Acalanes School District, and the Contra Costa County libraries are all funded with property taxes, other taxes and fees. In addition, the school districts receive one-time development impact fees when the Town approves a development project. At the present time residential developments are charged $2.05 per square foot of floor space per house.

The proposed project consists of six estate houses that would sell for approximately $2 million each. Therefore, the initial increase to the Town in assessed property valuation would be approximately $12 million, which would produce an initial base ad valorem tax of $120,000 per year. Under State Proposition 13 (passed by the voters in 1978), this amount could increase by two percent per year if property values increase. If property values decrease, property owners could appeal for reductions in their properties' assessed value and, hence the property taxes they pay.

In 2004-05, the Town of Moraga's general fund budget cost the average household $680. Thus, the general fund costs for Town services to the proposed project would be approximately $4,000 per year (in 2004-05 budget dollars) (Economic and Planning System, 2005). The study determined that the proposed project could pay for itself.

Discussion:

Would the project adversely impact fire protection?

The MOFD has a fire station on Moraga Way near School Street. It is equipped with a Class III wild-fire engine (pumper), a ladder truck, and an emergency medical treatment truck. It also has a Class I engine owned by the State Office of Emergency Services (OES). While this engine is assigned to the Moraga fire station, it can be taken elsewhere if OES determines it is best to do so. The response time from this station to the project site is approximately three minutes, much less than five minutes 95 percent of the time, which is a standard acceptable response time.

The MOFD has reviewed the proposed project, and the Fire Marshal has issued a Design Review letter identifying requirements for MOFD approval of the project. One requirement is that there can be no parking on either side of the on-site access road except at the three designated pull-out parking areas. The applicant would be required to comply with all the MOFD requirements.

Given the close proximity of a fully equipped fire station and the applicant's compliance with all MOFD requirements, the impact of the proposed project on fire protection services would be less than significant.

Would the project adversely impact police protection?

The Town of Moraga Police Department headquarters is on Rheem Boulevard west of Moraga Road. The Department maintains two officers in vehicles on patrol all the time. Response times for police services depend on the location of the officers when they receive a call, and how far they have to travel to respond. The officer/1000 resident ratio is currently 0.7, about half the national average. Although the impact of the six-unit Hetfield Estates subdivision would not be significant by itself, the cumulative impact of the Palos Colorados, Los Encinos and Hetfield Estates developments could adversely affect police service to the entire community.

Due to the site's secluded location and the future demand anticipated on police services, the Police Chief is recommending that as a condition of approval, the houses be equipped with security alarms. (Ruppenthal, 2006).

Impact XIII-1: Cumulative development proposed in the town, coupled with the location of the development, could delay police response time.

Mitigation Measure XIII-1: The six houses shall be equipped with security alarm systems subject to review and approval of the Town of Moraga Police Department.

Would the project adversely impact schools?

The applicant estimates that 17 people will occupy the six houses in the completed subdivision for an average of 2.83 persons per dwelling unit (The Wyro Company, undated). However, given the size of the proposed homes, a more realistic number would be 3.5-persons per dwelling unit, generating 21 persons. Approximately five to nine students are estimated to reside in the development. Of these, three to six would attend elementary or intermediate schools, and one to three would attend Campolindo High School. School impact fees will be assessed at a rate of $2.05 per square foot of floor space (Biondi, 2008) at the time building permits for the individual houses are issued.

Camino Pablo School is the elementary school closest to the project site. Camino Pablo School is currently overcrowded, and four new classrooms have been under construction with an expected completion date of April 2008 (Simonin, 2008). Depending upon when children from the proposed project are enrolled relative to enrollment of students from other new subdivisions in Moraga, the Moraga School District would place them in Camino Pablo School or one of the District's other elementary schools. Intermediate grade students would attend Joaquin Moraga Intermediate School, and there is space available for these students (Schafer, 2007).

The Acalanes Union High School District states that enrollment at Campolindo High School is declining so capacity if available for students from the proposed project could (Humphrey, 2007). Therefore, the impact of the proposed project on schools would be less than significant.

Would the project adversely impact parks?

Refer to Section XIV, Recreation, of this checklist.

Would the project adversely impact other public facilities?

Contra Costa County operates a public library on Saint Mary's Road in Moraga. The library has ample capacity to accommodate the small number of people from the proposed project. However, parking at that library is a problem when events are scheduled during daytime library operating hours. The County and the Town of Moraga are working to resolve this through better scheduling (Donahue, 2007). The proposed project would have a less-than-significant impact on the Moraga Library.

SOURCES OF INFORMATION

Biondi, Lucille, 2008, Moraga School District, Telephone communication with Carolyn Mills, February 21

Donahue, Laura, Contra Costa County Library Department. 2007. Telephone communication with Bob Mills, Mills Associates, January 19.

Economic and Planning System. 2005. *Wyro Property Fiscal Impacts* letter to Lori Salamack, Planning Director, Town of Moraga, December 22. Letter is on file at the Town of Moraga Planning Department, 329 Rheem Boulevard, Suite 2, Moraga, CA 94556.

Humphrey, David, Acalanes Union High School District. 2007. Telephone communication with Carolyn Mills, Mills Associates, January 18.

Moraga-Orinda Fire District. 2005. *Fire Prevention Division Design Review,* August 3.

RMR Design Group. 2008. *Hetfield Estates, Subdivision 9051, Conceptual Development Plan,* August 27.

Ruppenthal, Mark, Chief of Police, Town of Moraga. 2007. Telephone communication with Bob Mills, Mills Associates, January 17.

Schafer, Rick, Superintendent, Moraga School District. 2007. Telephone communication with Bob Mills, Mills Associates, January 18.

Simonin, Paul, Director of Administrative Services, Moraga School District, 2008. Telephone communication with Carolyn Mills, Mills Associates, April 15.

The Wyro Company. Undated. *Hetfield Estates, Conceptual Development Plan – Narrative Description.*

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV.	**RECREATION** —				
	a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?			√	
	b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?			√	

Setting:

The Town of Moraga provides local parks and recreational services, which include the Moraga Commons, Rancho Laguna Park, and the Hacienda de las Flores. Regional trails include the Lafayette Moraga Regional Trail and the Old Moraga Ranch Regional Trail. East Bay Regional Park District owns and operates many regional parks in the East Bay area. The nearest regional park is Redwood Regional Park southwest of Moraga in the Oakland hills. In addition, the East Bay Municipal Utility District watershed lands offer hiking opportunities. The Valle Vista Staging Area in the Upper San Leandro Reservoir watershed is located on Canyon Road in Moraga, approximately two miles from the project site.

Discussion:

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

The proposed project is a six-unit subdivision that would house an estimated 17 to 21 people. This small number of people would not increase the use of parks and other recreational facilities (e.g., trails) such that physical deterioration would occur or be accelerated. The impact would be less than significant.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

The proposed project includes a dedicated public trail that would extend from the entrance to the project at Hetfield Place to the existing Old Moraga Ranch Regional Trail. This trail will follow the terrain and require minimal disturbance to the existing, undeveloped conditions. The project also includes undeveloped easements for trails along the ridge above the subdivision with an extension to Vista Encinos on the southwest side of the ridge. The homeowner's association would be responsible for maintaining the trail. These recreational facilities would have a less-than-significant adverse impact on the environment and would be considered a beneficial impact.

SOURCES OF INFORMATION

RMR Design Group. 2008. Hetfield Estates, Subdivision 9051, Conceptual Development Plan, August 27.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XV.	**TRANSPORTATION/TRAFFIC** — Would the project:				
	a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			√	
	b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?		√		
	c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				√
	d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				√
	e) Result in inadequate emergency access?				√
	f) Result in inadequate parking capacity?				√
	g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				√

Setting:

Access to the project site is via Sanders Drive to Hetfield Place, whereupon a new bridge would cross Larch Creek to enter the project site. The bridge would have a 12-foot-wide lane in, a 12-foot-wide lane out, and a 4.5-foot-wide sidewalk on one side. A private, 20-foot-wide road that parallels the creek will provide access to the individual lots within the subdivision. Sanders Drive and other local streets in the area currently have adequate capacity for existing traffic. The Town of Moraga has established level of service (LOS) standard of ~~"h~~high C" for various types of intersections (Town of Moraga, 2002). LOS "A" has very slight or no delay. LOS ~~"F~~" has excessive delay. Level C has delays of between 20 and 35 seconds for signalized intersections and 15 and 25 seconds for unsignalized intersection. A traffic impact analysis was prepared for a larger project that includes the

Los Encinos subdivision (located south of the proposed project site) as well as the Hetfield Estates subdivision (the proposed project) (TKJM, 2000). This analysis determined that the Moraga Way/Canyon Road/Moraga Road and the Canyon Road/Sanders Drive intersections operate at LOS "A."

Discussion:

a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?

The Traffic Analysis prepared for the proposed project (Nickelson, 2005) states that the residents of the six houses would generate 10 daily vehicle trips, for a total of 60 daily trips, evenly split in and out of the subdivision. During the morning peak traffic hour, there would be four trips out, and during the evening peak traffic hour, there would be four trips into the subdivision. According to the Traffic Analysis, local streets (principally Sanders Drive) would have adequate capacity for the increased traffic associated with the proposed project. Daily traffic increases on Sanders Drive would be about five percent, and these increases would not significantly impact traffic flows.

b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

The Town of Moraga has established LOS standards for various types of intersections. For signal-controlled intersection (e.g., Moraga Way/Canyon Road/Moraga Road), the operation should not be below LOS "D." At an intersection where only the side street is controlled by a stop sign (e.g., Canyon Road/Sanders Drive), the overall LOS should not be below LOS ~~C~~," and the side street approach should not be below LOS ~~E~~" with a maximum delay of 45 seconds. The Moraga Way/Canyon Road/Moraga Road and the Canyon Road/Sanders Drive intersections currently operate at LOS "A" and would continue to do so after construction of the two subdivisions. However, the Traffic Analysis for the proposed project notes that during the morning peak hour, traffic on Sanders Drive approaching Canyon Road experiences longer delays typical of the LOS ~~C~~" range (Nickelson, 2005). In any case, both intersections would remain well within the LOS standards established by the Town of Moraga.

The Traffic Analysis for the proposed project recommends that, although project trip generation would not be high, it would be appropriate to provide stop signs at the Sanders Drive/Hetfield Place intersection for improved safety (Nickelson, 2005).

Impact XV-1: The increase in traffic at the Sanders Drive/Hetfield Place intersection could create a safety hazard if left uncontrolled.

Mitigation Measure XV-1: Both approaches of Hetfield Place shall be stop sign controlled.

In addition, the applicant would be assessed a traffic impact fee as a requirement of the Lamorinda Fee and Financing Authority.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

The proposed project would have no impact on air traffic patterns.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Moraga-Orinda Fire District (MOFD) has reviewed the proposed project and prescribed required minimum width, maximum grade, minimum turning radius, and parking restriction requirements for the private access road. There are no incompatible uses at the site or proposed within the development, thus no impacts would occur.

e) Result in inadequate emergency access?

Refer to the discussion for Item d) above. The MOFD requires that the access road be an all-weather road. The conceptual plan for the proposed project complies with all MOFD requirements. Therefore, the proposed project will not result in inadequate emergency access, and there will be no impact.

f) Result in inadequate parking capacity?

The houses in the proposed subdivision would have 3-car garages and room for at least three more cars in each driveway (Swatt Architects, 2006). In addition, the conceptual development plan for the proposed project shows three, 3-car pullout parking areas along the access road (RMR Design Group, 2005). Therefore, a minimum of seven parking spaces (including garages and assuming they are not used for storage) would be provided for each house. The parking capacity exceeds the requirements of the Town of Moraga Parking Ordinance.

g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

The proposed project would not conflict with any policies, etc., supporting alternative transportation. Buses would not enter the project site.

SOURCES OF INFORMATION

George W. Nickelson, P.E. 2005. Traffic Analysis for the Lipson-North Property Residential Project in the Town of Moraga, a letter report to The Wyro Company, November 9.

Moraga-Orinda Fire District. 2005. Fire Prevention Division Design Review, August 3.

RMR Design Group. 2008. Hetfield Estates, Subdivision 9051,Conceptual Development Plan, August 27.

Swatt Architects, Inc. 2006. Hetfield Estates Development (Site Plan, Site Sections, Site Elevations), March 31.

TJKM Transportation Consultants. 2000. Draft Traffic Impact Analysis for the Proposed Lipson Property Development in the Town of Moraga, August 18.

Town of Moraga. 2002. Moraga 2002 General Plan, Chapter 10, Growth Management.

Town of Moraga. 2006. Municipal Code Section 8.76.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI.	**UTILITIES AND SERVICE SYSTEMS** — Would the project:				
	a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				√
	b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?			√	
	c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√
	d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?			√	
	e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			√	
	f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?			√	
	g) Comply with federal, state, and local statutes and regulations related to solid waste?				√

Setting:

The project site is within the existing service area of the East Bay Municipal Utility District (EBMUD), which would provide domestic water supply. The project site is within the existing service area of the Central Contra Costa Sanitary District (CCCSD), which would provide wastewater (i.e., sewage) collection, treatment and disposal. Garbage (solid waste) would be collected at the curb of each house by Allied Waste Services, a private firm. Valley Waste Management, a private firm, would collect recyclable materials at the curb of each house. These firms operate under the purview of the Central Contra Costa Solid Waste Management Authority.

Discussion:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Wastewater (i.e., sewage) from the subdivision would be conveyed through sanitary sewers to the CCCSD pump station located in Moraga. From there, the wastewater would be conveyed to the CCCSD Wastewater Treatment Plant (WWTP) in Martinez for treatment and disposal into Suisun Bay. The CCCSD plant operates under a National Pollutant Discharge Elimination System (NPDES) permit issued by the San Francisco Bay Regional Water Quality Control Board that establishes discharge requirements that reduce pollutants in the plant's effluent to acceptable levels. The proposed project would not cause CCCSD to exceed wastewater treatment requirements so there would be no impact.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

EBMUD has sufficient water treatment capacity at its existing water treatment plants to serve the proposed project. Treated water would come from either the Orinda or Lafayette filter plants. The proposed project is in EBMUD's Bryant Pressure Zone. The water would be conveyed through EBMUD's existing distribution system to the one-million-gallon Arroyo Tank that has capacity to serve the proposed project. There is an existing 8-inch-diameter distribution pipeline for the Bryant Pressure Zone in Sanders Drive with a 6-inch-diameter stub extending south in Hetfield Place in the direction of the proposed project site. The 6-inch-diameter stub may have to be replaced with a larger diameter pipeline at the applicant's expense to convey the 2,250 gallons per minute fire flow required by the Moraga-Orinda Fire District (Rehnstrom, 2007).

There is an 8-inch-diameter sanitary sewer along Sanders Drive that could serve the proposed project. However, there is insufficient conveyance capacity in CCCSD's collection and conveyance system between Moraga and the CCCSD's WWTP in Martinez. Improvements to correct deficiencies are or will be included in CCCSD's Capital Improvement Plan. Improvements to CCCSD's existing facilities that are required as a result of new development will be funded from applicable CCCSD fees and charges. The applicant would be required to pay these fees and charges at the time of connection to the sewer system (Leavitt, 2007).

The impact of the proposed project on the need to expand existing public utility facilities would be less than significant.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

A subterranean detention basin under the access road on the project site would be constructed as part of the storm drain system. The detention basin would be sized to ensure that runoff from the subdivision during a storm with a 100-year recurrence interval (i.e., a storm with a one-percent chance of occurring each year) and a 12-hour duration, will not exceed the runoff from the existing undeveloped site (RMR Design Group, 2007). There would be no need to construct or expand off-

site storm drainage improvements so there would be no impact. Refer to Section VIII, Hydrology and Water Quality.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

The primary water supply for EBMUD, the water purveyor for the proposed project, is the Mokelumne River watershed in the Sierra Nevada foothills. EBMUD has sufficient water rights from this source to serve the proposed project along with EBMUD's existing and planned customers during years with normal and high precipitation. EBMUD is pursuing an additional water supply from the Sacramento River for use during dry or drought years. EBMUD had water rights for American River water that were transferred downstream to the Sacramento River. Since the proposed project consists of only six houses, the impacts on EBMUD's efforts to seek an expanded water supply would be less than significant.

e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The CCCSD wastewater treatment plant in Martinez has an average dry weather flow (ADWF) capacity of 53.8 million gallons per day (mgd). The ADWF in 2006 was 39.1 mgd. Therefore, the CCCSD WWTP has sufficient capacity to serve both the proposed project and other planned developments in the CCCSD service for the next several decades (Leavitt, 2007). The proposed project would have a less-than-significant impact on wastewater treatment capacity.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Garbage from the proposed project would be collected by Allied Waste Services. Valley Waste Management would collect recyclable materials. Garbage is taken to the Contra Costa Transfer and Recovery Station in Martinez where certain recyclable materials (e.g., construction waste materials) are extracted and sent to the nearby Acme Landfill. The remaining garbage is transported to the Keller Canyon Landfill in Pittsburg for disposal. The Keller Canyon Landfill has sufficient remaining capacity to receive garbage from the collection services it serves (e.g., Allied Waste Services) for at least the next 50 years. Increases in recycling may extend the service life of Keller Canyon Landfill. Therefore, the proposed project would have a less-than-significant impact on landfill capacity.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

The Keller Canyon Landfill is licensed and operated in compliance with applicable federal, state and local statutes and regulations. The landfill must continuously satisfy the requirements of this license to comply with federal, state, and local statutes and regulations related to solid waste. Therefore, the proposed project would have no impact regarding compliance with these statutes.

SOURCES OF INFORMATION

City of Lafayette. 2006. *Lafayette Vistas,* winter edition.

Leavitt, Russell. 2007. Telephone communication with Robert Mills, Mills Associates, January 18.

Rehnstrom, David, East Bay Municipal Utility District. 2007. Telephone communication with Robert Mills, Mills Associates, January 18.

RMR Design Group. 2008. *Hetfield Estates, Subdivision 9051,Conceptual Development Plan,* August 27.

RMR Design Group. 2007. *Subdivision 9051, "Hetfield Estates," Preliminary Drainage Study,* March.

Tim Argenti, Allied Waste Services, 2007. Telephone communication with Robert Mills, Mills Associates, October 17.

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII.	**MANDATORY FINDINGS OF SIGNIFICANCE —**				
	a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				√
	b) Does the project have impacts that are individually limited, but cumulatively considerable? (—Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)				√
	c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				√

Discussion

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

The development is contained on 16 acres of a 58+-acre site. The six units will not degrade the quality of the environment or reduce the habitat of a fish or wildlife species. Development will avoid the riparian corridor and provide for on-site wetland mitigation. (Refer to discussion in IV. Biological Resources).

b) Does the project have impacts that are individually limited, but cumulatively considerable?

The project does not create substantial cumulative impacts. This project is considered infill development in that it is surrounded by single-family residential neighborhoods. A large portion of the site will remain in permanent open space and provide public trails that will be maintained by the homeowners association.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

The project will create environmental impacts for which mitigation measures have been recommended.

APPENDICES

A Mitigation Monitoring and Reporting Program

B Biological Resources

C Geology and Grading

D Additional Documentation Supporting Density

E Comments Received During Public Review and Responses to Comments

APPENDIX A

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING PLAN

(For Significant Impacts Only)

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
AESTHETICS				
Mitigation Measure I.1a: The existing tree screen shall be supplemented with similar native species on the site behind the houses at 1108 through 1116, 1140, 1144, and 1156 through 1164 Sanders Drive. Trees shall be planted on creek bank; protected from deer and maintained prior to issuance of building permits. Tree size shall be no less than five-gallon. The applicant shall submit a tree-planting plan for the review and approval by the Town.	Applicant/Builder	Tree planting plan shall be submitted for design review. Town of Moraga shall review final planting plan prior to issuance of grading permit. Notify Town when trees have been planted. Conduct on-site inspection of new trees.	Town of Moraga Town of Moraga	Pre-construction After trees have been planted.
Mitigation Measure I.1b: The applicant shall post a security bond to assure protection of existing and newly planted trees that are located along the north edge of the property. The term of the bond shall extend at least 36 months beyond the completion of the required subdivision improvements.	Applicant/Builder	Bond shall be posted prior to start of site preparation and grading.	Town of Moraga	Prior to issuance of grading permit.
Mitigation Measure I.1c: Newly planted trees shall be monitored for a period of ten years from the date of installation. Any trees lost during this period shall be replaced and monitored by the developer for the same length of time. Upon completion of the monitoring period, the Homeowner's Association shall replace any trees that may require removal and shall be responsible for maintaining the trees.	Applicant/Builder	The applicant shall submit annual monitoring reports to the Town of Moraga for review and approval.	Town of Moraga	Reports filed yearly after first year of installation.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure I.1d: The massing and stepping of the houses shall be as shown on Figures 2-4 through 2-6. The maximum building height will be determined through the design review process, but shall not exceed 28 feet.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
Mitigation Measure I.1e: The final map shall reflect similar house plotting as show on Figure 3-1. A minimum distance between new and existing houses shall be no less than 180 feet.	Applicant/Builder	Plans submitted for review and approval by the Design Review Board.	Town of Moraga	Prior to issuance of building permits.
AIR QUALITY				
Mitigation Measure III-1: During grading and construction activities, the applicant shall implement the following measures to control dust: • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials, or require trucks to maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. • Sweep off-site streets leading to the project site daily if soil, sand, or other loose materials are deposited on these streets. • Sweep daily all paved access roads, parking areas, staging areas and entrances at the construction site.	Applicant/Builder	Grading plans shall include dust control measures approved by the Town of Moraga.	Town of Moraga	On-site inspection during grading activities

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
BIOLOGICAL RESOURCES				
Mitigation Measure IV-1a: The applicant shall obtain all necessary permits from the Corps, USFWS, and the RWQCB as required by federal and State law to avoid, minimize or offset impacts to any species listed under either the State or federal Endangered Species Acts or protected under any other State or federal law as follows:				
• Before project implementation, a delineation of waters of the United States, including wetlands that could be affected by development, shall be made by a qualified wetland specialist through the formal CWA Section 404 process.	Applicant's Wetland Consultant/Jurisdictional Agencies	Verify Draft Wetland Delineation with Corps and provide copy to Town.	Town of Moraga	Provide Verification prior to issuance of Grading Permit.
• If based on the verified delineation, it is determined that fill of waters of the United States would result from project implementation, authorization for such fill shall be secured from the Corps through the Section 404 permitting process and from the RWQCB as part of the Section 401 water quality certification process.	Applicant's Wetland Consultant/Jurisdictional Agencies	Secure agency authorizations and provide evidence to Town.	Town of Moraga	Provide copies of agency authorizations prior to issuance of Grading Permit.
• Consultation or incidental take permitting may be required under the ESA. The applicant shall obtain all legally-required permits from the USFWS for the —take" of protected species under the ESA.				
• Evidence that the applicant has secured any required authorization from these agencies shall be submitted to the Town of Moraga prior to issuance of any grading or building permits for the project.				

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure IV-1b: Following a biological opinion issued by the regulatory agencies as discussed above, measures shall be applied to minimize take within the construction zone. The applicant shall follow the requirements of the biological opinion. Furthermore, a qualified biologist shall be retained by the applicant to oversee construction and ensure that no inadvertent take of Alameda whipsnake or California red-legged frog occurs as a result of development of the site.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
If no biological opinion is obtained from the regulatory agencies regarding the taking of an endangered species, the following mitigation shall apply: • Prior to any grading or grubbing of the site, the biologist shall conduct a preconstruction survey to confirm absence of any California red-legged frog or Alameda whipsnake on the site. During the construction phase of the project, a trained biologist or a trained on-site monitor (such as the construction foreman) shall check the site in the morning and in the evening of construction activities for the presence of California red-legged frog and Alameda whipsnake. This includes checking holes, under vehicles and under boards left on the ground. If any California red-legged frog or Alameda whipsnake are found, construction shall be halted until they disperse naturally, and the monitor shall immediately notify the biologist in charge and the USFWS. Construction shall not proceed until adequate measures are taken to prevent dispersal of any individuals into the construction zone, as directed by the USFWS.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
• Subsequent recommendations made by the USFWS shall be followed. The monitor shall not handle or otherwise harass the animal. The biologist in charge and the on-site monitor shall be aware of all terms and conditions set by USFWS and CDFG on the project. The biologist in charge shall train the on-site monitor in how to identify California red-legged frog and Alameda whipsnake. The biologist in charge shall visit the site at least once a week during construction and confer with the trained on-site monitor.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• All construction workers shall be informed of the potential presence of California red-legged frog and Alameda whipsnake, that these species are to be avoided, that the foreman must be notified if they are seen, and that construction shall be halted until authorization to proceed is obtained from the USFWS and appropriate protocols for species protection shall be followed	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• During construction, all holes shall be covered at night to prevent California red-legged frog and Alameda whipsnake from becoming trapped in holes on the construction site.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure IV-1c: A qualified biologist shall be retained by the applicant to conduct a trapping and relocation program for any San Francisco dusky-footed woodrats located within the limits of proposed grading and development. A field survey shall be conducted by a qualified biologist to determine whether any woodrat nests occur within the anticipated limits of grading. Any nests within the construction zone shall be relocated to locations proposed as permanent open space on the site and individual woodrats released into their relocated nests. If nest relocation is required, the trapping and relocation effort shall be conducted from August through February outside the breeding season, to ensure any young are not inadvertently lost due to the destruction of the protective nest. The trapping and relocation effort shall preferably be conducted within a few days prior to grubbing and vegetation removal to prevent individual woodrats from moving back into the construction zone.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
Mitigation Measure IV-1d: Any active raptor or loggerhead shrike nests in the vicinity of proposed grading shall be avoided until young birds are able to leave the nest (i.e., fledged) and forage on their own. Avoidance can be accomplished by scheduling removal of trees and shrubs during the non-nesting period (August through February). Provisions of the pre-construction survey and nest avoidance, if necessary, shall include the following:	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
• If grading is scheduled during the active nesting period (March through August), a qualified wildlife biologist shall be retained by the applicant to conduct a pre-construction nesting survey no more than 30 days prior to initiation of grading to provide confirmation on the presence or absence of active nests in the vicinity.	Applicant's Biological Consultant/Construction Contractor	Implement preconstruction and construction avoidance measures to ensure avoidance of inadvertent take.	Applicant's Biological Consultant and Construction Contractor	Applicant's Biological Consultant and Construction Contractor

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
• If active nests are encountered, species-specific measures shall be prepared by a qualified biologist in consultation with the CDFG and implemented to prevent nest abandonment. Buffers and setback zones shall be established as required by CDFG and remain in place until young have fledged the zones. At a minimum, grading in the vicinity of the nest shall be deferred until the young birds have fledged. The perimeter of the nest-setback zone shall be fenced or adequately demarcated, and construction personnel restricted from the area.	Applicant's Biological Consultant/DFG	Provide required construction setback as negotiated with CDFG	Applicant's Biological Consultant and CDFG	As negotiated during construction.
• If permanent avoidance of the nest is not feasible, impacts shall be minimized by prohibiting disturbance within the nest-setback zone until a qualified biologist verifies that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from the nest are foraging independently and capable of independent survival at an earlier date. A survey report by the qualified biologist verifying that the young have fledged shall be submitted to the Town of Moraga prior to initiation of grading in the nest-setback zone.	Applicant's Biological Consultant/DFG	Provide copy of survey report to Town prior to initiation of grading in nest-setback zone.	Applicant's Biological Consultant and Town of Moraga	Provide copy of survey report prior to grading in nest-setback zone.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure IV-2: Native grass plants from the stand of creeping wildrye in the vicinity of proposed Lot 3 shall be salvaged and reused as part of revegetating graded slopes. Plants shall be salvaged before grubbing and initial grading, and stored until replanted on the site. The salvage and replanting program shall be prepared by a qualified biologist and incorporated into the Landscaping Plan for the project, preferably as part of the Wetland Mitigation Program specified in **Mitigation Measure IV-3a**.	Applicant's Biological Consultant/Landscape Architect	Provide salvage and replanting program as part of Landscape Plan	Applicant's Biological Consultant/Landscape Architect/Town of Moraga	Incorporate program prior to approval of Final Landscape Plan.
Mitigation Measure IV-3a: A Final Wetland Mitigation Program shall be prepared by a qualified wetland specialist to provide for the protection, replacement, and management of jurisdictional waters on the site affected by proposed development. The Final Wetland Mitigation Program shall include the following components and meet the following standards	Applicant's Wetland Consultant	Provide Final Wetland Mitigation Plan	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• Proposed grading and development shall be redesigned to preferably avoid removal or adverse impacts on areas verified as jurisdictional wetlands, particularly the freshwater seep at the southeastern edge of the ~~"~~Grading Daylight Limits" on proposed Lot 6. (This freshwater seep appears to be larger than currently mapped by the applicant's consultant as indicated in Figure 3-5 in the Environmental Checklist.)	Applicant's Wetland Consultant and Civil Engineer	Refine Tentative Map and Grading Plan to minimize disturbance to wetlands.	Applicant's Biological Consultant/Town of Moraga	Demonstrate wetlands have been adequately avoided and provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
• Provide adequate mitigation for any direct or indirect impacts on jurisdictional waters as coordinated with the Corps and/or RWQCB where complete avoidance is infeasible. Replacement wetlands shall be at a minimum of 2:1 ratio and shall be established in suitable locations within undeveloped open space areas, preferably on-site. The wetlands replacement component of the Final Wetland Mitigation Program shall emphasize establishment of native freshwater marsh and seasonal wetlands to enhance existing habitat values.	Applicant's Wetland Consultant/Jurisdictional Agencies	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• The wetland replacement component of the Final Wetland Mitigation Program shall specify performance criteria, maintenance and long-term management responsibilities, monitoring requirements, and contingency measures. Monitoring shall be conducted by the qualified wetland specialist for a minimum of five years and continue until the success criteria are met.	Applicant's Wetland Consultant/Jurisdictional Agencies	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to issuance of Grading Permit.
• The Final Wetland Mitigation Program shall be completed prior to approval of the Final Map for the project to demonstrate feasibility of wetland mitigation, and allow for possible major adjustments to the limits of proposed development, particularly on Lot 6.	Applicant's Wetland Consultant and Civil Engineer	Provide Final Wetland Mitigation Plan satisfactory to jurisdictional agencies.	Applicant's Biological Consultant/Town of Moraga	Provide Final Wetland Mitigation Plan prior to approval of Final Map.
Mitigation Measure IV-3b: The final trail alignment connecting to the cul-de-sac on proposed Lot 6 should be designed to avoid or minimize passing through the freshwater seeps and seasonal wetlands on this portion of the site. If complete avoidance is not feasible, potential impacts shall be addressed as part of the Final Wetland Mitigation Program outlined in **Mitigation Measure IV-3a.**	Applicant's Wetland Consultant and Civil Engineer	Adjust alignment of trail to avoid wetland resources and address any impacts as part of Final Wetland Mitigation Plan.	Applicant's Biological Consultant and Civil Engineer/Town of Moraga	Identify trail alignment and provide Final Wetland Mitigation Plan prior to approval of Final Map.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure IV-4a: The portion of the site not proposed for development will be placed in permanent open space to preserve its function as permanent wildlife habitat. Any fencing proposed as part of development on individual lots shall be designed to allow for continued movement by wildlife, or shall be restricted to the vicinity of the building pads. Any fencing, which could obstruct wildlife movement, shall not extend beyond the limits of grading shown in the Conceptual Development Plan.	Applicant's Civil Engineer	Provide protective mechanism.	Applicant's Civil Engineer/Town of Moraga.	Include r protective mechanism prior to approval of Final Map.
Mitigation Measure IV-4b: Signage shall be provided at the access points off the cul-de-sac on proposed Lot 6 which indicate that dogs shall be leashed.	Applicant's Civil Engineer	Include signage on Final Map. Conduct on-site inspection	Applicant's Civil Engineer/Town of Moraga Town of Moraga	Confirm signage include on plans prior to approval of Final Map. Prior to issuing occupancy permit
Mitigation Measure IV-5a: Grading shall be designed to avoid and minimize possible tree removal. This shall be accomplished by expanding the current tree mapping, adjusting the limits of grading to ensure adequate avoidance, and retaining a certified arborist to evaluate potential impacts and make specific recommendations to minimize tree loss or damage. The limits of tree mapping should be expanded to show all trees with trunk diameters of 5 inches or greater within 30 feet of the proposed "Grading Daylight Line" on the Conceptual Development Plan. All mapped trees shall be evaluated by a certified arborist consistent with Section 12.12.070 of the Town of Moraga Tree Preservation Ordinance, and a report shall be repaired to minimize short-term construction damage and long term decline due to changes in root zone.	Applicant's Biological Consultant, Certified Arborist and Civil Engineer	Adjust limits of grading on the Final Map and Final Grading Plan.	Applicant's Certified Arborist and Town of Moraga	Confirm adjustments to Tentative Map and Grading Plan.

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure IV-5b: A construction fence shall be installed around all trees to be protected that will identify the limits of grading and disturbance.	Applicant's Biological Consultant and Construction Contractor	Install construction fencing to protect trees to be preserved.	Applicant's Biological Consultant and Construction Contractor	As specified during construction.
Mitigation Measure IV-5c: A Tree Replacement Program shall be prepared by the applicant's consulting biologist, and implemented as part of the mitigation program for the project. Replacement trees shall be provided at a minimum 3:1 ratio, shall be installed along the edge of the riparian corridor and other locations to be retained as undeveloped open space, and shall be maintained for a minimum of five years to ensure their successful establishment. Replacement tree plantings shall be irrigated for a minimum of two years following initial planting to ensure their survival, and shall be replaced on an annual basis to meet success criteria specified in the Tree Replacement Program.	Applicant's Biological Consultant	Prepare and implement Tree Replacement Program, and provide results of long-term monitoring	Applicant's Biological Consultant/Town of Moraga	Provide Tree Replacement Program prior to issuance of Grading Permit, and Annual Monitoring Reports.
CULTURAL RESOURCES				
Mitigation Measure V-1a: In the event of the discovery of human remains during construction, pursuant to Section 7050.5 of the Health and Safety Code and Section 5097.94 of the Public Resources Code of the State of California, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains. The Contra Costa County Coroner shall be notified by the developer and shall make a determination as to whether the remains are Native American. If the remains are not subject to his authority, he shall notify the Native American Heritage Commission, who will attempt to identify descendants of the deceased Native American.	Builder/Contractor	Notify County Coroner and Town of Moraga if remains are uncovered.	Contractor/Town of Moraga	During grading/ excavation activities

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure V-1b: Should evidence of prehistoric cultural resources be discovered during construction, work in the immediate area of the find shall be stopped to allow adequate time for evaluation and mitigation. A qualified professional archaeologist will be called in to make an evaluation of the material; and if significant, develop a mitigation program that includes collection and analysis of the materials, preparation of a report, and curation of the materials at a recognized storage facility under the direction of the Planning Director. Collection and evaluation shall be completed prior to the resumption of grading.	Builder/Contractor	Notify Town of Moraga when cultural resources encountered.	Builder and/or Contractor and/Town of Moraga	During grading/ excavation activities
GEOLOGY/SOILS				
Mitigation Measure VI-1a: A design-level geotechnical and geologic investigation report shall be submitted to the Town of Moraga prior to recordation of the subdivision map. The report, which shall respond to the peer review letter of CEG, shall provide specific criteria and standards to guide site grading, drainage and foundation design. (Refer to the Environmental Checklist for additional details of mitigation measure.)	Applicant's geotechnical consultant	Submit final geotechnical report 45 days prior to recordation	Review and approval of report by Town's Peer Review Geologist	Prior to recordation
Mitigation Measure VI-1b: Gradient criteria for engineered slopes as recommended by Engeo shall be required for development of the project site. Any conflicts between the future grading plans and these criteria should be interpreted as evidence that special engineering is required (e.g., retaining walls, geogrid reinforcement). Those standards call for use of 3:1 fill slopes as a general standard for the project. Cut slopes are to be avoided.	Applicant's geotechnical consultant	Submit grading plan 45 days prior to recordation	Review and approval of report by the Town's Peer Review Geologist	Prior to recordation
Mitigation Measure VI-1c: In conformance with the grading provisions of the Town Grading Ordinance, drainage terraces and drainage benches are not required on engineered slopes with gradients of 3:1 or flatter.	Applicant's engineer	Submit grading plan 45 days prior to recordation	Review and approval of report by the Town's Peer Review Geologist	Prior to recordation

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure VI-1d: All grading and drainage plans are subject to review of the Town's peer geologist and the review and approval of the Town of Moraga. Appropriately licensed professionals shall prepare the plans.	Town of Moraga	Technical review of grading and drainage plans	Review and approval of plan by Town's Peer Review Geologist	Prior to issuance of grading permit
Mitigation Measure VI-1e: Unstable soils and landslides shall be removed within graded areas. Buttressing, keying and installation of debris benches shall be provided in the transition areas between open space areas and development as recommended in the final reports of the project geotechnical engineering ("approved geotechnical reports").	Applicant's engineer	Applicant's geologist to prepare an as-graded map of site based on exposed conditions during mass grading	Review and approval of map by Town's Peer Review Geologist	Prior to issuance of grading report
Mitigation Measure VI-1f: Prior to issuance of the grading permit, provide a grading remediation plan and report for the approval of the Building Inspection Department (BID). The report shall evaluate all major graded slopes and open space hillsides whose performance could affect planned improvements. The slope stability analysis shall be performed for both static and dynamic conditions using an appropriate pseudo-static coefficient.	Applicant's engineer	Applicant's geotechnical engineering to provide the technical data and engineering analysis prescribed in on this mitigation measure	Review and approval of data by Town's Peer Review Geologist	Prior to issuance of grading permits
Mitigation Measure VI-1g: During grading, the project engineering geologist shall observe and approve all keyway excavations, removal of fill and landslide materials down to stable bedrock or in-place material, and installation of all subdrains including their connections. Cut slopes shall be observed and mapped by the project geotechnical engineering who will provide any required slope modification recommendations based on the actual geologic conditions encountered during grading. Written approval from the Town's representatives shall be obtained prior to any modification. Placement of all fill shall be observed and tested by the project geotechnical engineer, and the density test results and reports submitted to the Town to be kept on file.	Project engineering geologist	Observation and mapping throughout mass grading of site	Review and approval by the Town's Peer Review Geologist	Submittal of a final grading report by applicant prior to "finalizing" grading permit

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure VI-1h: The grading plans for the project shall identify proposed maintenance access to the debris benches. The proposed access shall be subject to review and approval by both the Town's Engineering Geologist and Town Engineer.	Applicant's engineer	Review of grading plans for maintenance access details	Town Engineer and Town's Peer Review Geologist	Prior to issuance of grading permit
Mitigation Measure VI-1i: Prior to recordation of the Final Map, the applicant shall provide a deed disclosure for each lot that provides a detailed citation of the Final Geotechnical Report, summarizing the potential geologic hazards and providing details of the maintenance responsibilities of the property owner, including maintenance of the debris bench. The language in the draft deed disclosure shall be subject to review and approval of the Town of Moraga.	Applicant	Review and approval of Deed Disclosure	Town's Peer Review Geologist and Town of Moraga	Prior to recordation of final map
Mitigation Measure VI-2a: Grading activities shall be restricted to the summer construction season (15 April through 15 October). Any earthwork done after 15 October shall be limited to activities directly related to erosion control, unless the Town of Moraga authorizes additional work in writing.	Applicant	Town of Moraga to review requests for winter season work	Planning Director may seek comments from Grading Inspector or Town's Peer Review Geologist	Prior to authorizing any winter season work
Mitigation Measure VI-2b: Provide an erosion control plan prior to approval of the grading plan. The following interim control measures shall be employed based on site-specific needs in the project areas: • Grading to minimize areas of exposed, erodible material, and to avoid over-concentration of rapidly flowing runoff in unprotected, erodible areas. • The erosion control plans shall include water bars, temporary culverts and swales, mulch and jute netting blanks on exposed slopes, hydroseeding, silt fences, and sediment traps/basins. • Placement of stripped topsoil on graded 3:1 slopes prior to the onset of winter rains.	Applicant's engineer	Technical review of erosion control plans	Grading Technician Review	Prior to issuance of grading permit

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
• Because the biggest problem with effective sediment control is lack of maintenance, the erosion control plan shall have a comprehensive program for inspection and maintenance during the winter rainy season, including provisions for documenting maintenance activities. • Wherever feasible, runoff shall be isolated from ungraded areas, thereby simplifying erosion control and sediment control measures within the graded area. • The Town of Moraga shall monitor the effectiveness of the erosion control measures throughout the duration of construction.				
Mitigation Measure VI-2c: In order to reduce the potential impacts of long-term erosion and sedimentation, the project shall incorporate the appropriate design, construction and continued maintenance of one or more of the following long-term control measures: • The specific measures shall be based on the recommendations of the project geotechnical engineer and hydrologist. • Project plans shall incorporate drainage measures to collect and control surface runoff water on sloping lots, including lined ditches and downspout collection systems. • Concentrated runoff shall not be permitted to drain over engineered slopes. • The proposed location of lined drainage ditches shall be specified on the development plan accompanying the design-level geotechnical investigation report, and shall be reviewed and approved by the Town's peer review geologist.	Applicant	Technical review of Improvement Plans	Town Engineer and Town's Peer Review Geologist	Prior to issuance of grading permit

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
Mitigation Measure VI-.2d: V-ditches shall be constructed at the top of slope to intercept surface drainage. Ditches shall be designed to allow for entry and exit of small wildlife subject to Town approval.	Applicant's engineer	Technical review of Improvement Plans	Town Engineer and Town's Peer Review Geologist	Prior to issuance of grading permit
Mitigation Measure VI-4a: The design-level geotechnical investigation shall provide criteria for foundation and pavement design, developed in accordance with the Uniform Building Code (UBC) and Ordinance Code requirements on the basis of subsurface exploration and laboratory testing. The constraints on the use of expansive soil near finish grade shall be evaluated in the design-level geotechnical investigation report that will be subject to the review and approval of the Town's peer review geologist.	Applicant's engineer	Technical review of geotechnical report	Town's Peer Review Geologist	Prior to issuance of building permits
Mitigation Measure VI-4b: Foundation design shall include drilled pier-and-grade beam foundations, reinforced slabs placed on select fill and/or post-tensioned slabs; and thicker pavement sections designed using criteria provided by the design-level geotechnical investigation. The design shall be subject to the review and approval of the Town's peer review geologist	Applicant's engineer	Technical review of geotechnical report	Town's Peer Review Geologist	Prior to issuance of building permits
HYDROLOGY AND WATER QUALITY				
Mitigation Measure VIII-1: The applicant shall contact the United States Corps of Engineers and California Department of Fish and Game and obtain required permits and a Streambed Alteration Agreement for construction and operation of a storm drain discharge structure and access bridge in Larch Creek.	Applicant's engineer	Streambed alteration permit shall be obtained and submitted with improvement plans to Town of Moraga for review and approval.	Town of Moraga	Prior to issuance of grading permit/

Mitigation Measure	Person/Agency Responsible for Implementation	Monitoring Requirements	Person/Agency Responsible for Monitoring	Timing or Frequency of Monitoring
PUBLIC SERVICES				
Mitigation Measure XIII-1: The six houses shall be equipped with security alarm systems subject to review and approval of the Town of Moraga Police Department.	Applicant/Builder	Building plans and specifications shall include security systems. Plans to be reviewed and approved by Building Inspection. Conduct on-site inspection.	Town of Moraga Town of Moraga	Prior to issuance of building permit. Prior to issuance of occupancy permit.
TRANSPORTATION/TRAFFIC				
Mitigation Measure XV-1: Both approaches of Hetfield Place shall be stop sign controlled.	Applicant's engineer	Submit improvement plans for review and approval by the Town of Moraga	Town of Moraga	Prior to issuance of grading permit.

APPENDIX B

Biological Resources

APPENDIX B: BIOLOGICAL RESOURCES

BACKGROUND AND METHODS

Biological resources were identified through the review and compilation of existing information and a field reconnaissance survey. The review provided information on general resources in the area, potential jurisdictional wetlands and other waters, and the distribution and habitat requirements of special-status species, which have been recorded from or are suspected to occur in the Moraga vicinity. This included preliminary wetland delineation (LSA, 2005), a *Biological Resources* report (LSA Associates, 2006), and a *Conceptual Wetlands Mitigation Plan* (LSA Associates, 2007), prepared for the applicant. The preliminary wetland delineation provides a detail assessment and mapping of the extent of potential jurisdictional wetlands based on the opinion of the applicant's consultant. This preliminary wetland delineation has not yet been verified by the U.S. Army Corps of Engineers and is not considered a definitive determination until such time. The *Biological Resources* report provides information on vegetation and wildlife habitat, potential for occurrence of special-status species, and summary of potential jurisdictional wetlands and other waters. The *Conceptual Wetlands Mitigation Plan* provides a description of the proposed approach to on-site mitigation for anticipated impacts to potential jurisdictional wetlands and other waters. A field reconnaissance survey of the site was conducted on January 11, 2007, by the Initial Study/MND biologist to confirm information presented in the applicant's reports and determine the potential impacts of the project on sensitive resources.

SETTING

Vegetation and Wildlife Habitat

Vegetation on the project site supports a matrix of non-native grassland, stands of native grassland, coastal scrub, woodland, freshwater seeps, and riparian woodland. Non-native grassland forms the predominant cover on the site, with coastal scrub and coast live oak woodland occurring on the upper elevations of the north-facing slope. The grasslands are dominated by wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), and Italian rye-grass (*Lolium multiflorum*). Ruderal species include yellow star thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), and curly dock (*Rumex crispus*). Dense riparian woodland occurs along the drainage on the northern edge of the property, dominated by coast live oak (*Quercus agrifolia*), willow (*Salix* spp.), and California bay (*Umbellularia californica*). Coast live oak, California bay, and California buckeye (*Aesculus californica*) form the dominant cover, together with coyote brush (*Baccharis pilularis*) on the upper north-facing slopes on the site. Native grasslands occur in a number of locations in the proposed development area, and on the ridgeline and south-facing slopes of the larger property, forming dense stands of creeping ryegrass (*Leymus triticoides*) and open cover of purple needle grass (*Nassella pulchra*). One large stand of creeping ryegrass occurs within the proposed development area on Lot 3, with the remainder of the native grasslands occurring in areas to be retained as open space. The stands of native grassland are recognized as sensitive natural community types by the California Natural Diversity Data Base of the CDFG.

Freshwater seeps and seasonal wetland depressions occur throughout the proposed development area on the site. These features vary in form and condition, from dense stands of native sedges (*Carex* sp.) to sparsely vegetated depressions supporting pricklegrass (*Cryupsis vaginiflora*), pennyroyal mint (*Mentha pulegium*), knotweed (*Polygonum arenastrum*), and rabbit's foot grass (*Polypogon monspeliensis*). Figure 3-4 in the Environmental Checklist shows the location of these features according to mapping by the applicant's consulting wetland. During the field reconnaissance by the Initial Study/MND Biologist, a much larger seep dominated by a monotypic stand of Santa Barbara sedge (*Carex barbarae*) was encountered just southeast of the proposed "Grading Daylight Limits" on proposed Lot 6 at an elevation of from 660 to 640 feet. This feature is also mapped in Figure 3-4 as an additional potential jurisdictional wetland feature. It also represents a sensitive natural community, as do all the other potential jurisdictional wetlands on the site.

The site continues to provide important foraging and possibly breeding habitat to a number of wildlife common in the Moraga area. The grasslands most likely support species common to non-native grasslands, such as pocket gopher, meadow lark, sparrows, and finches, and may occasionally be used by raptors for foraging. However, existing development to the north and west prevents opportunities for movement across the site by larger wildlife species, including black-tailed deer, coyote, and other predatory mammals. The seasonal nature of the drainage along the northern edge of the site limits its value to wildlife, but the dense riparian woodland provides important foraging, perching, and possibly nesting locations for numerous species of birds, deer mouse, and grey squirrel. The coastal scrub and woodland on the north-facing slopes along the upper elevations of the site also provide protective cover for numerous species of birds, black-tailed deer, and dusky-footed woodrat.

Special-Status Species

Special-status species[1] are plants and animals that are legally protected under the state and/or federal Endangered Species Acts[2] or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts and other essential habitat. Species with legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take"[3] of these species.

The *Biological Resources* report prepared by the applicant's biological consultant provides a detailed discussion of the potential for occurrence of special-status plant and animal species on the site. A copy of the *Biological Resources* is on file with the Town of Moraga Planning Department, 329 Rheem Boulevard, Suite 2, Moraga, CA 94556. A habitat suitability analysis was originally conducted in 2000 as part of the original assessment prepared for the applicant on the entire property, followed by a detailed survey for special-status plant species conducted in 2001 and 2005. Species of particular concern addressed in the *Biological Resources* report include the state and federally-threatened Alameda whipsnake (*Masticophis lateralis euryxanthus*), California red-legged frog (*Rana aurora draytonii*), San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), big-scale balsam root (*Balsamorhiza macrolepis* var. *macrolepis*), and fragrant fritillary (*Fritillaria liliacea*). With the exception of a survey for possible nesting raptors conducted in July and October 2005, during which no signs of active nests were encountered, no detailed surveys were conducted

for special-status wildlife species. The *Biological Resources* report concludes that the drainage along the northern boundary of the site is unsuitable as potential breeding habitat for the federally-threatened California red-legged frog, and that the areas of coastal scrub and open woodland on the north-facing slopes provide only marginally suitable habitat for Alameda whipsnake. The site is outside the designated critical habitat units for the California red-legged frog, and outside the proposed critical habitat unit for Alameda whipsnake. The report also concludes that areas of scrub and woodland provide suitable habitat for San Francisco dusky-footed woodrat, which is unlisted under the Endangered Species Acts but is considered a California Special Concern species by the CDFG. The *Biological Resources* report acknowledges that proposed development may affect suitable habitat for Alameda whipsnake, which may require appropriate mitigation, and recommends that preconstruction surveys be conducted for nesting raptors to prevent inadvertent take if new nests are established before construction proceeds.

Based on a peer review by the Initial Study/MND biologist, information in the *Biological Resources* report on special-status species and recommendations for preconstruction surveys for nesting raptors appears reasonable. Further consultation with trustee agencies will most likely be required to address potential impacts of the project on listed species, particularly Alameda whipsnake and California red-legged frog. Although the potential for occurrence of these two species on the site appears remote, this should be confirmed with agency representatives. Appropriate measures to avoid inadvertent take of San Francisco dusky-footed woodrat would also be appropriate, although this has not been recommended in the *Biological Resource* report.

Wetlands

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated 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 flood waters, and water recharge, filtration and purification functions. The CDFG, the Regional Water Quality Control Board (RWQCB), and the U.S. Army Corps of Engineers (Corps) have jurisdiction over modifications to riverbanks, lakes, stream channels and other wetland features.[4]

The *Biological Resources* report and preliminary wetland delineation identify potential jurisdictional and non-jurisdictional features on the site. Figure 3-4 in the Environmental Checklist shows the location of mapped features on the site. These consist of freshwater seeps, seasonal wetlands, presumed non-jurisdictional gullies, and the ephemeral drainage along the northern edge of the site. Collectively, the preliminary wetland delineation estimates that a total of 0.53 acre of jurisdictional seasonal wetlands, and 0.28 acre of jurisdictional other waters associated with the ephemeral drainage occur on the site, representing a total estimate of 0.81 acre of potential jurisdictional waters. Several smaller drainages in the large landslide area east of the proposed development area on Lot 6 have been identified as non-jurisdictional gullies by the applicant's consultant, and it is unclear whether these are in fact non-jurisdictional features. In addition, a large seep area supporting a cover of Santa Barbara sedge (a Facultative Wetland species which meets the vegetative criterion for potential wetlands) was observed by the Initial Study/MND biologist during the field reconnaissance which was not mapped by the applicant's consultant. This seep occurs just outside the "Grading Daylight Line" on proposed Lot 6, as shown in Figure 3-4. While the overall mapping prepared as part of the preliminary wetland delineation appears relatively thorough, these two issues regarding

whether the gullies are in fact non-jurisdictional and the extent of the possible large freshwater seep on Lot 6 remain uncertain. It should be noted that the accuracy of the preliminary wetland delineation has not yet been verified by the Corps, which must be completed before an accurate determination on the extent of any jurisdictional waters is made on the site.

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[1] Special-status species include: designated rare, threatened, or endangered and candidate species for listing by the California Department of Fish and Game (CDFG); designated threatened or endangered and candidate species for listing by the U.S. Fish and Wildlife Service (USFWS); species considered rare or endangered under the conditions of Section 15380 of the *California Environmental Quality Act Guidelines*, such as those plant species identified on lists 1A, 1B and 2 in the *Inventory of Rare and Endangered Vascular Plants of California*; and possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on list 3 in the California Native Plant Society *Inventory* or identified as animal "California Special Concern" species by the CDFG.

[2] The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal species. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California species.

[3] "Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. The CDFG also considers the loss of listed species habitat as take, although this policy lacks statutory authority and case law support under the CESA.

[4] Jurisdiction of the Corps is established through the provisions of §404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including wetlands and unvegetated "other waters." Jurisdictional authority of the CDFG over wetland areas is established under §1600 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The RWQCB jurisdiction is established through §401 of the Clean Water Act, which requires certification or waiver to control discharges in water quality. The RWQCB has taken an increasing role over regulating wetlands that are hydrologically isolated following the U.S. Supreme Court decision in 2001 regarding the case *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC), which limits the jurisdictional authority of the Corps under §404. These hydrologically isolated features are now regulated by the RWQCB under authority of §401 of the CWA and the Porter-Cologne Water Quality Control Act.

APPENDIX C

Geology and Grading

APPENDIX C: GEOLOGY AND GRADING

INTRODUCTION

Previous Investigation

Engeo, Inc. performed an initial investigation of the site and documented their findings in a report dated September 26, 2005.[1] Their scope of work included literature review, photointerpretation of the project area and subsurface exploration of selected sites. The subsurface exploration included the logging of 14 test pits. Additionally, the subsurface data presented in the Engeo report included five borings from a 1993 report of Seidelman Associates.[2]

The purpose of the investigation was to provide sufficient data to make preliminary assessment of geologic and seismic geological hazards; provide general recommendations and criteria for site grading, drainage and foundation design; and provide geologic and geotechnical input into the constraints analysis which preceded formulation of the tentative subdivision map. The report indicates that the recommendations are only suitable for use as a project planning tool. Specific standards and criteria for construction projects will require supplemental geotechnical studies, which will be performed in conjunction with the processing of construction permits.

On August 9, 2007, Engeo Inc. issued a letter-report[3] commenting on two specific aspects of the project: (a) geotechnical design criteria for wetland mitigation areas, and (b) maintenance access easements to the debris benches at the top of the proposed 3:1(horizontal to vertical) slopes. The plans that were the subject of the Engeo letter-report were Vesting Tentative Map (VTM) (Sheets 2 and 3). Sheet 2 shows the proposed grading and drainage facilities, and Sheet 3 shows the location of five proposed wetland ponds, including the associated grading for the ponds and elevation of the pond bottom.

The Town's Ordinance Code makes provisions for requiring additional geologic and geotechnical studies during the processing of grading and building permits. Consequently, Engeo's approach of a phased study is consistent with adopted Town of Moraga regulations. The geologic issues to be resolved by the pending application are chiefly land use, density and the grading concept for the project. Construction details are not needed at this time.

Published Mapping

The project site and adjacent region have been mapped by geologists of the U.S. Geological Survey (USGS) and the California Geological Survey (CGS) (formerly California Division of Mines and Geology). The products of the USGS mapping include bedrock geology maps (Graymer, et al., 1994; Dibblee, 1980); and photointerpretative landslide maps (Nilsen, 1975). The CGS prepared bedrock geology, landslide, debris flow susceptibility and landslide susceptibility maps (Majmundar, 1996).

Other pertinent literature includes the Ph.D. Dissertation Mapping by J.R. Wagner[4] and a USGS Professional Paper that evaluates the stratigraphy and engineering geology of hillsides throughout the San Francisco Bay Region.[5]

SETTING

Bedrock Geology

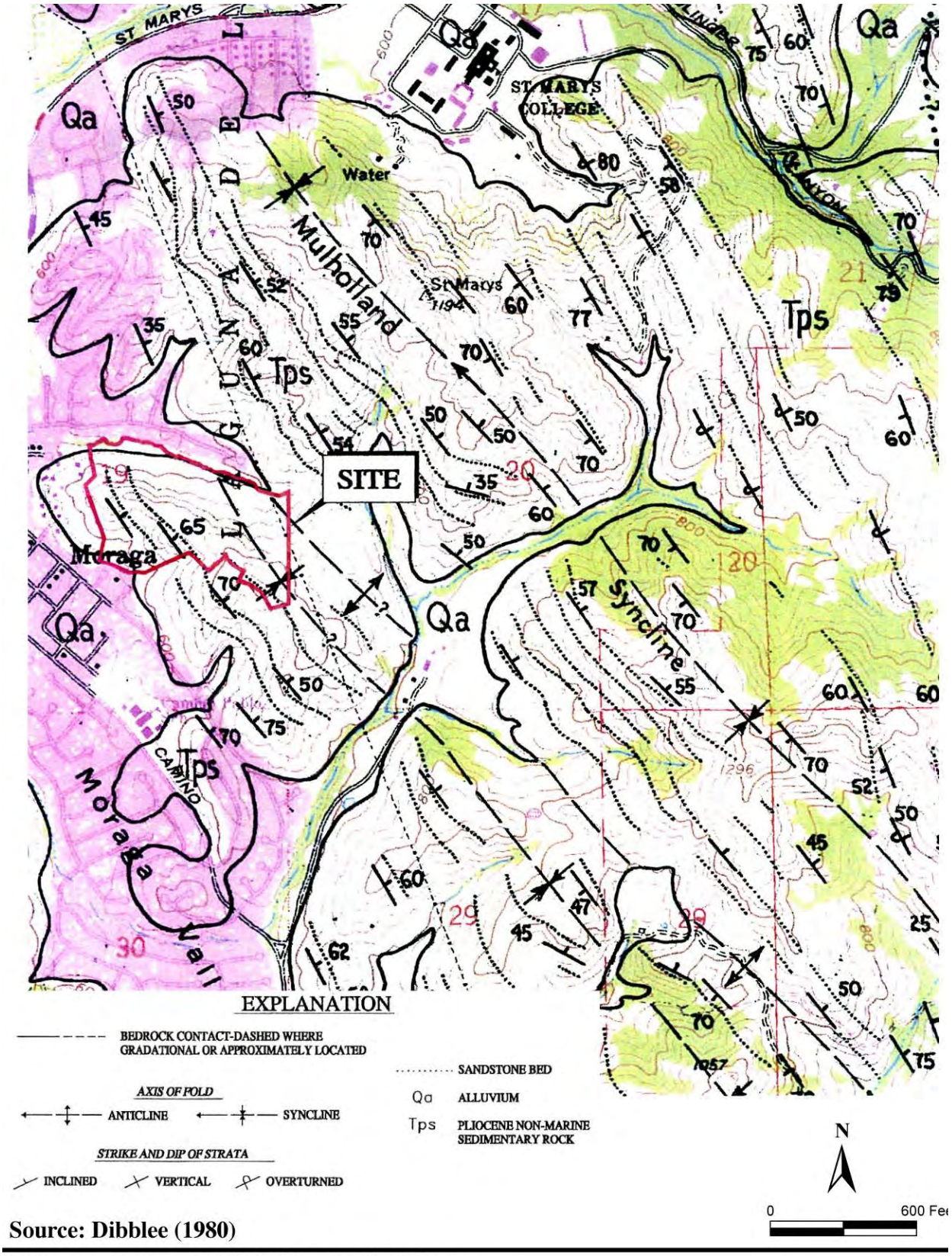
The site is located within an area of faulted and tightly folded bedrock formations. In the Moraga area these formations consist chiefly of Pliocene and Miocene bedrock units. The most recent geologic map of Contra Costa County is a map that was published by the USGS.[6] That map is largely a compilation of previous mapping, and digitizing of the data. The map was issued at a scale of 1:75,000 (approx. 1" = 1.2 miles). The interpretation of geology in the Moraga area is based chiefly on the mapping of Dibblee,[7] which was based on field mapping and photointerpretation. Figure C-1 presents the Dibblee Geologic Map at a scale of 1" = 1,600'. According to this map, the site is within the outcrop belt of non-marine sedimentary rocks of Pliocene age (Tps). The bedrock is tightly folded. The potential building sites are on the west limb of a northwest-trending synclincal fold. By extrapolation from nearby measurements, bedding on the site can be inferred to dip northeast at 50 to 70 degrees.

The property is not located in an Alquist-Priolo Earthquake Fault Zone. The nearest faults considered active by the CGS and USGS are the Hayward and Calaveras faults, which pass approximately 5 miles to the southwest and 8 miles to the southeast of the site, respectively. The Dibblee map shows no bedrock faults in the site vicinity. However, the most recent USGS Geologic Map shows a west-northwest trending fault passing tangent to the north property boundary. This fault is not considered active.

Engineering Geologic Properties of Bedrock

The USGS issued a Professional Paper that characterizes hillside materials in the San Francisco Bay Region (Ellen & Wentworth, 1995). The maps and unit descriptions are intended to provide a guide to the physical nature of the ground from place-to-place in hillside terrain of the region. The report does not classify geologic units according to their slope stability characteristics. Instead, it provides a unit description, emphasizing physical properties that most influence engineering operations in land development. This publication refers to the geologic unit on the property as the Mulholland Formation – Lower Member. Key features of this formation as follows:

> *<u>Composition</u>: Interbedded sandstone and mudstone: minor persistent beds of limestone, tuff, and bentonite. Sandstone and mudstone generally occur in about equal proportions. The sandstone is mostly medium grained, ranging from fine-grained to very coarse grained, and has minor pebbly beds in which pebbles are mostly less than 0.5 inches, but as much as 2 inches in diameter. About one-third of sandstone is well sorted, has interstices partly filled by clay and silt, and has moderate permeability; remainder consists of moderately sorted sand in a silt and clay matrix and has low permeability. Sandstone generally contains minor to some calcite cemented concretions and beds. Mudstone in places is fissile (shale), is variably silty and fine sandy (grades to siltstone).*



Source: Dibblee (1980)

Figure C-1 USGS Geologic Map

Weathering: Most sandstone is weathered or partially weathered to depths of 30 feet, some to depths of more than 50 feet, some well weathered to depths of only 10 feet. Mudstone weathered to depths of 5-10 feet.

Surficial Mantle: The soil and colluvium largely clayey, some granular.

Expansivity: Some to much bedrock is expansive (mudstone), some severely expansive. Most mantle significantly expansive, some severely expansive.

Landslide Deposits

USGS Mapping

In 1975 the USGS published surficial deposit maps of the entire San Francisco Bay Region. These maps, which were based on geologic interpretation of 1960s and early 1970s vertical angle aerial photographs, mapped the distribution of alluvial, colluvial and terrace deposits, along with mapping landslides. These maps were published at 1" = 2,000'. To enhance readability, the map of the site and vicinity has been enlarged to 1" = 500' and plotted on a base map that shows topography on an aerial photo base map (see Figure C-2).[8] The parcel that is the subject of the application is outlined on the map and labeled site. The potential building sites are located adjacent to the creek, near the north property line. According to Figure C-2, two landslide complexes are mapped within the portion of the property that is planned for residential development. On this north-facing hillside, approximately 20 acres are mapped as landslide deposits. This map does not classify slides according to type of slide, activity status or depth of slide plane. The intent of this map is to "red flag" sites that require detailed, site-specific investigations.

CGS Mapping

In 1996 the CGS issued a set of maps that include bedrock geology, landslides and slope stability.[9] This landslide map indicates that the two landslides mapped by the USGS within the area proposed for residential development; they encompass nearly 100 percent of the lands being proposed for grading and development. The Relative Slope Stability Map prepared by the CGS used the following criteria to yield the four value scale presented in Table C-1: (a) the broad apparent stability characteristics of geologic materials; (b) steepness of slope; and c) presence/density of landslides. The Relative Slope Stability Map classifies the lands being proposed for grading and development as "Area 4," which is defined in Table C-1 as the "most susceptible area."

Slope Map

The Moraga General Plan gives consideration to slopes gradients in evaluation of the relative development potential of properties, recognizing the cost and engineering difficulties of grading in areas of steep slopes. The applicant has identified a "cell" on each proposed parcel. Within each cell is the portion of the parcel proposed for grading and development. Calculations submitted with the Vesting Tentative Subdivision Map indicate the average slope within each "cell" is less than 20 percent.

Source: Nilsen (1975)

Figure C-2 USGS Photo Interpretive Landslide Map

Table C-1
CDMG Relative Slope Stability Categories

AREA 1	LEAST SUSCEPTIBLE AREA: Landslide and other features related to slope instability are very rare to non-existent within this area. Included within this area are topographically low-lying valley bottoms and alluviated floodplains. Part of the area may be underlain by material that lacks the strength to support steep slopes (such as unconsolidated alluvium) but occupies a relatively stable position due to the flatness of the slope (lacks potential energy). Land within area 1 will probably remain relatively stable unless the topography is radically modified.
AREA 2	MARGINALLY SUSCEPTIBLE AREA. This area includes gentle to moderate slopes underlain by relatively competent material or colluvium that is considered unlikely to remobilize under natural conditions. Also includes ridgetops and spur crests that are underlain by relatively competent material but flanked by steep, potentially unstable slopes. The stability of slopes within Area 2 may change radically in response to modification of the adjacent terrain.
AREA 3	GENERALLY SUSCEPTIBLE AREA. Slopes within this area are at or near their stability limits due to a combination of weaker materials and steeper slopes. Although most slopes within areas 3 do not currently landslide deposits, the materials that underlie them can be expected to fail, locally, when modified because they are close to their stability limits.
AREA 4	MOST SUSCEPTIBLE AREA. This area is characterized by steep slopes and includes most landslides in upslope areas, whether apparently active at present or not, and slopes upon which there is substantial evidence of downslope creep of surface materials. Slopes within Area 4 should be considered naturally unstable, subject to failure even in the absence of the activities of man.

Engeo Report

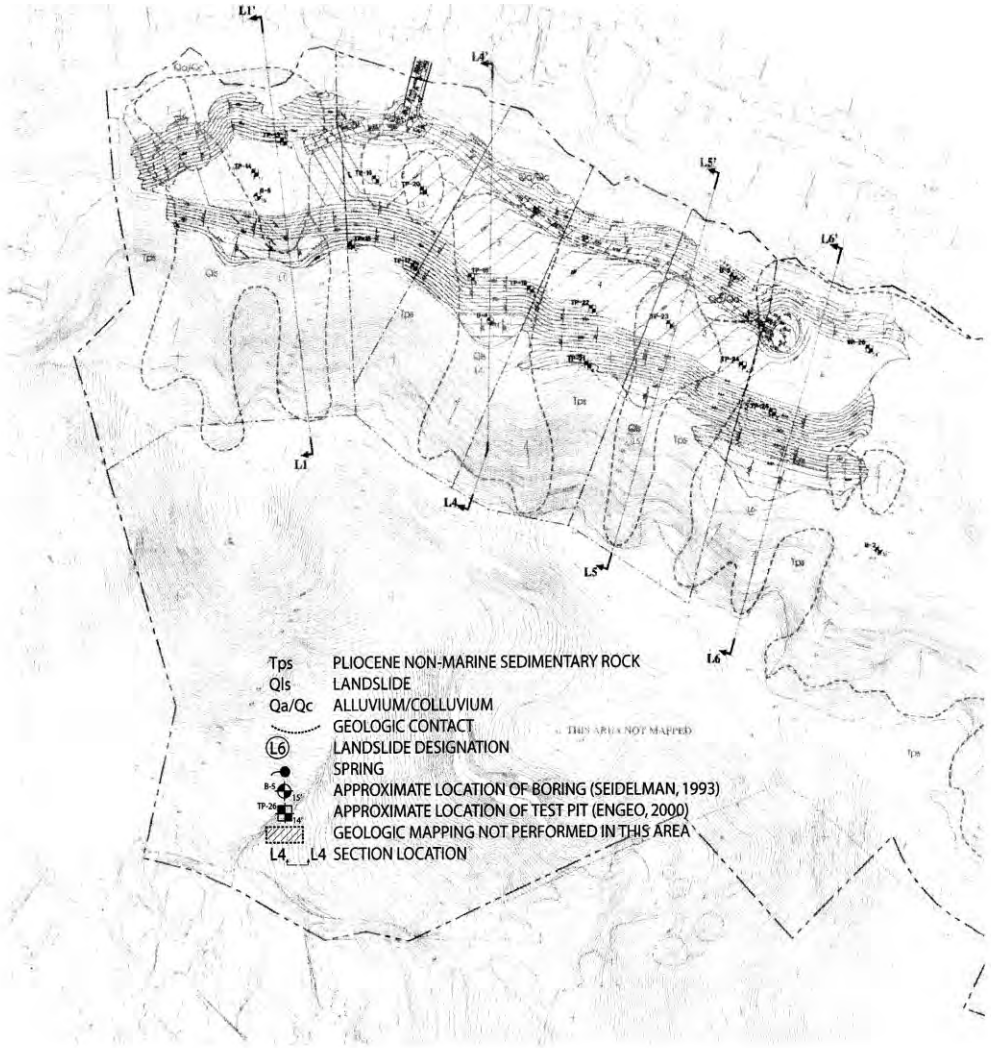
The report issued by Engeo presents an overview of subsurface conditions on the property, an assessment of geologic hazards, and preliminary conclusions and recommendations regarding project development.

Subsurface Conditions

The soils on the site, where present, were confirmed by Engeo to have moderate to high plasticity and a high expansion potential. In some areas proposed for development there are relatively thick accumulation of slopewash deposits.

Based on geologic interpretation of aerial photographs, along with field reconnaissance mapping and subsurface exploration, Engeo has prepared a Site Geologic Map which is presented in Figure C-3. The logs of test pits and borings indicate that the slide debris consists of stiff, silty clay with embedded clasts of sandstone. Based on the preponderance of data, Engeo concludes that the landslides range up to as much as 40 feet thick. They are classified by Engeo as "slumps," which move slowly as a relatively coherent mass. The landslides plotted on Figure C-3 are designated L1 through L6.

The relatively flat area along the south side of the creek is interpreted as a combination of alluvial and colluvial soils. They are dry to moist, stiff to very stiff silty clay, and are considered to have a high expansion potential.



Source: Engeo, Inc. (2005)

Figure C-3 Site Geologic Map

C-7

Bedrock within the "cells," where encountered in test pits, was found to consist of claystone that is described as friable to weak, highly fractured to crushed, and thin to thick bedded. The claystone is considered to be highly expansive. The ridgeline above the "cells" is interpreted by Engeo as consisting chiefly of hard, erosion-resistant sandstone. The bedding exposed in test pits is characterized by a northwest strike and dips consistently to the northeast at 25 to 55 degrees.

Groundwater

Groundwater levels were variable across the site. A small spring was observed within Slide L1, groundwater was at a depth of approximately 10 feet in both test pit TP-16 and boring B-5, and groundwater was at a depth of 20 feet in boring B-2. No free water was encountered in the other borings and test pits.

Conclusions

The primary conclusion of Engeo is that the project is feasible. The chief geologic/geotechnical hazards are landsliding and slope stability. Other potential hazards are: (a) expansive soils and bedrock, (b) seismic hazards, and (c) groundwater.

Geologic and Geotechnical Hazards

Slope Stability. Due to the adverse engineering geologic characteristics of the bedrock, Engeo recommends that engineered slopes over 8 feet high be constructed at 3:1 (or flatter). Fill slopes less than 8 feet high can be constructed with 2:1 gradients. Where slopes higher than 8 feet with gradients steeper than 3:1 are required, geogrid reinforced fills are recommended.

Expansive Soils. Soils and claystone bedrock have a high potential for shrink-swell behavior. For planning purposes, Engeo suggests either: (a) conventional concrete mat; (b) post-tensioned mat; or (c) pier-and-grade beam foundation.

Potential Seismic Hazards. The risk of fault rupture is considered nil, and Engeo states that ground shaking damage is mitigated by compliance with the seismic design standards of the Uniform Building Code. The potential for liquefaction and lurch cracking are rated low and very low, respectively. With regard to seismically-inducing landsliding, with effective implementation of the recommended grading solutions, Engeo considers the risk of seismically-inducing landsliding should be low. Moreover, Engeo recommends subdrains in all keyways and in swales, as well as debris benches between the areas proposed for grading/development and the ungraded (potentially unstable) upslope private open space area.

Future Geotechnical Studies

Engeo considers the project feasible from a geotechnical perspective and recommends that a geotechnical exploration report be prepared that includes logging of borings, laboratory testing of representative samples, and engineering analysis of the data gathered. It is anticipated that the design-level study will be performed as a condition of approval of the pending application.

Grading Plan

Grading plans for the project are presented in Figure 2-3. The grading concept involves removal of slide debris within the portion of the site planned for development, and retaining the steep upper portion of the ridge in an ungraded "scenic easement." A basal keyway cut into bedrock would be constructed in the area of the building sites, subdrains installed, and then placement of engineered fill

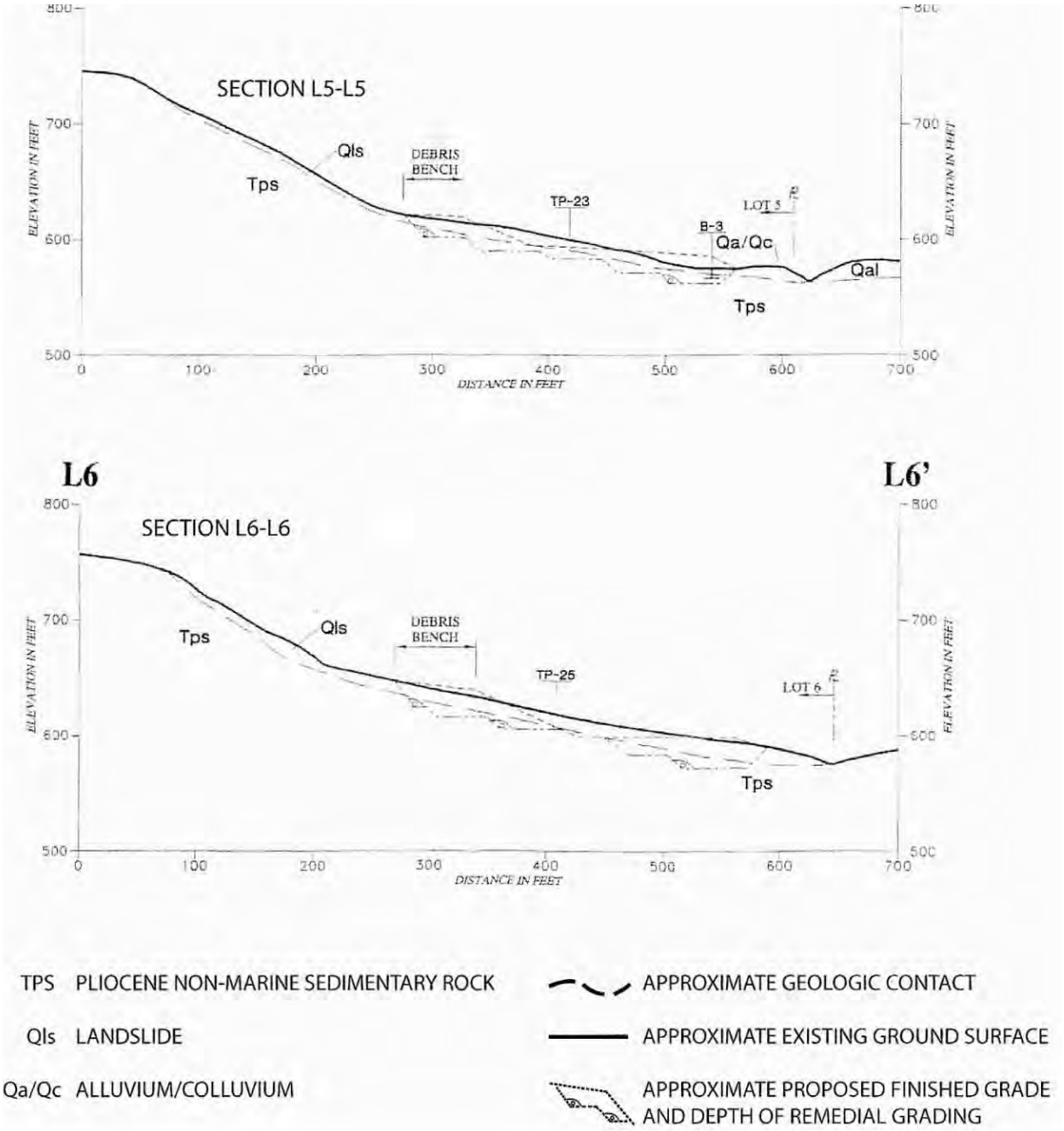
would commence. The existing creek channel is to be retained. At the rear of the area slated for development, fill slopes with gradients of 3:1 (horizontal to vertical) are indicated, ranging from 15 to 40 feet in vertical height. Building pads are proposed on Lots #1 and #6. On Lots #2 to #5, the potential building sites are planar slopes characterized by grades of 6 to 7 percent. Runoff from these lots would be intercepted at the northwest property line and conveyed to drainage facilities within the private road easement. At the top of the fill slope a debris bench is indicated. The purpose of the bench is to intercept runoff and sediment originating higher on the slope. Additionally, the bench is to serve as a runout area for slide debris originating higher on the slope. The benches will require maintenance over the life of the project (e.g., removal of slide debris, and routine maintenance of the ditch).

The cross-sections, presented in Figure C-4, illustrate the existing topography (solid line), landslide/bedrock contact (dashed line); and approach to corrective grading (which consists of continuous "benching"). The lines-of-section are shown in Figure C-3. These sections indicate the general approach to corrective grading. Each proposed residence is to be constructed on engineered fill (i.e., slide debris replaced with engineered fill). The overall grading concept is to create fill slopes with gradients of 3:1 (horizontal to vertical). Should the development concept require steeper slopes, special engineering such as reinforced earth (geogrid) would be required. At the southwest limit of grading, a debris bench with a 10 percent gradient is indicated. The bench is a catchment area for shallow slides originating in the upslope area. The future residences would be constructed on engineered fill. The sections indicate the relatively steep slopes that overlook the debris benches would be retained as ungraded open space.

With regard to the wetland ponds shown on Sheet 3 of the VTM, the proposed ponds are situated within a landslide area. To minimize grading the pond sites are situated in areas of gentle slopes. The ponds are bounded by engineered slopes, with a berm that extends 2 feet in height above the floor of the pond on its downstream flank. The ponds are located east of proposed Lot #6 within a private open space area. There are six relatively small ponds, and each is situated a short distance behind the top of the creek bank. The Engeo letter-report provides geotechnical recommendations for construction of the ponds.

Peer Review

On January 30, 2006, California Engineering & Geology (CEG) issued a letter which identified issues and concerns relating to the preliminary geotechnical report and preliminary grading, drainage and improvement plans.[10] CEG notes that the assessment is generally complete, but goes on to identify five issues that require further information. These points are presented in Table C-2. In effect the issues raised by CEG are intended to guide the scope and direction of the future Engeo report and lead to refinements in the grading and drainage plans for the project. Engeo provided a response to the CEG comments in a letter dated March 6, 2006.



Source: Engeo, Inc (2005

Figure C-4 Geologic Cross Sections

Table C-2
Peer Review Comments of CEG on Subdivision 9051

Item 1 Maintenance Access to Debris Benches	CEG notes that a maintenance access route has not been provided for the debris catchment areas. Engeo replies that the access would be limited to dry weather by equipment over 3:1 slopes, but the grading plan could be redesigned to incorporate improved access if so desired by the Town. Nevertheless, Engeo states that even a maintenance road would probably only be passable only in dry weather.
Item 2 Concern About Adverse Bedding	CEG expresses concern about potential for adverse bedding. Engeo states that they believe bedding will not "daylight" in planned graded slopes. Nevertheless, as suggested by CEG, Engeo states the project geologist will examine all cut slopes during grading. If adverse bedding or other indicates of geologic weakness are exposed, supplemental recommendations will be provided to address the exposed condition.
Item 3 Debris Flows	CEG expressed concern regarding the potential for debris flows and measures to mitigate this potential hazard. Engeo responds that on this site the slide behavior is controlled by the high plastic clay content of the soils, stating that the debris catchment areas will provide an adequate buffer separating the planned improvements from the developed areas of the site.
Item 4 Height of Cut Slope	A 36-foot-high cut slope is indicated on Lot #6, with a gradient of 2½:1 (horizontal to vertical). CEG notes that the operative grading regulations of the Town require drainage terraces at mid-slope on graded slopes over 30 feet in height. Engeo responds that special design measures are proposed to control erosion, including (a) a concrete ditch at the top-of-slope, (b) the entire slope covered by erosion-control fabric to facilitate revegetation, and (c) the slope is to be constructed as a reinforced earth slope (geogrid reinforcement). With such special design features, the proposed slope can be approved.
Item 5 Design Level Geotechnical Report	CEG indicates that the Engeo report is not intended to be adequate for the issuance of construction permits or installation of improvements. The Town has determined that the Engeo report is adequate for environmental review of the project, but another investigation will be needed to provide specific geotechnical standards and criteria for the project. Engeo concurred and notified that a recommendation for a design-level investigation is provided in their report (Engeo report, page 12).

[1] Engeo, Inc., 2000. *Preliminary Geotechnical Exploration, Lipson Property, Northern Parcel, Moraga, California.* Engeo Job #5047.1.002.01.

[2] Seidelman Associates, Inc., 1993. *Geotechnical Investigation of Major Development Located at Tentative Tract #7810, Moraga, California.* Unpublished report.

[3] Engeo Inc., 2007. *Wetland Mitigation Areas and Maintenance Access Easements, Hetfield Estates, Moraga, California.* Engeo Job #5047.1.002.01.

[4] Wagner, J.R., 1978. *Late Cenozoioc History of the Coast Ranges East of San Francisco Bay.* U.C. Berkeley Ph.D. Dissertation.

[5] Ellen, S.D. and C.M. Wentworth, 1995. *Hillside Materials and Slopes of the San Francisco Bay Region, California.* U.S. Geological Survey, Professional Paper 1357.

[6] Graymer, R.W., D.L. Jones and E.E. Brabb, 1994. *Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County: A Digitized Database.* U.S. Geological Survey Open File Report 94-622.

[7] Dibblee Jr., T.W., 1980. *Preliminary Geologic Map of the Las Trampas Ridge Quadrangle, Contra Costa County, California*. U.S. Geological Survey Open File Map 80-545.

[8] Dibblee Jr., T.W., 1980. *Preliminary Geologic Map of the Las Trampas Ridge Quadrangle, Contra Costa County, California.* U.S. Geological Survey Open File Map 80-545.

[9] Majmundar, H.H., 1996. *Landslide Hazards in the Las Trampas Ridge Quadrangle and Parts of the Diablo Quadrangle, Alameda and Contra Costa Counties, California.* CDMG Open File Report 95-15.

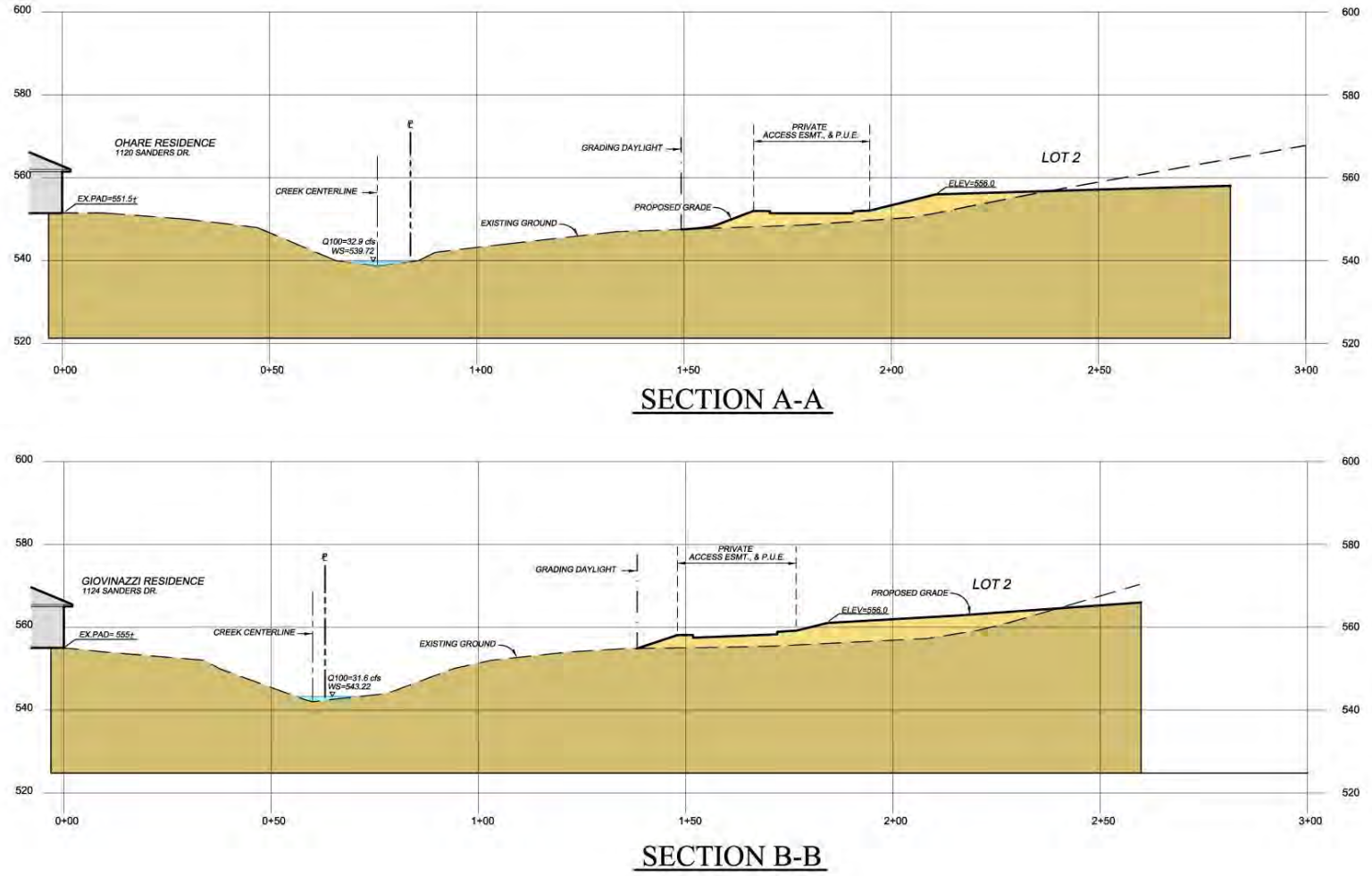
[10] California Engineering and Geology, 2006. *Geologic/Geotechnical Review, Preliminary Geotechnical Exploration, Conceptual Development Plan, Hetfield Estates, Tract 9051, Moraga, California.* Project #060310.001.

APPENDIX D

Additional Documentation Supporting Density

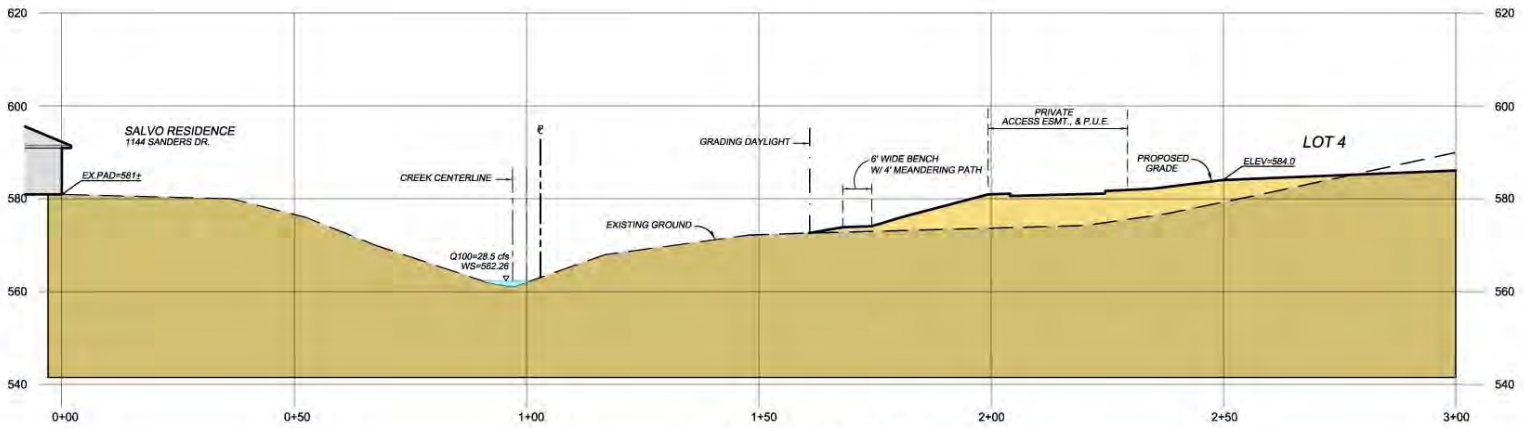
Source: RMR Design Group

Figure D-1 Cross Section and Debris Bench Locations

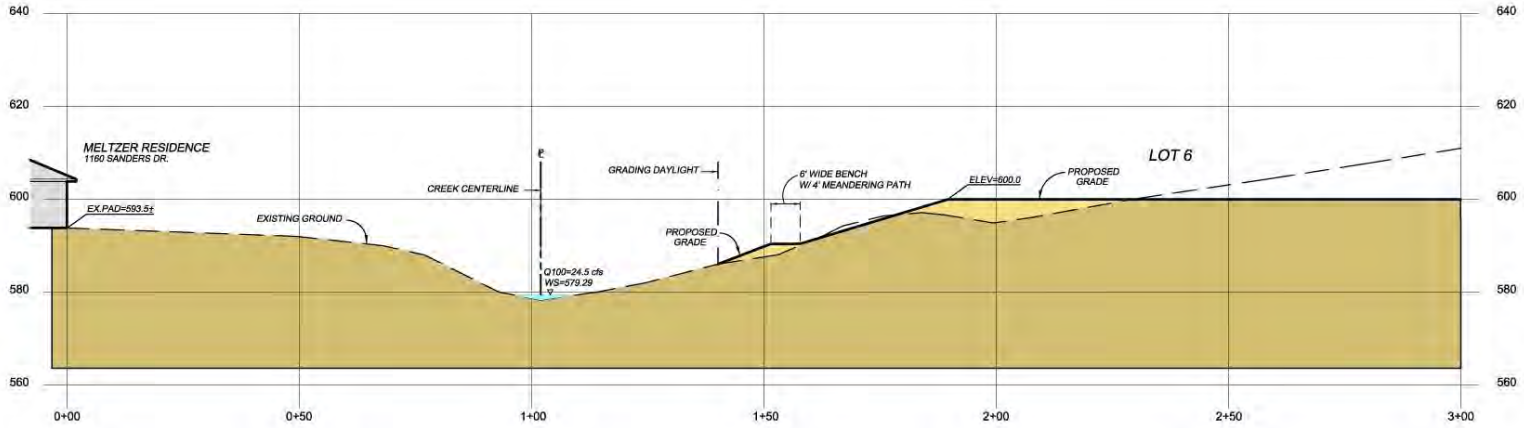


Source: RMR Design Group

Figure D-2 Creek Cross Sections A-A and B-B



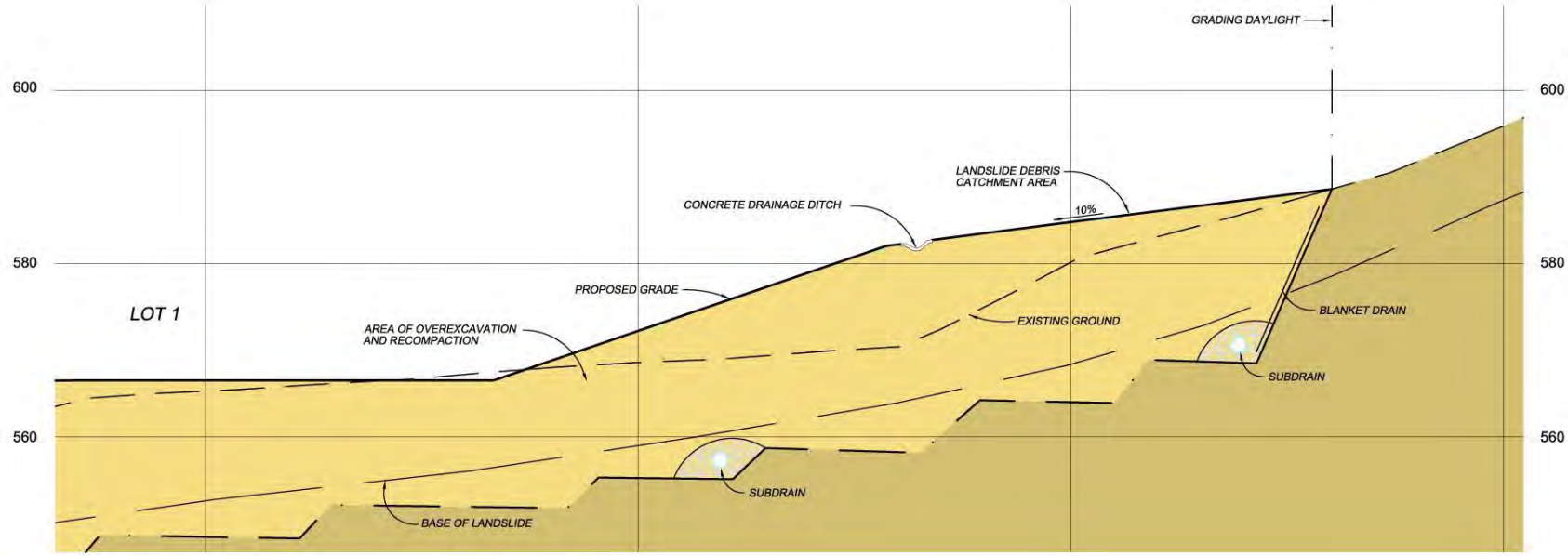
SECTION C-C



SECTION D-D

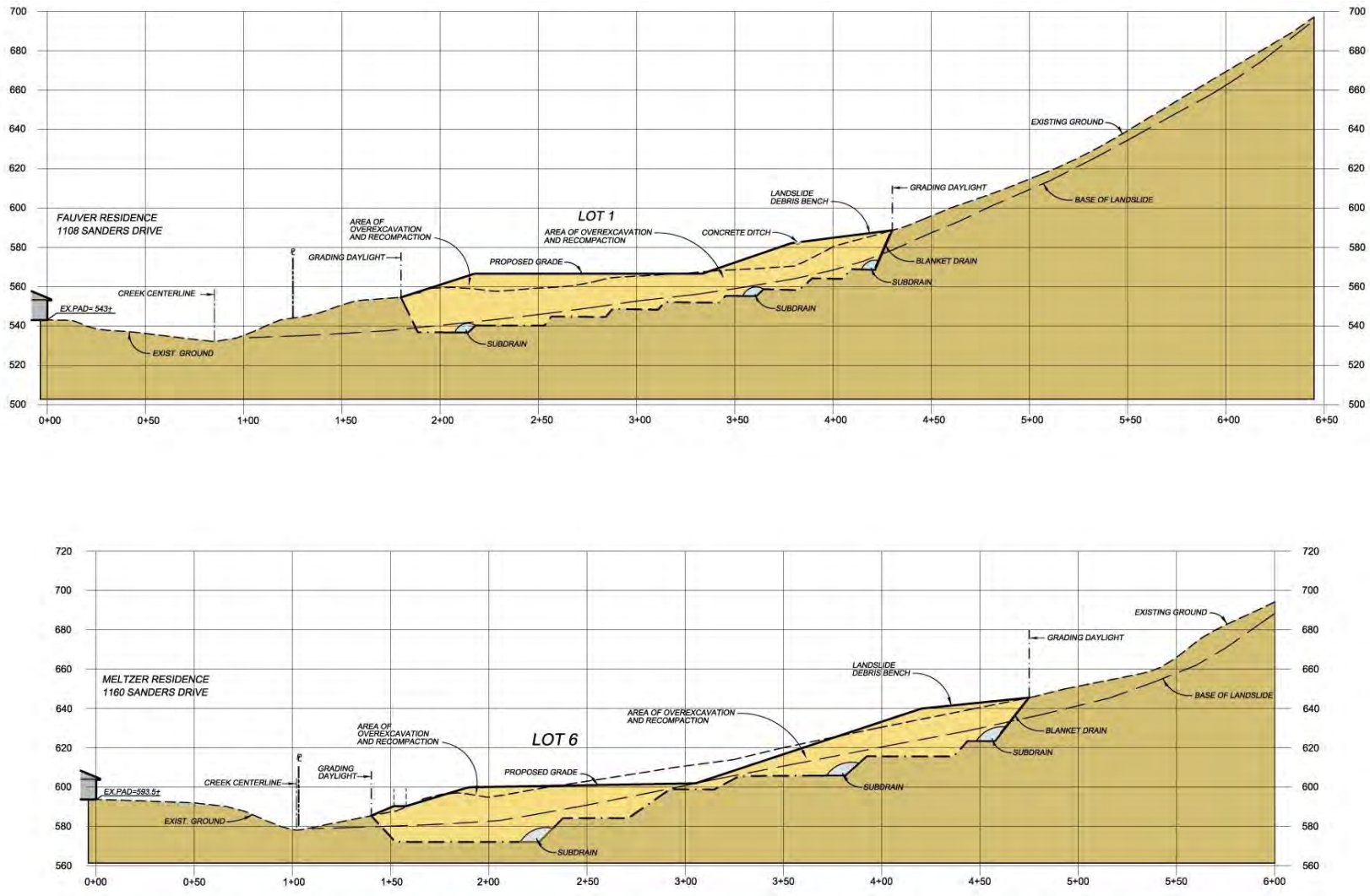
Source: RMR Design Group

Figure D-3 Creek Cross Sections C-C and D-D



Source: RMR Design Group

Figure D-4 Geotechnical Debris Catch Basin Cross Section 1-1



Source: RMR Design Group

Figure D-5 Geotechnical Cross Sections 1-1 and 2-2

APPENDIX E

Comments Received During Public Review
and Responses to Comments

Zoë and Walter Klippert
27 Hetfield Place
Moraga CA 94556

May 26, 2008

To: Lee Hays, Chair
Allen Sayles, Vice Chair
Allison Daniels
Russell Driver
Margaret Goglia
Stacia Levenfeld
Bruce Whitley

Re: Hetfield Estates Subdivision 9051

Dear Members of the Planning Commission:

As longtime residents of Hetfield Place, we remember the 1982 landslide that impacted six properties on Sanders Drive: #1100-1120. More than 25 years have gone by, but the instability of the land remains a concern.

As noted on page 6 of the Staff Report, "Landslides have the potential to cause significant damage to improvements and, in extreme cases, loss of life. Impact VI-3: Bedrock units on the site are prone to landsliding."

We ask that you give due consideration to the history and potential of the land proposed for development and deny the application.

1

Very truly yours,

Walter Klippert

Zoë Klippert

Zoe and Walter Klippert
May 26, 2008

1. The Geology Section of the Initial Study/Proposed Mitigated Negative Declaration identified impacts associated with unstable slopes and provided mitigation measures that could reduce the potential for slope failure. Pages 3-33 through 3-38 identify several mitigation measures that will be required as a part of the slope repair to ensure the slope is stabilized prior to the construction of the houses. The mitigation measures were developed in consultation with the applicant's geotechnical engineer, the CEQA geological consultant and the Town's geotechnical engineer. The decision-makers must consider the analysis and mitigation measures to determine whether the project is feasible in the context of the MOSO ordinance.

1132 Sanders Dr.
Moraga, CA 94556
2 May 2008

Town of Moraga
Planning Department
329 Rheem Blvd., Suite 2
Moraga, CA 94556

Dear Town of Moraga Planning Commission,

I am writing about the May 5 hearing regarding the "Hetfield Estates" subdivision. I have many concerns and do not understand how the proposed subdivision addresses them.

- The land in question is MOSO open space. According to Planning and Zoning Chapter 8.52.140, MOSO open space density: "Development shall be prohibited on minor ridgelines immediately adjacent to and extending into MOSO open space lands if slopes exceed twenty (20) percent and elevation of the ridges is greater than eight hundred (800) feet above mean sea level."
    - When I run on the Old Moraga Ranch Regional Trail, which goes through the land in question and reaches almost to the top of the ridge, my GPS watch says I am already higher than 800 feet and have climbed a slope exceeding 30%. Per MOSO, doesn't that mean development is prohibited in this open space? 1
    - How does permanently altering the land into homes fit with the Town's original intent on designating this area as "open space"? 2
- The Initial Environmental Study found that development could have "a significant effect on the environment."
    - The property owners and developer say there will not be a "significant effect" if they excavate up to 25 feet into the hillside and hold back the slope with massive retaining walls. Won't this exacerbate, rather than eliminate, any "significant effect on the environment"? 3
    - The land in question had a mudslide in the 1980s. Sanders Drive residents were forced to pay for cleanup since the property owner went bankrupt. Have the current property owners agreed to cover costs and liabilities for future slides, especially those that occur as a result of development? 4
    - What are the property owners and developer doing to eliminate the "significant effect" on wildlife? We have witnessed a bobcat, coyotes, deer, hares, Monarch butterflies, turkeys, owls, Cooper's hawks, and other species living on the land in question. Are the property owners paying for the safe handling and relocation of wildlife displaced as a result of development? 5
    - Since Sanders Drive residents own their side of the creek, who is liable if any constructions accidents occur that damage or block the creek? 6
    - Did the study take into account any changes in water runoff into the creek or impact on drains and homes further down Sanders Drive? 7

- The road into the subdivision will require the destruction of a large and old oak tree on a homeowner's property. How will the property owners and developer replace this loss? 8

- Despite the name, Hetfield "Estates" is actually a narrow area with wooded slopes. The proposal is to build six dwellings that can reach 11,000 square feet each - approximately 3-4 times the size of (and a stone's throw away from) existing homes on Sanders Drive. 9

  - Access to the subdivision will instantly increase the ease of access to backyards of homes that border the subdivision. Given that one of these homes was recently burglarized in broad daylight, what safety measures will be put in place to protect current homes from increased trespassing and crime? 10

  - The proposed dwellings would dwarf all other homes in this neighborhood. Even if the Town approved such mansions, why squeeze them into a sliver of open space that's not suitable for development without excavation and retaining walls? 11

  - The proposed subdivision will require the Hetfield street stub to be turned into a road. My children and others in the neighborhood play and ride bikes in this stub since it is level and sheltered from traffic travelling up and down Sanders Drive. Obviously a subdivision will increase this traffic. What measures will be put in place to calm traffic and ensure the continued safety of neighborhood children? 12

Having grown up in Moraga, I know very well that once you build in these hills, you can never get them back. We're the ones who have to live with whatever is done to our dwindling open space.

But the property owners aren't from here – they're from Beverly Hills. My guess is they couldn't care less about the impact on Moraga and would rather make a profit, walk away, and leave us with the consequences. 13

Please seriously consider whether the "Hetfield Estates" subdivision project:

- ☐ **Adheres to open space ordinances**
- ☐ **Fits the Town's vision for open space vs. development**
- ☐ **Honestly makes sense to you as a Moraga resident**

If the project has to proceed, PLEASE do it in a more environmentally responsible way than gouging out a hillside, constructing monster homes, holding back the ridge with concrete and calling it "open space."

If you are not familiar with the area, I would be more than happy to join you on a walk up the Old Moraga Ranch Regional Trail where you can get an amazing view of Moraga and see the open space in question.

Best regards,

Jennifer Hansen Koziel

Moraga resident 1973-1975, 1977-1986, 2003-present

Jennifer Hansen Koziel
May 2, 2008

1. The existing trail rises to an elevation of 853.3 feet, which is located in the southwest corner of the property. This is considered a minor ridgeline as defined by MOSO. The ordinance does not allow development on minor ridgelines that are located immediately adjacent to and extending into MOSO open space lands where the elevation of the ridge is greater than 800 feet above mean sea level. A review of the site plan shows that the entire trail would be contained within the designated open space easement that is not subject to development. The houses would be located below the ridgeline approximately 120 feet.

2. MOSO does not preclude development. As stated in the Initial Study/Proposed Mitigated Negative Declaration on page 3-49, the MOSO zoning district allows single-family residential dwellings, as well as other uses under a conditional use permit. The densities in the MOSO district are determined by the planning commission, based upon site constraints and in compliance with applicable goals and policies of the general plan. The Town must determine that the project site is not high risk to make findings that would allow for an increase in density.

3. As stated in Chapter 3.VI. Geology/Soils, the report acknowledges the presence of landslides that will have to be repaired prior to creating building pads. On page 3-33, the report identifies the methods to repair the landslides which include: removal of unstable or compressible slide debris; excavation into underlying competent bedrock; construction of subsurface drainage measures; replacement of soil with compacted engineered fill; construction of surface drainage measures; and planting with erosion-resistant vegetation. Plans do not indicate the installation of retaining walls. Rather, the slopes will be regraded at 3:1 with debris benches to capture lose soil, etc. The commentor should refer to the cross-sections in Appendix C, Figure C-4 and Appendix D, that illustrate the grade of slope and placement of debris benches.

4. Damage that could result from potential landslides on the property would be the responsibility of the future homeowners.

5. The Initial Study/Proposed Mitigated Negative Declaration (page 3-15) discusses the importance of the site providing foraging and possibly breeding habitat to a number of wildlife common in the Moraga area. It is acknowledged that during site preparation, grading and construction, wildlife will leave the site. However, as is typical in the Moraga area wildlife return, particularly where open space areas provide habitat. A major portion of the project site will remain in permanent open space. The developer/property owners are not responsible for the relocation of wildlife unless state or federal law protects a species. Mitigation measures call for

pre-construction surveys to determine the presence of certain candidate, sensitive or special status species that are regulated by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

6. The developer/property owner of the project would be responsible for any damage that may occur as a result of construction accidents on the project site.

7. Refer to Chapter 3.VIII. Hydrology and Water Quality. Plans call for an on-site detention basin sized to ensure that runoff from the subdivision during a storm with a 100-year recurrence interval would not exceed the runoff from the existing undeveloped site.

8. On page 3-27 in Chapter 3.IV, Biological Resources, the potential impact of construction on a 30-inch diameter coast live oak located on the west side of the proposed creek crossing is discussed. As stated in the report, the conceptual development plan shows that the tree would not be removed, however, the close proximity of the creek crossing, coupled with construction and disturbance to the tree's root zone could adversely affect this tree. Mitigation measures have been recommended to reduce the potential impacts on remaining trees.

9. Refer to page 2-2 of the Initial Study where it is stated that the houses would range in size from 5,110 to 6,500 gross square feet (including the garage), not 11,000 square feet as stated by the commentor. The Town's Design Review Board will review detailed house plans and the maximum square footage will be determined through this process.

10. The creek and underbrush provide an obstacle to easy backyard access to the homes on Sanders Drive. Maintaining the creek corridor in its natural state will help to deter potential crimes. No other safety measures are proposed at this time.

11. As stated previously, the Design Review Board will review and act upon future building plans. The architectural plans shown in the document are merely representation of what could be built on the site.

12. The Hetfield Street stub is a public right-of-way. When the Sanders Drive subdivision was created, the street was stubbed out with the intention that at some time in the future the road could access the property on the south side of the creek. Traffic coming out of the subdivision would not be traveling at a fast speed, since the creek crossing is located in close proximity to the intersection with Sanders Drive and cars would have to stop before entering Sanders Drive. Mitigation Measure XV-1 on page 3-62 of the Initial Study/Proposed Mitigated Negative Declaration calls for the intersection to be stop-signed controlled.

13. These comments are opinions of the commentor on the project and do not relate to the adequacy of the CEQA document.

MEMORANDUM

To: Ms. Lori Salamack, Planning Director
And to the Moraga Planning Commission

From: Timothy and Pamela Meltzer

Date: May 22, 2008

Re: Proposed Hetfield Estates Development

We are writing because of our growing concerns about the proposed Hetfield Estates project. From what we can tell, the project is going to have a significant, and permanent, negative effect on the extraordinary beauty of the area, affecting both sight and sound. It will apparently also have an adverse effect on the existing wildlife on the hillside in the hundreds of acres behind the 20 or more homes that are the nearest to the proposed development.

My wife and I, and our two children, moved to Moraga in 1981; almost 27 years ago. We looked at several areas around the Bay Area, and concluded that no place compared with Moraga or the home we decided to buy at 1160 Sanders Drive. We understood at the time, and this was confirmed on two or three occasions over the years, that there would be no building in any of the areas on the hillside or anywhere behind the homes, (at least at the end of Sanders Drive), because of the obviously unstable hillside as evidenced by the erosion and land movement on the hill. On many occasions, I walked in the open space on the hill behind our property, and could see first-hand the numerous areas of erosion and earth movement. If, all of a sudden, the developer who is pushing the Hetfield Estates project thinks it can stabilize the hillside to eliminate this risk, then how much grading will be required, and how much of the beauty of the entire hill will be eliminated or compromised permanently?

1

It is difficult to describe the unique peacefulness of the area. There are long stretches of time when it is almost silent outside. There are times when you can hear the wind through the trees, and not much else, except, perhaps, the sound of birds. In the winter, you can hear the sound of a rushing stream that runs through the backside of our property, and the property of numerous homeowners along our side of the street. Indeed, after the first rains, one can hear the sound of baby frogs when you listen through an open window or stick your head outside. How will the creek and the creatures that live in and around it be affected by the proposed development? 2

In the spring and summer, one can see and hear cows on the hillside. They meander back and forth from the hill on the other side of our street, to the hill behind our house. How will the proposed development affect the casual movement of the cows to the areas behind our house and further along the hill adjacent to the homes on Sanders Drive? 3

What about the remaining wildlife in the area? Won't the proposed development negatively, and permanently, affect them? There are periods when deer, wild turkeys and field rabbits visit the property, along with what I think are hawks, and a variety of other birds and animals, including an occasional coyote, which I have seen running on the animal trail on the hillside in the fall and winter, moving in the direction of the planned development. Isn't the impact on these creatures an important consideration that should, along with all of the other issues, raise potentially insurmountable obstacles to permitting the Hetfield Estates development? 4

Indeed, we agree with the list of "Significant Impacts" that are listed in the "Hetfield Estates Subdivision Initial Study and Proposed Mitigated Negative Declaration" prepared by Mills Associates dated April 18, 2008 (the "Initial Study") including, but not limited to, the acknowledgement that "The proposed project will substantially degrade the existing visual character of the site"; "The proposed project will have an adverse effect on biological resources"; "Development could potentially interfere with the movement of wildlife species"; and "Landslides have the potential to cause significant damage to improvements and, in extreme cases, loss of life". However, the described "Mitigation Measures" for these and the other "Significant Impact" items do not appear to be sufficient to solve the problems that are likely to be caused by the project. 5

We have a number of other questions that we have not been able to resolve from looking at the map of the proposed development at the offices of the Planning Commission (the "Map") or from our limited review of the extensive Initial Study. Unfortunately, I only had an opportunity to see the Map for a short time yesterday, and only then obtained a copy of the Mills Associates' Initial Study. I wonder if we, and possibly other interested parties, could have some additional time to address the matters in that Initial Study beyond the deadline at 5 p.m. today, particularly since the previously scheduled public hearing was never held on May 5, 2008, and was postponed until June 2, 2008?

We greatly appreciate your consideration of these matters. Moraga has been our home for almost three decades, and we plan to live here for many more years to come.

Sincerely,

Timothy A. Meltzer

Pamela K. Meltzer

Timothy and Pamela Meltzer
May 22, 2008

1. As stated previously, the Initial Study/Proposed Mitigated Negative Declaration (page 3-33) identifies the type of repairs that will be undertaken to repair unstable slopes and to ensure stability prior to creating the building pads. The Town's geotechnical engineer and the consulting geologist for the CEQA document have reviewed the grading and slide repair plans. The types of repairs proposed are typical of those used in the hilly terrain and for the soil type found in the Lamorinda area.

2. The creek will not be disturbed during grading/site preparation except in the immediate area where the bridge crosses the creek. As shown on the plans the creek area will be contained within the open space that is located outside the individual lots. As stated in the Initial Study/Proposed Mitigated Negative Declaration, Chapter 3.IV, Biological Resources, the applicant will be required to obtain permits from the Corps of Engineers, and State and Federal wildlife agencies. As a part of the permitting process, additional surveys must be undertaken to determine whether or not certain candidate, sensitive or special status species are present on the project site, including the creek corridor that borders the project site.

3. The project site has not been used for grazing for the last couple of years. Cattle grazing occurs on the property to the north and south of Sanders Drive, which is under different ownership. The proposed project would not affect the continuation of cattle grazing on neighboring property.

4. There will be a temporary interruption of wildlife utilizing the site during site preparation and construction. Upon completion of the development, the proposed 6 home sites will occupy no more than 6.75 acres with the remaining 51.45 acres left in permanent open space. Wildlife common to Moraga (e.g., deer, raptors, gophers, skunks) would continue to be able to use the open space areas. Page 3-26 in the Initial Study/Proposed Mitigated Negative Declaration discusses the potential interference on the movement of native wildlife species.

5. This is a statement of opinion regarding the effectiveness of the recommended mitigation measures and does not reflect upon the adequacy of the CEQA document. Therefore, no additional comment is required.