COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHY MOLLOY PREVISICH, PLANNING DIRECTOR

NEGATIVE DECLARATION AND NOTICE OF DETERMINATION

Application No: 09-0131 **APN(S): 078-101-03**

Proposal to construct a 25 foot long diversion wall and a 42 foot 6 inch long reinforcement retaining wall in front of the existing gabion baskets, install rock slope protection within the Riparian Corridor of Marshall Creek and remove 576 sq ft of unpermitted deck and 601 square feet of unpermitted room addition at dwelling. Project also includes recognize conversion of 1,068 square feet of lower floor of dwelling to habitable space and conversion of a detached structure from habitable space back to storage space. Requires a Riparian Exception, a Geological/Soils Report Review, Biotic Assessment and Environmental Review. Property located on the south side of Hubbard Gulch Road (435 Hubbard Gulch Road) about .75 mile west of the intersection with Hwy 9.

ZONE DISTRICT: RA (Residential)
OWNER/APPLICANT: ARTHUR CODY
STAFF PLANNER: JESSICA DUKTIG, 454-3162
Email: pln866@co.santa-cruz.ca.us
ACTION: ADMINISTRATIVE
REVIEW PERIOD ENDS: SEPTEMBER 5, 2010

Findings:
This project, if conditioned to comply with required mitigation measures or conditions shown below, will not have significant effect on the environment. The expected environmental impacts of the project are documented in the Initial Study on this project, attached to the original of this notice on file with the Planning Department, County of Santa Cruz, 701 Ocean Street, Santa Cruz, California.

Required Mitigation Measures or Conditions:
_____ None
__XX__ Are Attached

Review Period Ends: September 5, 2010

Date Approved By Environmental Coordinator: Matt Johnston 9/8/10

MATT JOHNSTON
Environmental Coordinator
(831) 454-3201

If this project is approved, complete and file this notice with the Clerk of the Board:

NOTICE OF DETERMINATION

The Final Approval of This Project was Granted by the Environmental Coordinator on 9/8/10 (Date). No EIR was prepared under CEQA.

THE PROJECT WAS DETERMINED TO NOT HAVE SIGNIFICANT EFFECT ON THE ENVIRONMENT.

Date completed notice filed with Clerk of the Board: _____

County of Santa Cruz

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KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR

NOTICE OF ENVIRONMENTAL REVIEW PERIOD

SANTA CRUZ COUNTY

APPLICANT: Arthur Cody

APPLICATION NO.: 09-0131

PARCEL NUMBER (APN): 078-101-03

The Environmental Coordinator has reviewed the Initial Study for your application and made the following preliminary determination:

XX Negative Declaration
(Your project will not have a significant impact on the environment.)

XX Mitigations will be attached to the Negative Declaration.

_____ No mitigations will be attached.

_____ Environmental Impact Report
(Your project may have a significant effect on the environment. An EIR must be prepared to address the potential impacts.)

As part of the environmental review process required by the California Environmental Quality Act (CEQA), this is your opportunity to respond to the preliminary determination before it is finalized. Please contact Matt Johnston, Environmental Coordinator at (831) 454-3201, if you wish to comment on the preliminary determination. Written comments will be received until 5:00 p.m. on the last day of the review period.

Review Period Ends: SEPTEMBER 3, 2010

Jessical Duktig

Phone: (831) 454-3162

Date: August 5, 2010

NAME: Arthur Cody
APPLICATION: 09-0131
A.P.N: 078-101-03

NEGATIVE DECLARATION MITIGATIONS

1. The riparian corridor in this reach has been subject to repeated disturbance in efforts to retain the streambank, and as a result, the area has been subject to infestation by disturbance-associated invasive vegetation. In order to mitigate the impacts of these non-native invasives, the applicant shall submit a revegetation plan that includes planting all disturbed slope areas, including areas cleared of invasive exotic species, with native riparian species and mixed evergreen forest species. The revegetation plan shall indicate that areas of the property adjacent the house and within the riparian corridor would be cleared of invasive exotic species.

2. In order to mitigate potential impacts from the spill of fuel, oil and hydraulic fluid while operating large machinery within the riparian corridor, prior to disturbance the contractor shall maintain containment and absorbent materials on hand to quickly isolate and clean up any accidental spill.

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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ENVIRONMENTAL REVIEW INITIAL STUDY

Date: July 26, 2010 **Application Number:** 09-0131

Staff Planner: Jessica Duktig

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: Arthur Cody **APN(s)**: 078-101-03

OWNER: Arthur Cody **SUPERVISORAL DISTRICT**: 5

PROJECT LOCATION: Located on the south side of Hubbard Gulch Road, about ¾ mile from the intersection with HWY 9 in Ben Lomond, CA.

SUMMARY PROJECT DESCRIPTION: The proposed project includes construction of a 25-foot long diversion wall and a 42-foot long reinforcement retaining wall in front of an existing gabion wall and installation of rocks slope protection within the Riparian Corridor of Marshall Creek. The project also includes recognition of 1068 square feet of habitable space to the lower floor of an existing single-family dwelling, demolition of 576 square feet of deck and conversion of a detached guestroom to storage.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.

- ☒ Geology/Soils
- ☒ Hydrology/Water Supply/Water Quality
- ☒ Biological Resources
- ☐ Agriculture and Forestry Resources
- ☐ Mineral Resources
- ☐ Visual Resources & Aesthetics
- ☐ Cultural Resources
- ☐ Hazards & Hazardous Materials
- ☐ Transportation/Traffic
- ☐ Noise
- ☐ Air Quality
- ☐ Greenhouse Gas Emissions
- ☐ Public Services
- ☐ Recreation
- ☐ Utilities & Service Systems
- ☐ Land Use and Planning
- ☐ Population and Housing
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☐ Development Permit
- ☐ Coastal Development Permit
- ☐ Grading Permit
- ☒ Riparian Exception
- ☐ Other:

NON-LOCAL APPROVALS

Other agencies that must issue permits or authorizations: USACOE, RWQCB, CDFG

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 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.

Matthew Johnston
Deputy Environmental Coordinator

Aug 2, 2010
Date

For Claudia Slater
Environmental Coordinator

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS

Parcel Size: 4.141 acres
Existing Land Use: Residential Agriculture
Vegetation: Mixed evergreen forest with riparian vegetation along creek
Slope in area affected by project: ☐ 0 - 30% ☒ 31 – 100%
Nearby Watercourse: Marshall Creek
Distance To: Adjacent

ENVIRONMENTAL RESOURCES AND CONSTRAINTS

Water Supply Watershed: yes
Groundwater Recharge: yes
Timber or Mineral: no
Agricultural Resource: no
Biologically Sensitive Habitat: yes
Fire Hazard: no
Floodplain: yes
Erosion: yes
Landslide: yes
Liquefaction: yes

Fault Zone: no
Scenic Corridor: no
Historic: no
Archaeology: yes
Noise Constraint: no
Electric Power Lines: no
Solar Access: n/a
Solar Orientation: n/a
Hazardous Materials: n/a
Other:

SERVICES

Fire Protection: Ben Lomond Fire
School District: SLV
Sewage Disposal: Septic

Drainage District: Zone 8
Project Access: Hubbard Gulch Road
Water Supply: SLV Water District

PLANNING POLICIES

Zone District: RA
General Plan: R-M

Special Designation: n/a

Urban Services Line: ☐ Inside ☒ Outside
Coastal Zone: ☐ Inside ☒ Outside

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

The subject parcel is located in a rural area of Ben Lomond in the Santa Cruz Mountains, CA. The parcel is currently developed with a single-family dwelling, habitable accessory structure (cabin), and bridge crossing and associated hardscape improvements. The single-family dwelling and cabin are situated on the northern bank of Marshall Creek, just below Hubbard Gulch Road. The cabin is located about 50 feet west of the residence and the bridge crossing is located a few feet west of the cabin. The bridge crossing supports septic lines that lead to the leachfield located on the south side of Marshall Creek. The structures are located in a very constrained area between Hubbard Gulch Road and Marshall Creek (exhibit A). There are outstanding code violations on the property which are to be resolved as part of this application and

building application 71014G. Surrounding land uses are residential, although no other structures exist along this reach of Marshall Creek.

PROJECT BACKGROUND:

A massive debris flow landslide occurred on the southern slope of Marshall Creek in 1986 and flowed down the Hubbard Gulch drainage course (Marshall Creek). The deck to the residence was damaged during this event and the foundation was in danger of being undermined. In fall of 1986, the County of Santa Cruz issued two Emergency Permits on the parcel. Permit No. 0881 was issued to "re-establish channel in front of house – place fill against house to redirect flow of river away from foundation." Permit No. 0877 was issued to "install concrete caissons to shore-up existing foundation of SFD in accordance with design of Haro and Kasunich." The emergency work was considered to be temporary until a regular permit was granted. In December of 1986 the regular permit, 86-1150, was issued to "Grade about 260 cubic yards to clear and to reestablish a creek channel and to install concrete caissons to repair the creek side foundation of an existing dwelling." This permit included neither a structural legality determination nor recognition of any construction done without permits. A riparian exception (04-0048) was approved in 2004 to restore the riparian corridor and to install erosion control along Marshall Creek.

In 2005, owner Carvajal submitted applications to recognize an unpermitted room addition on the existing dwelling. The applications included a proposal to convert a detached structure from a habitable to a nonhabitable structure. Both the building permit application (54666G) and the discretionary application (05-0645) for this project were abandoned. A virtually identical proposal (07-0139) was submitted in 2007 for a Variance, Residential Development Permit and Riparian Exception to recognize the added rooms, establish a 2,590 square-foot single family dwelling, recognize the detached building as a habitable accessory structure with a bathroom and recognize gabion retaining wall in the Riparian Corridor. This application, too, was abandoned.

The landslide hazard to the residence continues to exist and the gabion retaining wall is distressed and failing. In 2007, the property was red-tagged as "Unsafe to Occupy" due to the landslide hazard above the dwelling and slope instability below the dwelling.

The current owner, Arthur Cody, has a pending application, submitted on 4/8/09, for a Riparian Exception, Geologic Report Review and Soils Report Review to build a 25-foot long diversion wall; to retrofit the existing gabion baskets, retrofit the foundation for the dwelling, and address the other structural legality issues with the dwelling and detached structure. Most of the project site is located within the riparian corridor of Marshall Creek.

DETAILED PROJECT DESCRIPTION:

An existing gabion retaining wall is located along the channel of Marshall Creek immediately below the existing residence. The gabion wall was constructed without a permit and is currently distressed and failing. In March 2009 the project proposal included removal of the gabion wall, however removal of the wall is not recommended due to the disturbance involved with this work. Such disturbance and the associated mitigation were weighed against the option of retrofitting the existing gabion wall to prevent total failure of the wall. Retrofitting the existing wall is the preferred option to minimize disturbance and provide the necessary slope protection below an existing dwelling. The gabion wall will remain and be stabilized by building a new concrete retaining wall in front of the toe of the gabion wall. The new concrete retaining wall will be restrained with grouted tie back anchors.

As part of the gabion wall stabilization project, rock slope protection (RSP) will be placed on the slope upstream and downstream of the gabion wall. Rock will also be placed to create weirs within the channel of Marshall Creek. The rock will be excavated in a trench into bedrock within the channel to enable placement of the footer rock to an equal elevation of the thalweg. Installation of geotextile fabric will be placed on the slope prior to placement of the RSP. The RSP will then be backfilled with native streambed material and revegetated.

The existing residence is supported on a combination of pier and grade beam and spread footing foundation system. The downslope footing line closest to the creek consists of a concrete grade beam with drilled piers. The remaining foundation elements consist of shallow spread footings and isolated pier and post footings. Based on the geotechnical evaluation it was determined that portions of the shallow spread footing system should be retrofitted with drilled helix piers embedded into sandstone bedrock to mitigate for the potential for differential settlement.

The potential for a debris flow exists on the slopes above Marshall Creek. Debris flow material has the potential to flow through the gulch below the home. The project geologist recommends constructing a 4-foot high debris deflection wall to divert debris flow material around the residence.

The contractor will install and maintain a temporary water diversion system to dewater the project site and divert flows during construction in the stream channel. The diversion will be in place prior to commencement of in stream construction and will remain until the channel construction is complete and the site is stabilized against erosion or other potential water quality hazards.

The project includes detailed plans for grading, drainage, erosion control, access, and stream diversion.

Grading will be limited to foundation excavations for the debris diversion wall, foundation upgrade below the residence, RSP, rock weirs in Marshall Creek, and construction access. A grading permit is required for placement of fill on a slope and in a drainage course.

A Riparian Exception is required because most of the work would be located with the riparian corridor of Marshall Creek.

III. ENVIRONMENTAL REVIEW CHECKLIST

A. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
A. 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.	☐	☐	☒	☐
B. Strong seismic ground shaking?	☐	☐	☒	☐
C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
D. Landslides?	☐	☐	☒	☐

Discussion (A through D): The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001). However, the project site is located approximately 8.7 miles from the San Andreas fault, and approximately 2.3 miles from the Zayante-Vergeles fault. While the San Andreas fault is larger and considered more active, each fault is capable of generating moderate to severe ground shaking from a major earthquake. Consequently, large earthquakes can be expected in the future. The October 17, 1989 Loma Prieta earthquake (magnitude 7.1) was the second largest earthquake in central California history.

A Geologic Hazards Assessment for the project was prepared by Nolan Associates, dated January 23, 2009 (Attachment 3), and a geotechnical investigation was prepared by Dees & Associates, Inc., dated March 2009 (Attachment 5). These reports have been reviewed and accepted by the Environmental Planning Section of the Planning Department (Attachment 7). The reports conclude that fault rupture would not be a potential threat to the proposed development, and that seismic shaking can be managed by constructing with conventional spread footings or pier and grade beam foundation systems and by following the recommendations in the geologic and

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

geotechnical reports referenced above.

The geologic hazards assessment concluded that it would be prudent to construct a diversion wall to protect the lower floor of the existing residence from the landslide hazard from renewed landslide activity in the area of a 1986 landslide. Provided the diversion wall is constructed the geologic hazards assessment concludes that the existing residence would be subject to an "ordinary" risk with respect to expansion or reactivation of the 1986 landslide.

Based on the geologic and geotechnical evaluation the following requirements would be incorporated into the project as conditions of approval:

1. As recommended in the Geologic Hazards Assessment by Nolan Associates the project engineers shall review the findings of the report's seismic shaking evaluation and incorporate the findings into their analysis, where appropriate. All structures shall be designed to the most current building code standards.
2. As recommended in the Geologic Hazards Assessment by Nolan Associates a diversion wall shall be constructed along the uphill side of the residence on the parcel. The proposed wall location is depicted on Plate 1 of the report, and on the grading and drainage plans. The wall shall be at least four feet high, and shall be designed to deflect fluidized earth debris flowing down the Marshall Creek drainage.
3. Nolan Associates shall review final project plans for conformance with the recommendations of the Geologic Hazards Assessment.
4. Nolan Associates shall observe any excavations made during the course of implementing project plans, to evaluate the exposed conditions with respect to the geologic conditions summarized in the Geologic Hazards Assessment and to provide additional recommendations, if necessary.
5. Implementation of the additional requirements included in the review letter prepared by Environmental Planning staff (Attachment 7) will serve to further reduce the potential risk of seismic shaking and landslides.

2.	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?	☐	☐	☒	☐

Discussion: Based on the recommendation in the geologic hazards assessment a geotechnical engineer performed a slope stability analysis of the slope below the residence. The results of the analysis indicate the slope is stable, even without the gabion baskets.

The geotechnical report by Dees and Associates and their letter regarding gabion basket mitigation concluded that there is a potential risk to the dwelling from improperly

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

embedded foundations, erosion on the slope below the residence, debris flow impact as identified by the project geologist, and strong seismic shaking.

The following geotechnical requirements would be incorporated into the project as conditions of approval:

1. The recommendations contained in the geotechnical report and follow-up letter, regarding grading, foundations, drainage, and erosion control, will be implemented to reduce this potential hazard to a less than significant level.
2. Dees and Associates shall review final project plans for conformance with the recommendations of their geotechnical report and letter.
3. Dees and Associates shall observe and test grading operations and foundation excavations at the site to allow anticipated soil conditions to be correlated to those actually encountered in the field during construction.

3.	Develop land with a slope exceeding 30%?	☐	☐	☒	☐

Discussion: There are slopes that exceed 30% on the property. Grading, foundation, and drainage improvements are proposed on slopes in excess of 30% in order to protect an existing single family dwelling from geologic and geotechnical hazards. Conditions of approval listed in items 1 and 2 above, and item 4 below, address the slope hazards associated with the project.

4.	Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Discussion: Some potential for erosion exists during the construction phase of the project, and post construction because of steep slopes on the project site. Project plans address this potential with a detailed erosion control, access and diversion plans. The plan will includes provisions for treating disturbed areas with erosion control fabric and planting to minimize surface erosion and reclaim disturbed areas.

Conditions of approval listed below address the erosion hazard associated with the project:

1. During construction implement the Erosion Control, Access and Diversion Plan, Sheet C2 and details by Waterways Consulting.
2. Completion of the project shall include implementation of all final erosion control measures shown on the above cited plan and installation of all drainage improvements shown on the Grading and Drainage Plan, Sheet C1 and details by Waterways Consulting.

5.	Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007),	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
creating substantial risks to life or property?				

Discussion: The geotechnical report for the project did not identify any elevated risk associated with expansive soils.

6.	Place sewage disposal systems in areas dependent upon soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available?	☐	☐	☐	☒

Discussion: The project involves the repair of an existing dwelling with no impact on the existing septic system. The Department of Environmental Health has reviewed the existing septic system for adequacy for an existing two-bedroom dwelling.

7.	Result in coastal cliff erosion?	☐	☐	☐	☒

Discussion: The proposed project is not located in the vicinity of a coastal cliff or bluff; and therefore, would not contribute to coastal cliff erosion.

B. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1.	Place development 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?	☐	☐	☐	☒

Discussion: The property is outside the limits of mapping for the Federal Emergency Management Agency (FEMA) National Flood Insurance Program. However the gabion wall, and the proposed retrofit, is located at the toe of the slope on the banks of Marshall Creek, clearly within the floodplain of the creek. As non-residential structures (gabion wall, and retrofit) however there are no requirements due to the structure's location within the floodplain.

2.	Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?	☐	☐	☒	☐

Discussion: The property is outside the limits of mapping for the Federal Emergency Management Agency (FEMA) National Flood Insurance Program. However, the gabion wall, and the proposed retrofit, is located at the toe of the slope on the banks of Marshall Creek, clearly within the floodway of the creek. It has been determined that the carrying capacity of the creek will not be adversely affected, if the fill at the toe of the wall is removed. The project plans indicate removal of this fill as part of the retrofit

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

of the wall.

3. Be inundated by a seiche, tsunami, or mudflow? ☐ ☐ ☐ ☒

4. 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)? ☐ ☐ ☐ ☒

Discussion: The project involves geotechnical improvements on the site of an existing dwelling to protect the dwelling and Marshall Creek. There would be no impact on groundwater supplies.

5. Substantially degrade a public or private water supply? (Including the contribution of urban contaminants, nutrient enrichments, or other agricultural chemicals or seawater intrusion). ☐ ☐ ☐ ☒

1. ***Discussion***: The project involves geotechnical improvements on the site of an existing dwelling to protect the dwelling and Marshall Creek. The project plans include provisions for water quality protection during construction and measures to stabilize disturbed areas post construction. These include a diversion plan to dewater the construction site, erosion control, and designated access, fueling, parking, and concrete washout areas. Completion of the project would include implementation of all final erosion control measures and installation of all drainage improvements shown on the project plans (Attachment 2).

6. Degrade septic system functioning? ☐ ☐ ☐ ☒

Discussion: There is no indication that existing septic systems in the vicinity would be affected by the project.

7. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the ☐ ☐ ☒ ☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

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?

1. ***Discussion***: The proposed project would not alter the existing overall drainage pattern of the site. Department of Public Works Drainage Section staff has reviewed and approved the proposed drainage plan. To enable retrofit of the existing gabion wall the construction site would be dewatered during construction. Marshall Creek would be diverted into a pipe upstream of the construction site and released downstream of the construction site. The project would include removal of some fill at the toe of the gabion wall to restore pre-existing stream channel geometry. Boulder weirs would be placed in the disturbed channel area to help stabilized the channel and protect against post construction channel erosion.

8.	Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

Discussion: Drainage Calculations prepared by Waterways Consulting, dated 5/4/10, have been reviewed for potential drainage impacts and accepted by the Department of Public Works (DPW) Drainage Section staff. The calculations show that runoff volumes from existing impervious surfaces will be fully collected and adequately conveyed in properly sized pipes to energy dissipaters at the based of slopes. DPW staff has approved the drainage calculations. Refer to response B-5 for discussion of urban contaminants and/or other polluting runoff.

9.	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?	☐	☐	☐	☒

Discussion: The project does not involve a levee or dam.

10.	Otherwise substantially degrade water quality?	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

C. BIOLOGICAL RESOURCES

Would the project:

1.	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?	☐	☐	☒	☐

Discussion: According to the California Natural Diversity Data Base (CNDDB), maintained by the California Department of Fish and Game, there are no known special status plant or animal species in the site vicinity, and there were no special status species observed in the project area. Ecosystems West Consulting Group completed a Biotic Assessment (Attachment 10) and no candidate, sensitive, or special status species were observed in the vicinity of the project area.

Marshall Creek is a tributary to the San Lorenzo River, which provides habitat for steelhead (Oncorhynchus mykiss), federally listed as threatened, and coho salmon (O. kisutch), federally listed as endangered. Therefore it is important to protect water quality in Marshall Creek before it flows into the San Lorenzo River. See Section B for a discussion of water quality protection during construction and post construction.

2.	Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

Discussion: The project would take place within the riparian corridor of Marshall Creek. The purpose of the project is to stabilize a previously disturbed area. The project would not have a substantial adverse effect on the riparian corridor provided the project area, and surrounding riparian area on the property are cleared of invasive exotic plants (i.e. French broom) and reclaimed by planting native riparian plant species and mixed evergreen forest species. The condition of the riparian corridor in the project area is degraded from landsliding and efforts to protect the dwelling from landsliding (gabion wall). Completion of the project will provide long-term stream bank stability below the home. These improvements would protect the riparian corridor and the creek from impacts due to failure of an improperly designed and constructed gabion retaining wall. The additional placement of boulders at the upstream and

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

downstream margins of the retaining wall retrofit will include planting of riparian species in between the large boulders. Implementation of the water quality protection measures described in Section B would also serve to protect the riparian corridor from substantial adverse impacts both during construction and post construction.

Mitigation Measures

1. Submit a revegetation plan that includes planting all disturbed slope areas, including areas cleared of invasive exotic species, with native riparian species and mixed evergreen forest species.
2. The revegetation plan shall indicate areas of the property adjacent the house and within the riparian corridor would be cleared of invasive exotic species.

3.	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 or migratory wildlife nursery sites?	☐	☐	☒	☐

Discussion: If Marshall Creek has flow during construction of the project, it would have to be diverted to enable the construction of the retrofit of the gabion wall. The project plans include a stream diversion plan to temporarily divert the stream in a pipe through the construction site. Prior to installation of the stream diversion any fish present in the project area would have to be relocated by a qualified biologist in accordance with permit conditions from the California Department of Fish and Game and U.S. Army Corps of Engineers. Diversion of the stream through the project site will temporarily interfere with movement of fish through the section of Marshall Creek in the construction zone. However, this would not represent substantial interference because it is only temporary during construction. Construction of the gabion wall retrofit, requiring the stream diversion, is estimated to last approximately two months.

4.	Produce nighttime lighting that would substantially illuminate wildlife habitats?	☐	☐	☐	☒

1. ***Discussion***: The development area is adjacent to a riparian corridor, which could be adversely affected by a new or additional source of light that is not adequately deflected or minimized. No additional lighting sources are proposed, therefore there would be no impact.

5.	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.)	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

through direct removal, filling, hydrological interruption, or other means?

1. ***Discussion***: Because the project involves discharge of dredged or fill material into waters of the United States, the project requires authorization by the Corps of Engineers pursuant to Section 404 of the Clean Water Act. Waters of the United States include wetlands, tidal waters, lakes, ponds, rivers, and streams such as Marshall Creek. The installation of the temporary stream diversion, the rock slope protection, and the boulder weirs in and adjacent the channel of Marshall Creek would impact a water of the United States. As such, prior to commencement of work the project must obtain authorization from the Corps of Engineers through either a Nationwide or General Regional Permit

6.	Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?	☐	☐	☐	☒

Discussion: The project would not conflict with any local policies or ordinances.

7.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

D. AGRICULTURE AND FOREST 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. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1.	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?	☐	☐	☐	☒

Discussion: The project site does not contain any lands designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. In addition, the project does not contain Farmland of Local Importance. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. No impact would occur from project implementation.

2.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

Discussion: The project site is zoned Residential Agriculture (RA), which is not considered to be an agricultural zone. Additionally, the project site's land is not under a Williamson Act Contract. Therefore, the project does not conflict with existing zoning for agricultural use, or a Williamson Act Contract. No impact is anticipated.

3.	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒

Discussion: The project is not on or adjacent to land designated as Timber Resource.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The project would not result in the loss of forest land or conversion of forest land to non-forest use.

5. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Discussion: The project site and surrounding area does not contain any lands designated as Prime Farmland, Unique Farmland, Farmland of Statewide Importance or Farmland of Local Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. Therefore, no Prime Farmland, Unique Farmland, Farmland of Statewide, or Farmland of Local Importance would be converted to a non-agricultural use. In addition, the project site and surrounding area is not on or adjacent to land designated as Timber Resource. Therefore, no impacts are anticipated.

E. MINERAL RESOURCES

Would the project:

1. 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?	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2. 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?	☐	☐	☐	☒

Discussion: The project site is zoned residential, which is not considered to be an Extractive Use Zone (M-3) nor does it have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of this project.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

F. VISUAL RESOURCES AND AESTHETICS

Would the project:

1.	Have an adverse effect on a scenic vista?	☐	☐	☐	☒

Discussion: The project would not directly impact any public scenic resources, as designated in the County's General Plan (1994), or obstruct any public views of these visual resources.

2.	Substantially damage scenic resources, within a designated scenic corridor or public view shed area including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

Discussion: The project site is not located along a County designated scenic road, public viewshed area, scenic corridor, within a designated scenic resource area, or within a state scenic highway. Therefore, no impact is anticipated.

3.	Substantially degrade the existing visual character or quality of the site and its surroundings, including substantial change in topography or ground surface relief features, and/or development on a ridgeline?	☐	☐	☐	☒

Discussion: The existing visual setting is a private residential property along a creek. The existing dwelling is located on the stream bank. The project elements, including the diversion wall and the gabion wall retrofit, are needed to protect the existing dwelling from natural hazards. The project does not involve substantial change in topography or ground surface relief features that would substantially degrade the existing visual character of the site and its surroundings.

4.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Discussion: The project would not contribute a new source of night lighting to the visual environment. It should be noted that project conditions in Section C-4 have been included to help reduce the existing potential impact to a less than significant level.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

G. CULTURAL RESOURCES

Would the project:

1.	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	☐	☐	☐	☒

Discussion: The existing structures on the property are not designated as a historic resource on any federal, state or local inventory.

2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☐	☐	☒

Discussion: The riparian corridor of Marshall Creek is mapped as a potential archaeological resource area according the Santa Cruz County General Plan. However, the project would take place within previously heavily disturbed areas adjacent an existing dwelling. Archeological resources are not expected to occur during project activities. Pursuant to County Code Section 16.40.040, if at any time in the preparation for or process of excavating or otherwise disturbing the ground, any human remains of any age, or any artifact or other evidence of a Native American cultural site which reasonably appears to exceed 100 years of age are discovered, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

3.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

Discussion: Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Discussion: The project site is not located in an area mapped as a unique paleontological or geologic resource according the Santa Cruz County General Plan.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1. Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?	☐	☐	☒	☐

Discussion: The equipment used during construction of the project would involve routine use of fuel and other petroleum products and hydraulic fluids typically used by construction equipment. The project plans designate a fueling area that would be surrounded by containment berms to capture any hazardous materials should there be a spill during fueling or maintenance.

2. 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?	☐	☒	☐	☐

Discussion: Because the project would involve the use of construction equipment carrying fuel, oil and hydraulic fluid, in a riparian corridor any release of these hazardous materials in the riparian corridor, and potentially the waters of Marshall Creek, would by significant. To be prepared for such an event the contractor would need to have additional containment and absorbent materials on hand during construction to quickly isolate and clean up any spill. However, if all the equipment used is adequately maintained and properly operated such a scenario is unlikely. In addition, during construction Marshall Creek will be diverted through the project site in a pipe; therefore, in the unlikely event of a release of hazardous materials within the project area it is even more unlikely that the waters of Marshall Creek would be affected.

Mitigation Measure

1. To be prepared for a spill of fuel, oil and hydraulic fluid anywhere on the project site the contractor shall have additional containment and absorbent materials on hand during construction to quickly isolate and clean up any accidental spill.

3. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒

Discussion: The project would produce emissions from the use of standard construction equipment and it is not located with one-quarter mile of an existing or proposed school.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
4. 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?	☐	☐	☐	☒

Discussion: The project site is not included on the list of hazardous sites in Santa Cruz County compiled pursuant to the specified code.

5. 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?	☐	☐	☐	☒

Discussion: The project is not located within an airport land use plan or within two miles of a public airport or public use airport.

6. 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?	☐	☐	☐	☒

Discussion: The project is not within the vicinity of a private airstrip.

7. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

Discussion: the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

8. Expose people to electro-magnetic fields associated with electrical transmission lines?	☐	☐	☐	☒

Discussion: the project would not expose people to electro-magnetic fields associated with electrical transmission lines.

9. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Discussion: The project involves measures to protect an existing home from geologic and geotechnical hazards. As such, the project does not represent an exposure of people or structures to a significant risk of loss, injury or death involving wildland fires.

I. TRANSPORTATION/TRAFFIC

Would the project:

1.	Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒

Discussion: There would be no impact because no additional traffic would be generated.

2.	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?	☐	☐	☐	☒

Discussion: The project would not affect air traffic patterns.

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

Discussion: The project does not include any feature that would increase traffic hazards.

4.	Result in inadequate emergency access?	☐	☐	☐	☒

Discussion: The project does not involve any feature that would affect emergency

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

access.

5.	Cause an increase in parking demand which cannot be accommodated by existing parking facilities?	☐	☐	☐	☒

Discussion: The project does not cause an increase in parking demand.

6.	Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Discussion: The project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

7.	Exceed, either individually (the project alone) or cumulatively (the project combined with other development), a level of service standard established by the County General Plan for designated intersections, roads or highways?	☐	☐	☐	☒

Discussion: See response I-1 above.

J. NOISE

Would the project result in:

1.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Discussion: The project would create only a temporary increase in the existing noise environment associated with construction.

2.	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒

Discussion: Construction activities would generate groundborne vibration and noise levels, but this noise would be temporary during construction.

3.	Exposure of persons to or generation of noise levels in excess of standards	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

established in the General Plan or noise ordinance, or applicable standards of other agencies?

Discussion: The project would create only a temporary increase in the existing noise environment associated with construction.

4.	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

Discussion: Noise generated during construction would increase the ambient noise levels for adjoining areas. Construction would be temporary, however, and given the limited duration of this impact it is considered to be less than significant.

5.	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?	☐	☐	☐	☒

Discussion: The project is not located within an airport land use plan or within two miles of a public airport or public use airport,

6.	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?	☐	☐	☐	☒

Discussion: The project is not within the vicinity of a private airstrip.

K. AIR QUALITY

Where available, the significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) may be relied upon to make the following determinations. Would the project:

1.	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒

Discussion: The North Central Coast Air Basin does not meet state standards for ozone and particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors (Volatile Organic Compounds [VOCs] and nitrogen oxides [NO_x]), and dust.

Given the temporary use of standard construction equipment there is no indication that

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

temporary localized emissions of VOCs or NO_x would exceed MBUAPCD thresholds for these pollutants and therefore there would not be a significant contribution to an existing air quality violation.

Project construction may result in a short-term, localized decrease in air quality due to generation of dust. However, standard dust control best management practices, such as periodic watering, will be implemented during construction to reduce impacts to a less than significant level.

2.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒

Discussion: The project would not conflict with or obstruct implementation of the regional air quality plan. See K-1 above.

3.	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)?	☐	☐	☐	☒

Discussion: See K-1.

4.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒

Discussion: The project site is located in a rural residential area characterized by dense forest. This relatively minor construction project would not expose sensitive receptors (neighboring houses) to substantial pollutant concentrations.

5.	Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Discussion: The project would not create objectionable odors affecting a substantial number of people.

L. GREENHOUSE GAS EMISSIONS

Would the project:

1.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Discussion: The relatively minor construction activity associated with this project would not generate greenhouse gas emissions, either directly or indirectly, that would

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
have a significant impact on the environment.				
2. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Discussion: The project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases. The relatively minor construction activity associated with this project would not generate greenhouse gas emissions, either directly or indirectly, that would have a significant impact on the environment. The project would include a revegetation component to off set any loss of vegetation as a result of the construction of the project.

M. PUBLIC SERVICES

Would the project:

1. 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:				
a. Fire protection?	☐	☐	☐	☒
b. Police protection?	☐	☐	☐	☒
c. Schools?	☐	☐	☐	☒
d. Parks or other recreational activities?	☐	☐	☐	☒
e. Other public facilities; including the maintenance of roads?	☐	☐	☐	☒

Discussion (a through e): As the repair of an existing house the project would not create any additional need for services.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

N. RECREATION

Would the project:

1.	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?	☐	☐	☐	☒

Discussion: As the repair of an existing house the project would not project increase the use of existing neighborhood and regional parks or other recreational facilities.

2.	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?	☐	☐	☐	☒

Discussion: As the repair of an existing house the project would have no impact on recreational facilities.

O. UTILITIES AND SERVICE SYSTEMS

Would the project:

1.	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?	☐	☐	☐	☒

Discussion: Storm drainage calculations by Waterways Consulting dated May 4, 2010 determined pipe sizes necessary to convey all the collected runoff from roofs and other impervious surfaces to safe points of discharge near Marshall Creek. Department of Public Works Drainage staff have reviewed the drainage information and have approved the drainage plans for the project (Attachment XX).

2.	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?	☐	☐	☐	☒

Discussion: The house is served by an existing on-site sewage disposal system. The project does not include any elements that would impact the existing septic system.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒

Discussion: See O-2.

4. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒

Discussion: The existing water supply for the house would not be affected by the project.

5. Result in 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?	☐	☐	☐	☒

Discussion: See O-2.

6. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒

Discussion: The repair of an existing house would not represent an additional burden on the landfill.

7. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion: The project would comply with federal, state, and local statutes and regulations related to solid waste.

P. LAND USE AND PLANNING

Would the project:

1. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the	☐	☐	☐	☒

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

Discussion: The proposed project does not conflict with any regulations or policies adopted for the purpose of avoiding or mitigating an environmental effect.

2. Conflict with any applicable habitat conservation plan or natural community conservation plan? ☐ ☐ ☐ ☒

Discussion: The project would not conflict with any applicable habitat conservation plan or natural community conservation plan.

3. Physically divide an established community? ☐ ☐ ☐ ☒

Discussion: The project would not include any element that would physically divide an established community.

Q. POPULATION AND HOUSING
Would the project:

1. 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)? ☐ ☐ ☐ ☒

Discussion: The proposed project would no induce substantial population growth since the site is currently developed with one dwelling to remain.

2. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? ☐ ☐ ☐ ☒

Discussion: The proposed project would not displace any existing legal housing.

3. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? ☐ ☐ ☐ ☒

Discussion: The proposed project would not displace a substantial number of people since the site is currently developed with one dwelling to remain.

R. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
1. 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 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?	☐	☐	☒	☐

Discussion: 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 were considered in the response to each question in Section III of this Initial Study. Resources that have been evaluated as significant would be potentially impacted by the project include biological resources. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation includes the removal of invasive exotic species, revegetation of the project site, and preventing excessive nighttime lighting in the riparian corridor. In addition, the potential spill of hazardous materials from construction equipment in the riparian corridor would be mitigated by preparations for such a spill, in the unlikely event it occurs, with readily available containment and absorbent material. As a result of this evaluation, there is no substantial evidence that, after mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
2. 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)?	☐	☐	☐	☒

Discussion: In addition to project specific impacts, this evaluation considered the projects potential for incremental effects that are cumulatively considerable. As a result of this evaluation, there were determined to be no potentially significant cumulative effects due to the project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

	Potentially Significant Impact	Less than Significant with Mitigation	Less than Significant Impact	No Impact
3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion: In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III (Aesthetics, Air Quality, Geology and Soils, Hazards and Hazardous Materials, Hydrology and Water Quality, Noise, Population and Housing, and Transportation and Traffic). As a result of this evaluation, there were determined to be no potentially significant effects to human beings related to geology and soils. The project includes stabilizing the slope below the house and protecting the house from potential debris flow with a diversion wall. There is no substantial evidence that there are adverse effects to human beings associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. TECHNICAL REVIEW CHECKLIST

	REQUIRED	DATE COMPLETED
Agricultural Policy Advisory Commission (APAC) Review	Yes ☐ No ☒	
Archaeological Review	Yes ☐ No ☒	
Biotic Report/Assessment	Yes ☒ No ☐	7/29/10
Geologic Hazards Assessment (GHA)	Yes ☒ No ☐	6/30/10
Geologic Report	Yes ☐ No ☒	
Geotechnical (Soils) Report	Yes ☒ No ☐	6/30/10
Riparian Pre-Site	Yes ☐ No ☒	
Septic Lot Check	Yes ☐ No ☒	
Other:	Yes ☐ No ☒	

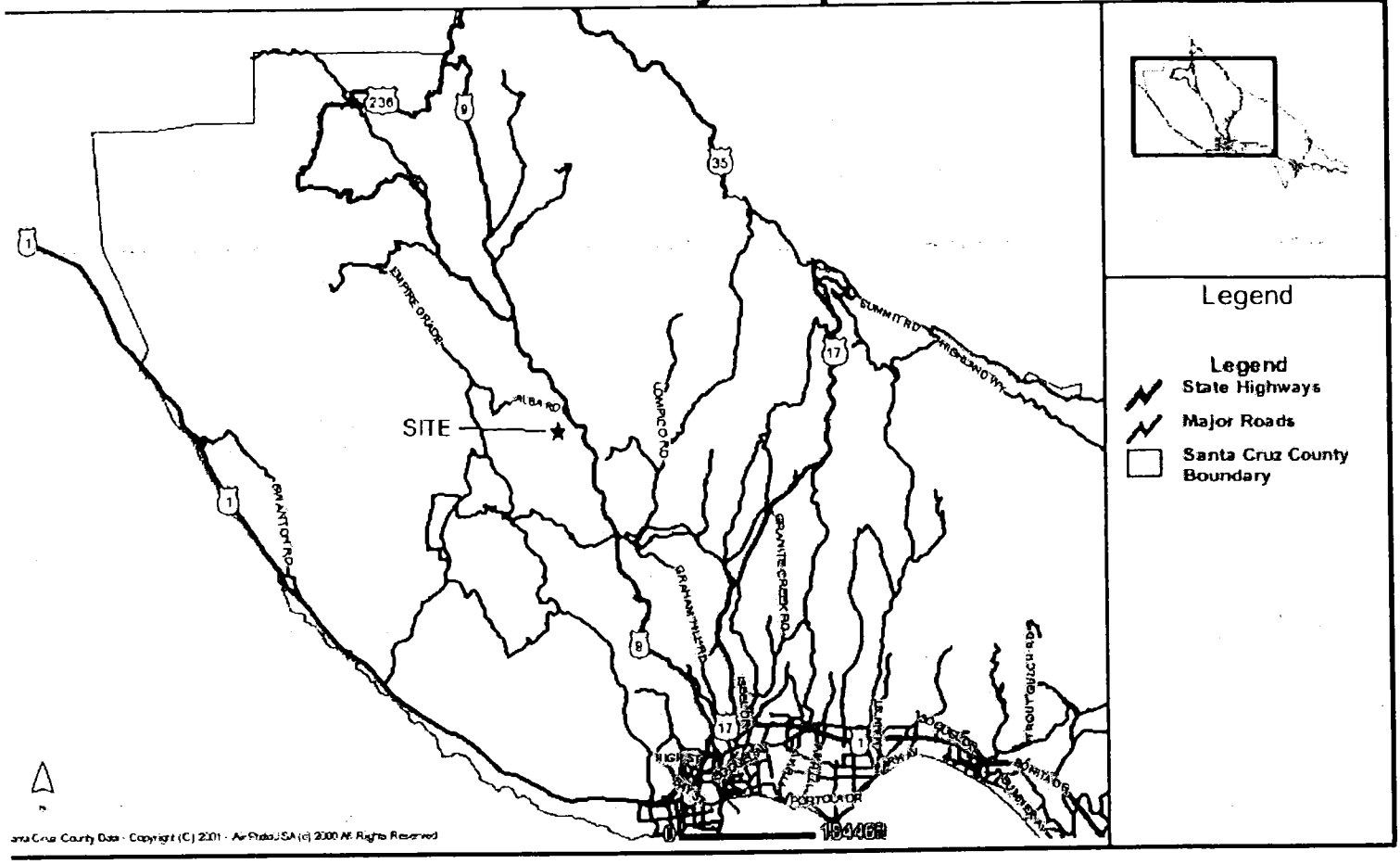
V. REFERENCES USED IN THE COMPLETION OF THIS ENVIRONMENTAL REVIEW INITIAL STUDY

County of Santa Cruz 1994.
1994 General Plan and Local Coastal Program for the County of Santa Cruz, California. Adopted by the Board of Supervisors on May 24, 1994, and certified by the California Coastal Commission on December 15, 1994.

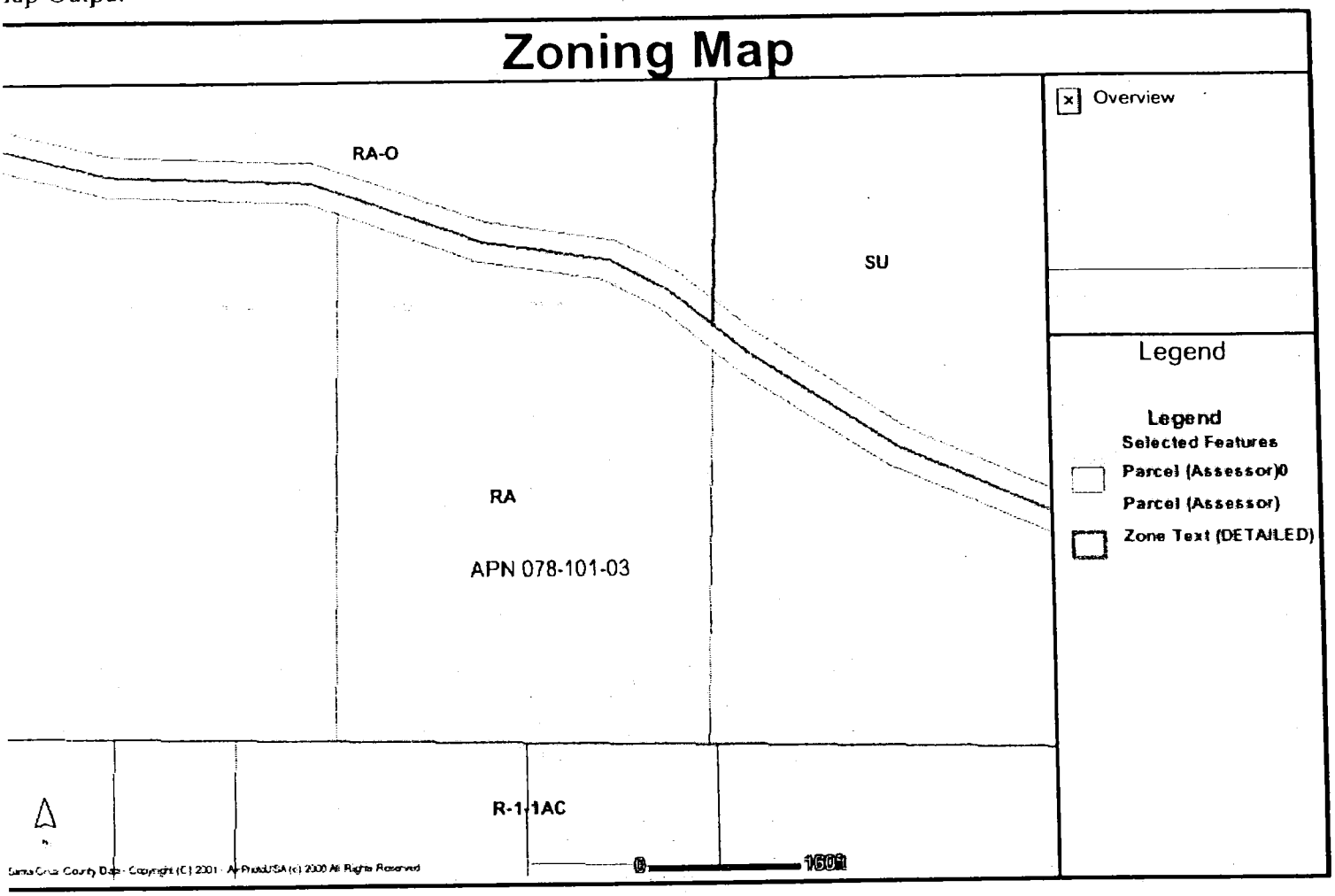
VI. ATTACHMENTS

1. *Vicinity Map, Map of Zoning Districts; Map of General Plan Designations; and Assessors Parcel Map.*
2. *Grading and Drainage Plans consisting of five sheets, (C1-C5), prepared by Waterways Consulting, dated 5/19/10.*
3. *Geologic Hazards Assessment (Conclusions, Recommendations), prepared by Nolan Associates, dated January 23, 2009*
4. *Letter from Nolan Associates dated March 29, 2010 regarding Gabion Wall Stabilization.*
5. *Geotechnical Investigation (Conclusions and Recommendations), prepared by Dees & Associates, Inc., dated March 2009.*
6. *Letter from Dees & Associates, Inc., dated March 23, 2009 (2010) regarding Proposed Gabion Basket Mitigation.*
7. *Geologic and Geotechnical Review Letter, prepared by Joe Hanna, County geologist, and Carolyn Banti, civil engineer dated June 30, 2010.*
8. *Discretionary Application Comments, dated June 29, 2010*
9. *Storm Drainage Calculations, prepared by Waterways Consulting, dated 5/4/2010*
10. *Biotic Assessment, prepared by Ecosystems West Consulting, dated July 29, 2010*

Vicinity Map

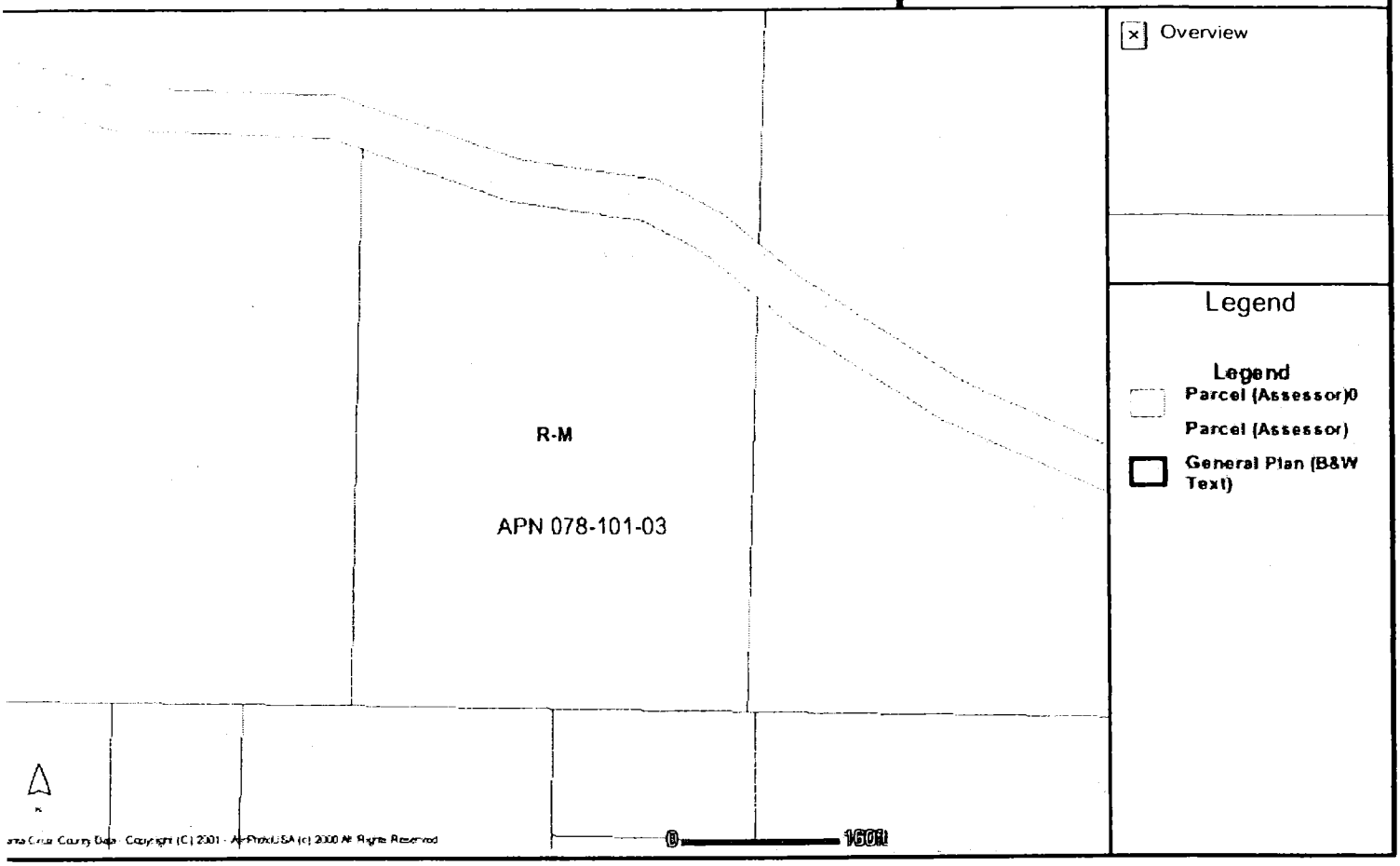


ATTACHMENT 1



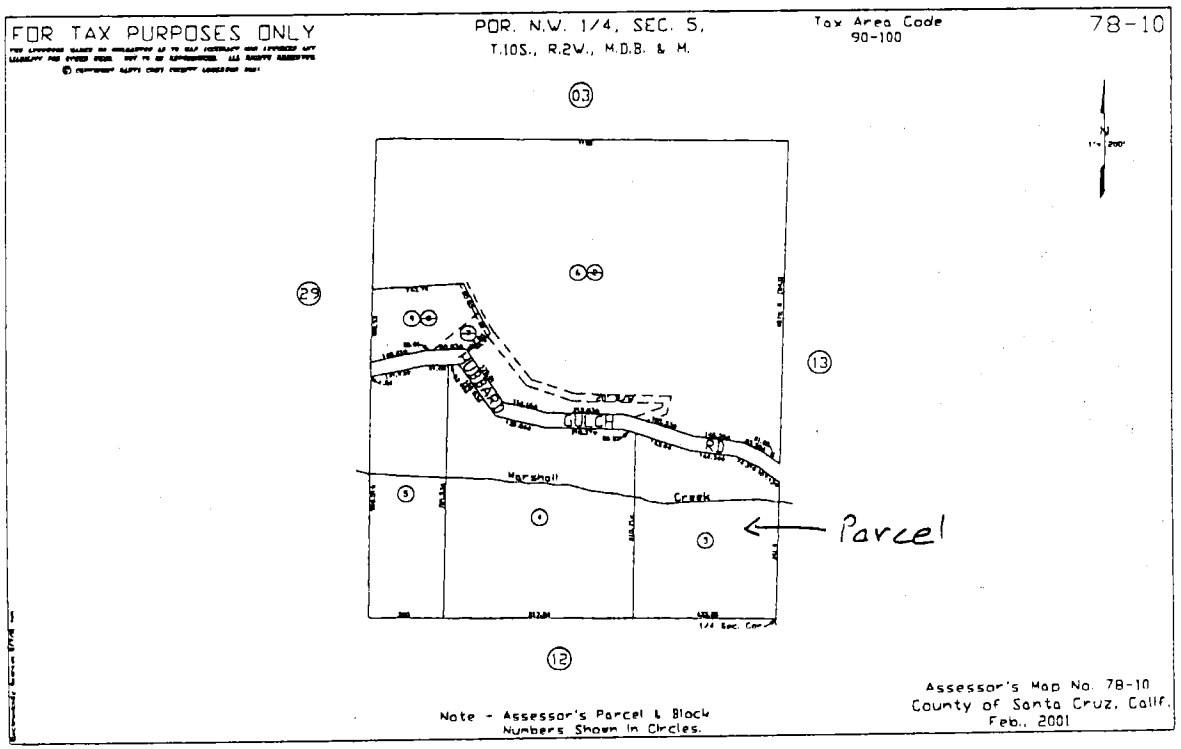
ATTACHMENT 1

General Plan Map

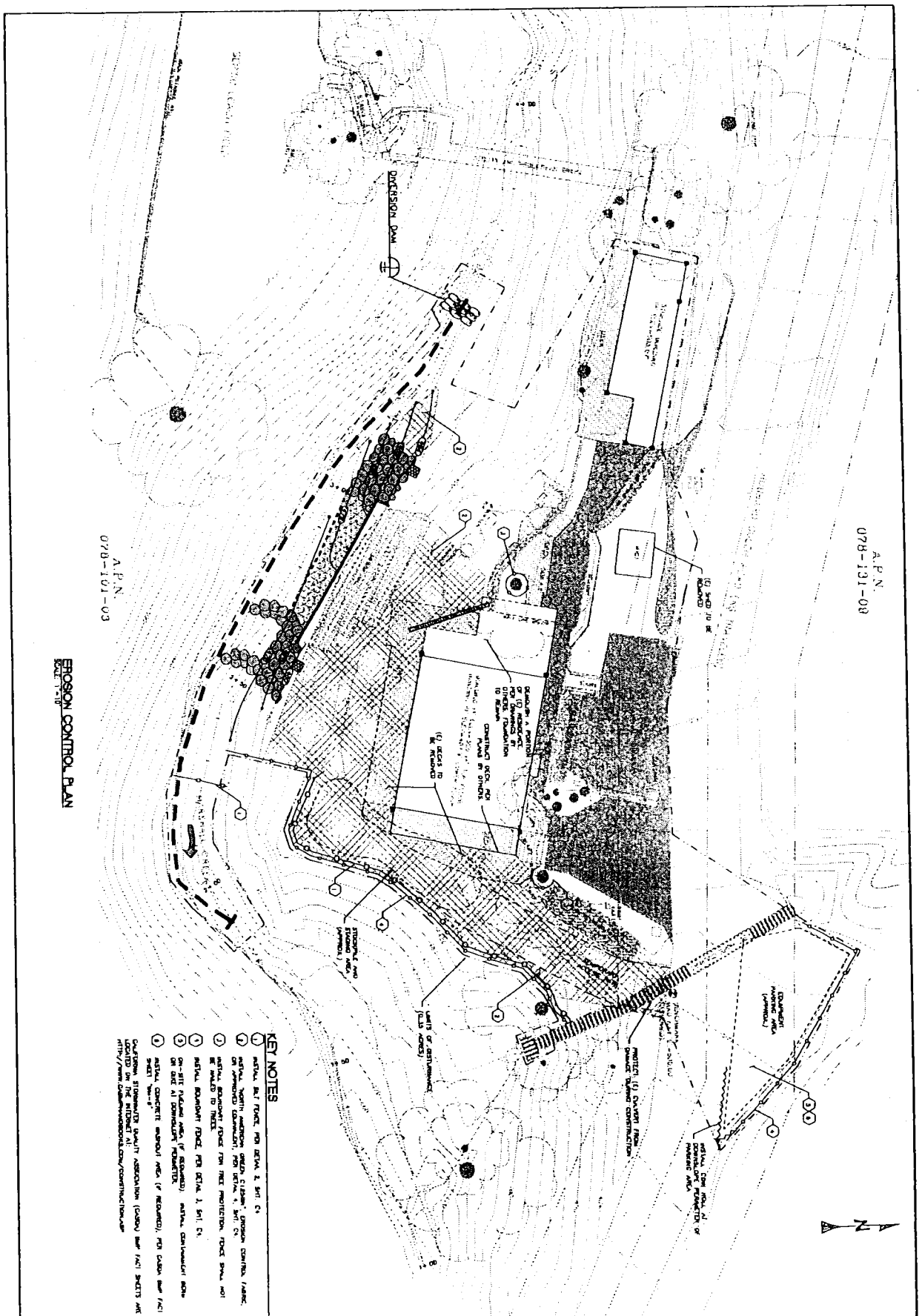


ATTACHMENT 1

ATTACHMENT 1



DRAINAGE NOTES
LEGEND
KEY NOTES
IMPERVIOUS AREAS
SITE PLAN
CODY RESIDENCE
A.P.N. 078-101-03
485 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA
GRADING AND DRAINAGE PLAN
PREPARED AT THE REQUEST OF:
ARTHUR CODY
380 FIELDBROOK LANE
WATSONVILLE, CA 95076
WATERWAYS CONSULTING INC
C1



C2

CODY RESIDENCE
A.P.N. 078-101-03

485 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA

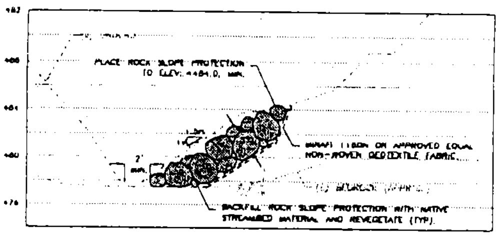
EROSION CONTROL ACCESS AND DIVERSION PLAN

PREPARED AT THE REQUEST OF:

ARTHUR CODY
380 FIELDBROOK LANE
WATSONVILLE, CA 95076

WATERWAYS CONSULTING INC.

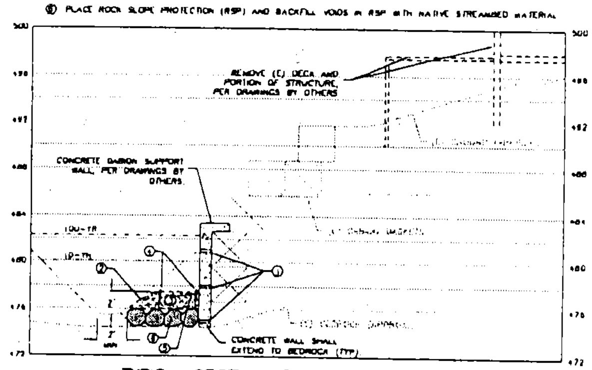
ATTACHMENT 2



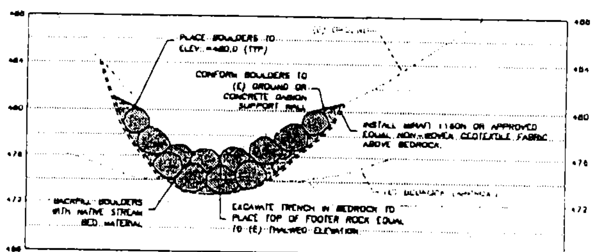
TYPICAL SECTION AT ROCK SLOPE PROTECTION (C / C3)
SCALE: 1"=5'

KEY NOTES

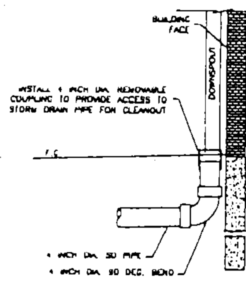
1. 3 INCH DIA. WEEP HOLES, PER DRAWINGS BY OTHERS.
2. WRAP SOIL LIFT IN DOUBLE LAYER OF EROSION CONTROL FABRIC. NONWOVEN COIR INNER LAYER SHALL BE "NORTH AMERICAN GREEN C 125BN", OR APPROVED EQUAL. WOVEN COIR OUTER LAYER SHALL BE "GEOCOIR DEKOWE 900" OR APPROVED EQUAL. SHINGLE SEAMS IN DOWNSTREAM DIRECTION AND PROVIDE A MINIMUM OF 12 INCHES OF OVERLAP. SECURE SEAM WITH WOOD STAKES AT 12 INCH O.C SPACING.
3. BACKFILL WITH NATIVE STREAMBED MATERIAL AND APPLY SEED MIX TO EXPOSED FACE BEFORE WRAPPING WITH FABRIC.
4. ANCHOR FABRIC WITH 18 INCH LONG WOODEN STAKES AT 3 FOOT O.C. SPACING (TYP).
5. FOLD FABRIC AT BACK OF LIFT TO PROVIDE ADDITIONAL ANCHORING STRENGTH.
6. PLACE ROCK SLOPE PROTECTION (RSP) AND BACKFILL VOIDS IN RSP WITH NATIVE STREAMBED MATERIAL.



TYPICAL SECTION AT GABION WALL (B / C3)
SCALE: 1"=5'

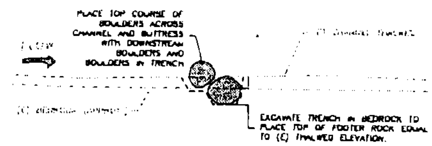


TYPICAL SECTION AT WEIR (A / C3)
SCALE: 1"=5'

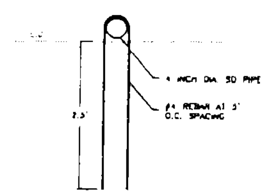


NOTE:
INSTALL SCREENS ON ALL DOWNSPOUTS

DOWNSPOUT CONNECTION (1 / C3)
SCALE: 1"=1'



TYPICAL PROFILE AT WEIR (B / C3)
SCALE: 1"=5'

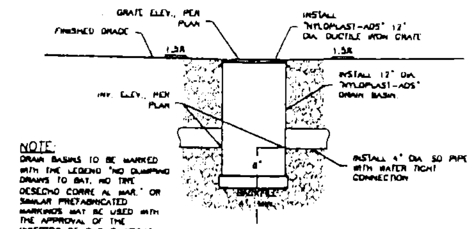


PIPE ANCHOR (3 / C3)
SCALE: 1"=1'

NOTES
1. THE INTENT OF THESE DETAILS IS TO AVOID ENCROACHING ON THE EXISTING CHANNEL GEOMETRY.
2. REVEGETATE RSP AND SOIL LIFT WITH A MIXTURE OF PLANTINGS FROM THE FOLLOWING PLANT LIST.

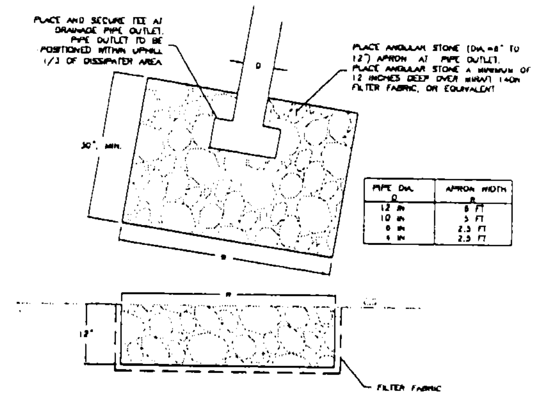
PLANT LIST		O.C. SPACING
Equisetum arvense	(Common horsetail)	2 FEET
Polypodium glycorrhiza	(Licorice Fern)	2 FEET
Polypodium californicum	(Calif. Polypody)	2 FEET
Polypodium scouleri	(Leather Fern)	2 FEET
Symphoricarpus albus	(Snowberry)	6 FEET
Acer macrophyllum	(Bigleaf maple)	10 FEET

3. HAND WATER PLANTINGS UNTIL WELL ESTABLISHED.



NOTE:
DRAIN BASINS TO BE MARKED WITH THE LEGEND "NO DUMPING DRAINS TO BAY, NO TIRE OCSECHO CORRE AL MAR." OR SIMILAR PREFABRICATED MARKINGS MAY BE USED WITH THE APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.
THESE MARKING SHALL BE MAINTAINED BY THE PROPERTY OWNER.

DRAIN BASIN (2 / C3)
SCALE: 1"=1'



PIPE DIA. D	APRON WIDTH a
12 in	6 FT
10 in	5 FT
8 in	2.5 FT
4 in	2.5 FT

ENERGY DISSIPATER (4 / C3)
SCALE: 1"=1'

WATERWAYS CONSULTING INC
4036 SWIFT ST. SANTA CRUZ, CA 95060

PREPARED AT THE REQUEST OF:
ARTHUR CODY
380 FIELDBROOK LANE
WATSONVILLE, CA 95076

SECTIONS AND DETAILS

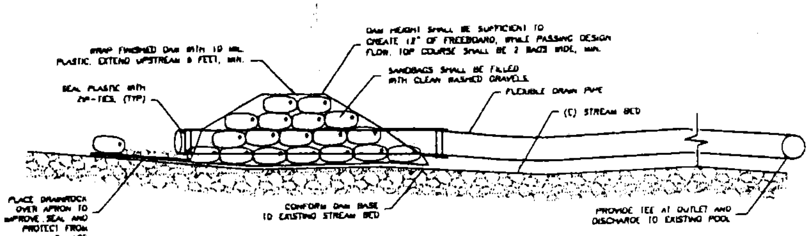
CODY RESIDENCE
A.P.N. 078-101-03
485 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA

DESIGNED BY: B.W.S.
DRAWN BY: B.W.S.
CHECKED BY: W.R.R.
DATE: 5/19/10
JOB NO.: 10-005

BAR IS ONE INCH ON ORIGINAL DRAWING. ADJUST SCALES FOR REDUCED PLOTS

C3

ACHMENT 2



DIVERSION DAM PROFILE (1)
SCALE: 1"=3'

DIVERSION NOTES

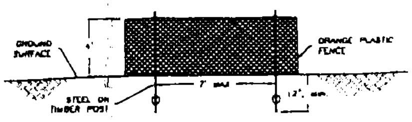
1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN A TEMPORARY WATER DIVERSION SYSTEM TO DEWATER THE PROJECT SITE AND DIVERT FLOWS DURING CHANNEL CONSTRUCTION. THE DIVERSION SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF IN STREAM CONSTRUCTION AND SHALL REMAIN UNTIL THE CHANNEL CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED AGAINST EROSION OR OTHER POTENTIAL WATER QUALITY HAZARDS.

THE DIVERSION SHALL BE CAPABLE OF PASSING A MINIMUM OF 3 CFS.

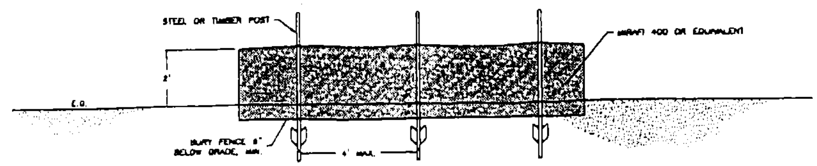
2. CONTRACTOR SHALL SUBMIT A DIVERSION PHASING PLAN TO THE ENGINEER FOR WRITTEN APPROVAL BEFORE INSTALLATION OF DIVERSION.
3. PRIOR TO DIVERSION OR DEWATERING, THE CONTRACTOR SHALL ENSURE THAT ALL FISH HAVE BEEN REMOVED FROM THE AFFECTED AREAS, IN ACCORDANCE WITH THE CONDITIONS OF THE PERMITS AND THESE DRAWINGS.
4. CONTRACTOR SHALL PROVIDE FLEXIBLE PIPE(S) WITH CAPACITY TO DIVERT THE FLOWS PRESENT AT THE TIME CONSTRUCTION BEGINS, WITH A MINIMUM OF 12 INCHES OF FREEBOARD. BYPASS PIPES SHALL HAVE A MINIMUM DIAMETER OF 10 INCHES TO MINIMIZE THE LIKELIHOOD OF CLOGGING BY DEBRIS. CONTRACTOR SHALL BE RESPONSIBLE FOR PIPE SELECTION AND INSTALLATION AT THE APPROPRIATE SLOPES AND GRADES TO SUCCESSFULLY DIVERT FLOWS AROUND THE CHANNEL CONSTRUCTION AREA AS NECESSARY TO ENABLE CHANNEL CONSTRUCTION AND PROTECT WATER QUALITY. TRASH RACKS SHALL BE PLACED ON THE PIPE INLET(S) TO PREVENT DEBRIS FROM CLOGGING THE DIVERSION. CONTRACTOR SHALL PLACE ROCK AT THE INLET AND OUTLET AS NECESSARY TO PREVENT EROSION. THE DIVERSION PIPES SHALL BE HELD IN PLACE USING REBAR STAKES AND BALING WIRE, OR OTHER METHODS AS APPROVED BY THE ENGINEER.
5. THE DIVERSION DAM SHALL BE CONSTRUCTED USING HALF-FILLED SANDBAGS. SANDBAG FILL SHALL BE CLEAN, WASHED SANDS AND GRAVELS. THE DAM SHALL BE WRAPPED IN 6 MIL PLASTIC TO PREVENT SEEPAGE. THE DAM CREST SHALL BE MINIMUM TWO BAGS WIDE, AT THE CREST. THE DIVERSION PIPES SHALL EXTEND THROUGH THE DAM.
6. CONTRACTOR MAY USE AN ALTERNATIVE DIVERSION METHOD, SUCH AS AN INFLATABLE DAM THAT SATISFIES THE OBJECTIVES ABOVE, WITH THE WRITTEN APPROVAL OF THE ENGINEER AND THE REVIEWING AGENCIES. ALTERNATIVE METHODS SHALL NOT REQUIRE PUMPING OR OTHER MECHANICAL DEVICES AS THE PRIMARY MEANS OF DIVERSION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING WATER QUALITY IN STRICT ACCORDANCE WITH THE PERMIT REQUIREMENTS AND THESE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND OPERATION OF THE DIVERSION AT ALL TIMES.
8. PUMPING SHALL BE ALLOWED FOR DEWATERING SPECIFIC AREAS AS DESCRIBED IN THE DEWATERING NOTES BELOW.
9. CONTRACTOR MAY RELOCATE DIVERSION PIPES DURING CONSTRUCTION, AS NECESSARY TO PERFORM SITE GRADING AND CHANNEL CONSTRUCTION.
10. CONTRACTOR SHALL CONSTRUCT TEMPORARY RAMPS OR CABINGS OVER DIVERSION PIPE AS NECESSARY TO ALLOW CONSTRUCTION ACCESS AND TO PROTECT DIVERSION PIPES.
11. FOLLOWING RECEIPT OF WRITTEN AUTHORIZATION FROM THE ENGINEER INDICATING REVIEW AND APPROVAL OF WORK, THE CONTRACTOR SHALL REMOVE THE DIVERSION WORKS IN THE REVERSE ORDER OF INSTALLATION AND SHALL RESTORE ANY DISTURBED AREAS.

EMERGENCY PROCEDURES:
12. MAINTAIN CLOSE ATTENTION TO FLOWS AND FORECASTED WEATHER CONDITIONS DURING CONSTRUCTION. SHOULD A RAIN EVENT BE FORECAST OR INCREASED FLOWS BE PREDICTED FROM FIELD OBSERVATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING ALL NECESSARY MEASURES TO PREPARE THE SITE. MEASURES SHALL INCLUDE, AT A MINIMUM: REMOVAL OF ALL MACHINERY AND TOOLS FROM THE CHANNEL, CONSTRUCTION OF TEMPORARY GRAVEL/COBBLE BERMS TO ISOLATE DISTURBED AREAS CONTAINING ERODE ABLE SOILS, PREPARATION OF A SAFE AND STABLE FLOW PATH THROUGH THE CONSTRUCTION SITE, AND ANY OTHER MEASURES NECESSARY TO PROTECT WATER QUALITY, AS APPROVED BY THE ENGINEER.

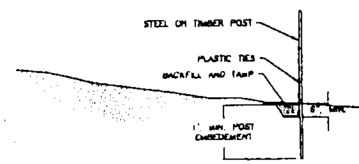
DEWATERING PROCEDURES:
13. SOME PUMPING MAY BE REQUIRED TO DEWATER THE SITE. PUMPING SHALL ONLY BE USED TO REMOVE SEEPAGE AND GROUNDWATER FROM THE CONSTRUCTION AREA, NOT AS A PRIMARY MEANS OF DIVERTING THE CREEK. PUMPED WATER SHALL BE DISCHARGED THROUGH APPROPRIATELY SIZED FILTER BAGS TO MEET WATER QUALITY STANDARDS, TO THE SATISFACTION OF THE ENGINEER. LOCATE FILTER BAGS IN A DEPRESSED GRASSY AREA ALONG THE SOUTH BANK OF THE CHANNEL.



BOUNDARY FENCE DETAIL (3)
SCALE: 1"=4'

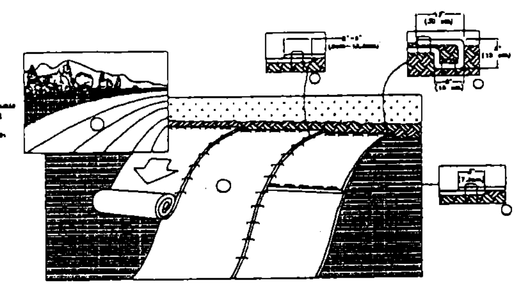


SILT FENCE NOTES
1. DIG TRENCH FIRST, THEN ERECT FENCE IN TRENCH. BACKFILL AND COMPACT SOIL TO SECURE FABRIC.
2. PROVIDE 1' MINIMUM OVERLAP AT FENCE SPLICES.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS.
4. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE ACCUMULATED SEDIMENT, TO AN APPROVED AREA.
5. ALL FENCE TERMINATIONS SHOULD BE TURNED UPSLOPE TO PREVENT FLANKING.



SILT FENCE DETAIL (2)
SCALE: 1"=2'

NORTH AMERICAN GREEN
EROSION CONTROL PRODUCTS
ENGINEERED SOLUTIONS



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP's IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) APART ACROSS THE WIDTH OF THE RECP's.
3. ROLL THE RECP's (A.) DOWN OR (B.) HORIZONTALLY ACROSS THE SLOPE. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL RECP's MUST BE STAPLED WITH APPROXIMATELY 2" - 5" (5 CM - 12.5 CM) OVERLAP DEPENDING ON RECP's TYPE.
5. CONSECUTIVE RECP's SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5 CM) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30 CM) APART ACROSS ENTIRE RECP's WIDTH.

NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY SECURE THE RECP's.

EROSION CONTROL FABRIC DETAIL (4)
SCALE: N.T.S.

WATERWAYS CONSULTING INC	403B SWIFT ST. SANTA CRUZ, CA 95060 WWW.WATWAYS.COM
PREPARED AT THE REQUEST OF:	ARTHUR CODY 380 FIELDBROOK LANE WATSONVILLE, CA 95076
DETAILS	
CODY RESIDENCE A.P.N. 078-101-03	485 HUBBARD GULCH ROAD BEN LOMOND, CALIFORNIA
DESIGNED BY: B.H.S. DRAWN BY: B.H.S. CHECKED BY: B.H.S. DATE: 3/19/10 JOB NO.: 10-005	BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS
C4	

ATTACHMENT 2

GENERAL NOTES

1. TOPOGRAPHIC MAPPING PROVIDED BY:
   BOWMAN AND WILLIAMS
   1011 CEDAR STREET
   SANTA CRUZ, CA 95060
   (831) 426-3560
   JOB No. 23899

2. AFFECTED APN'S:
   078-101-03

3. ELEVATION DATUM. ELEVATIONS SHOWN HEREON ARE BASED ON AN ASSUMED DATUM. BENCHMARK IS A MAG NAIL SET IN HUBBARD GULCH ROAD, EL.=500.00' (ASSUMED)

4. ELEVATIONS AND DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF. CONTOUR INTERVAL IS 2 FEET

5. THIS IS NOT A BOUNDARY SURVEY. PROPERTY LINES, IF SHOWN, WERE COMPILED FROM RECORD INFORMATION AND FROM FIELD TIES TO EXISTING BOUNDARY MONUMENTATION. THE LOCATION OF THESE LINES IS SUBJECT TO CHANGE, PENDING THE RESULTS OF A COMPLETE BOUNDARY SURVEY.

6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CURRENT EDITION OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS FOR CONSTRUCTION OF LOCAL STREETS AND ROADS (HEREAFTER REFERRED TO AS "STANDARD SPECIFICATIONS".

7. THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION. THE ENGINEER OR A DESIGNATED REPRESENTATIVE SHALL MONITOR THE CONSTRUCTION PROCESS, AS NECESSARY, TO ENSURE PROPER INSTALLATION PROCEDURES.

8. EXISTING UNDERGROUND UTILITY LOCATIONS:

   PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL CONTACT ALL UTILITIES COMPANIES WITH REGARD TO WORKING OVER, UNDER, OR AROUND EXISTING FACILITIES AND TO OBTAIN INFORMATION REGARDING RESTRICTIONS THAT ARE REQUIRED TO PREVENT DAMAGE TO THE FACILITIES.

   LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY THE APPROPRIATE UTILITY AGENCIES AND FROM FIELD MEASUREMENTS TO ABOVE GROUND FEATURES READILY VISIBLE AT THE TIME OF SURVEY. LOCATIONS SHOWN ARE APPROXIMATE. THE CONTRACTOR IS CAUTIONED THAT ONLY ACTUAL EXCAVATION WILL REVEAL THE DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND DEPTH OF UNDERGROUND UTILITIES.

   THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE LOCATION AND/OR PROTECTION OF ALL EXISTING AND PROPOSED PIPING, UTILITIES, TRAFFIC SIGNAL EQUIPMENT (BOTH ABOVE GROUND AND BELOW GROUND), STRUCTURES, AND ALL OTHER EXISTING IMPROVEMENTS THROUGHOUT CONSTRUCTION.

   PRIOR TO COMMENCING FABRICATION OR CONSTRUCTION, CONTRACTOR SHALL DISCOVER OR VERIFY THE ACTUAL DIMENSIONS, SIZES, MATERIALS, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS ARE LIKELY OR DATA IS OTHERWISE INCOMPLETE.

   CONTRACTOR SHALL TAKE APPROPRIATE MEASURES TO PROTECT EXISTING UTILITIES DURING CONSTRUCTION OPERATIONS, AND SHALL BE SOLELY RESPONSIBLE FOR THE COST OF REPAIR/REPLACEMENT OF ANY EXISTING UTILITIES DAMAGED DURING CONSTRUCTION. CONTRACTOR TO CALL UNDERGROUND SERVICE ALERT (1-800-642-2444) TO LOCATE ALL UNDERGROUND UTILITY LINES PRIOR TO COMMENCING CONSTRUCTION.

   UPON LEARNING OF THE EXISTENCE AND/OR LOCATIONS OF ANY UNDERGROUND FACILITIES NOT SHOWN OR SHOWN INACCURATELY ON THE PLANS OR NOT PROPERLY MARKED BY THE UTILITY OWNER, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY OWNER AND THE CITY BY TELEPHONE AND IN WRITING.

   UTILITY RELOCATIONS REQUIRED FOR THE CONSTRUCTION OF THE PROJECT FACILITIES WILL BE PERFORMED BY THE UTILITY COMPANY, UNLESS OTHERWISE NOTED.

9. SHOULD THE CONTRACTOR DISCOVER ANY DISCREPANCIES BETWEEN THE CONDITIONS EXISTING IN THE FIELD AND THE INFORMATION SHOWN ON THESE DRAWINGS, HE SHALL NOTIFY THE ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.

10. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE FULLY INFORMED OF AND TO COMPLY WITH ALL LAWS, ORDINANCES, CODES, REQUIREMENTS AND STANDARDS WHICH IN ANY MANNER AFFECT THE COURSE OF CONSTRUCTION OF THIS PROJECT, THOSE ENGAGED OR EMPLOYED IN THE CONSTRUCTION AND THE MATERIALS USED IN THE CONSTRUCTION.

11. PROJECT SCHEDULE: PRIOR TO COMMENCEMENT OF WORK, CONTRACTOR SHALL PROVIDE ENGINEER A DETAILED CONSTRUCTION SCHEDULE FOR APPROVAL. THE CONTRACTOR SHALL NOT BEGIN ANY CONSTRUCTION WORK UNTIL THE PROJECT SCHEDULE AND WORK PLAN IS APPROVED BY THE ENGINEER. ALL CONSTRUCTION SHALL BE CLOSELY COORDINATED WITH THE ENGINEER SO THAT THE QUALITY OF WORK CAN BE CHECKED FOR APPROVAL. THE CONTRACTOR SHALL PURSUE WORK IN A CONTINUOUS AND DILIGENT MANNER TO ENSURE A TIMELY COMPLETION OF THE PROJECT.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DESIGN, PERMITTING, INSTALLATION, AND MAINTENANCE OF ANY AND ALL TRAFFIC CONTROL MEASURES DEEMED NECESSARY.

13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS AND CODES. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING, AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND PROVIDE FOR THE PROPER AND SAFE ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE PROVISIONS OF OSHA IN THE CONSTRUCTION PRACTICES FOR ALL EMPLOYEES DIRECTLY ENGAGED IN THE CONSTRUCTION OF THIS PROJECT.

14. CONSTRUCTION CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONSTRUCTION CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONSTRUCTION CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD DESIGN PROFESSIONAL HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTION LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF DESIGN PROFESSIONAL. NEITHER THE PROFESSIONAL ACTIVITIES OF CONSULTANT NOR THE PRESENCE OF CONSULTANT OR HIS OR HER EMPLOYEES OR SUB-CONSULTANTS AT A CONSTRUCTION SITE SHALL RELIEVE THE CONTRACTOR AND ITS SUBCONTRACTORS OF THEIR RESPONSIBILITIES INCLUDING, NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND APPLICABLE HEALTH OR SAFETY REQUIREMENTS OF ANY REGULATORY AGENCY OR OF STATE LAW.

15. THE CONTRACTOR SHALL MAINTAIN A CURRENT, COMPLETE, AND ACCURATE RECORD OF ALL AS-BUILT DEVIATIONS FROM THE CONSTRUCTION AS SHOWN ON THESE DRAWINGS AND SPECIFICATIONS, FOR THE PURPOSE OF PROVIDING THE ENGINEER OF RECORD WITH A BASIS FOR THE PREPARATION OF RECORD DRAWINGS.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. ALL MATERIALS SHALL BE STORED WITHIN APPROVED STAGING AREAS.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AT HIS EXPENSE, ALL REQUIRED PERMITS NOT PREVIOUSLY OBTAINED BY THE OWNER. THE CONTRACTOR SHALL PROVIDE, AT HIS EXPENSE, ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLY WITH ALL APPLICABLE PERMIT CONDITIONS AND REQUIREMENTS.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND PRESERVATION OF ALL SURVEY MONUMENTS OR PROPERTY CORNERS. DISTURBED MONUMENTS SHALL BE RESTORED BACK TO THEIR ORIGINAL LOCATION AND SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER OR LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.

EARTHWORK NOTES

1. ALL GRADING SHALL COMPLY WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATION, AND WITH THE APPLICABLE REQUIREMENTS OF THE SANTA CRUZ COUNTY GRADING ORDINANCE. REFER TO GEOTECHNICAL INVESTIGATION BY:

OEES & ASSOCIATES, INC.
501 MISSION STREET, SUITE 8A
SANTA CRUZ, CA 95060
(831) 427-1770
PROJECT No. SCR-0345

PRIOR TO PERFORMING ANY WORK, THE CONTRACTOR SHALL BE FAMILIAR WITH THE GEOTECHNICAL INVESTIGATION. IN THE EVENT OF DISCREPANCY BETWEEN THE REPORT AND THE NOTES HEREON, THE REPORT SHALL PREVAIL. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VISIT THE SITE AND MAKE HIS OWN INTERPRETATIONS WITH REGARD TO MATERIALS, METHODS AND EQUIPMENT NECESSARY TO PERFORM THE WORK REQUIRED FOR THIS PROJECT.

2. GRADING SUMMARY:

TOTAL CUT VOLUME	=	70 CY
TOTAL FILL VOLUME	=	71 CY (45 CY IMPORTED ROCK)
NET CUT (OFFHAUL)	=	44 CY

THE ABOVE QUANTITIES ARE APPROXIMATE VOLUMES CALCULATED FROM THE DIMENSIONS SHOWN ON THE DRAWINGS.

THE ABOVE QUANTITIES HAVE BEEN CALCULATED FOR PERMITTING PURPOSES ONLY AND HAVE NOT BEEN FACTORED TO INCLUDE ALLOWANCES FOR BULKING, CLEARING AND GRUBBING, SUBSIDENCE, SHRINKAGE, OVER EXCAVATION, AND RECOMPACTION, UNDERGROUND UTILITY AND SUBSTRUCTURE SPOILS AND CONSTRUCTION METHODS.

THE CONTRACTOR SHALL PERFORM AN INDEPENDENT EARTHWORK ESTIMATE FOR THE PURPOSE OF PREPARING BID PRICES FOR EARTHWORK. THE BID PRICE SHALL INCLUDE COSTS FOR ANY NECESSARY IMPORT AND PLACEMENT OF EARTH MATERIALS OR THE EXPORT AND PROPER DISPOSAL OF EXCESS EARTH MATERIALS.

3. ALL EXCESS SOILS SHALL BE REMOVED TO AN APPROVED DUMP SITE OR DISPOSED OF ON SITE AT A LOCATION TO BE APPROVED BY THE ENGINEER, IN A MANNER THAT WILL NOT CAUSE EROSION.

EROSION CONTROL NOTES

1. THE EROSION CONTROL PLAN SHOWN IS INTENDED FOR THE SUMMER CONSTRUCTION SEASON (APRIL 15TH TO OCTOBER 15TH). IF THE DRAINAGE FEATURES SHOWN ON THESE DRAWINGS ARE NOT COMPLETED AND DISTURBED AREAS STABILIZED BY OCTOBER 1ST, CONSULT THE ENGINEER FOR ADDITIONAL RAINY SEASON EROSION CONTROL MEASURES.

2. PRIOR TO COMMENCING WORK, ALL AREAS TO REMAIN UNDISTURBED SHALL BE PROTECTED WITH TEMPORARY BOUNDARY FENCING, PER DETAIL 3, SHT. C4.

3. STOCKPILE AREA SHOWN IS APPROXIMATE. SILT FENCING SHALL BE INSTALLED ON THE DOWNSLOPE PERIMETER OF THE STOCKPILE AREA.

4. CONSTRUCT AND MAINTAIN EROSION CONTROL MEASURES TO PREVENT THE DISCHARGE OF EARTHEN MATERIALS FROM DISTURBED AREAS UNDER CONSTRUCTION AND FROM COMPLETED CONSTRUCTION AREAS. PRIOR TO OCTOBER 1ST, ALL DISTURBED AREAS SHALL BE STABILIZED, WINTERIZED, AND VEGETATED WITH THE FOLLOWING EROSION CONTROL SEED MIX:

SEED TYPE	SEED APPLICATION RATE
HORDEUM BRACHYANTHERUM (MEADOW BARLEY)	8 LB/ACRE
BROMUS CARINATUS (CALIFORNIA BROME)	7 LB/ACRE
FESCUTA RUBRA (RED FESCUE)	10 LB/ACRE

FOLLOWING SEED APPLICATION, RAKE SURFACES LIGHTLY, APPLY AMMONIUM PHOSPHATE AT 250 LB/ACRE, AND COVER WITH 2 INCHES OF STRAW MULCH.

5. ALL PROTECTIVE DEVICES SHALL BE IN PLACE AT LEAST 24 HOURS PRIOR TO A 30% CHANCE OF FORCASTED RAIN AS REPORTED BY NOAA (http//www.weather.gov).

6. THE CONTRACTOR IS RESPONSIBLE TO KEEP IN FORCE ALL EROSION CONTROL DEVICES AND TO MODIFY THOSE DEVICES AS SITE PROGRESS DICTATES.

7. THE CONTRACTOR SHALL MONITOR THE EROSION CONTROL DEVICES DURING STORMS AND MODIFY THEM IN ORDER TO PREVENT PROGRESS OF ANY ONGOING EROSION.

8. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CLEANING ANY EROSION OR DEBRIS SPILLING ONTO A PUBLIC STREET.

9. THE CONTRACTOR SHALL CONTACT THE ENGINEER IN THE EVENT THAT THE EROSION CONTROL PLAN AS DESIGNED REQUIRES ANY SUBSTANTIAL REVISIONS

10. ALL SITE WORK TO COMPLY WITH APPLICABLE SANTA CRUZ COUNTY CODES AND ORDINANCES.

11. 48 HOUR NOTICE SHALL BE GIVEN TO ENVIRONMENTAL PLANNING AT 454-3168 PRIOR TO COMMENCING WORK, AND UPON COMPLETION OF GRADING AND EROSION CONTROL. FAILURE TO COMPLY WILL RESULT IN ISSUANCE OF A STOP WORK ORDER.

ROCK SLOPE PROTECTION NOTES

1. ROCK SLOPE PROTECTION MAY BE SALVAGED AND REUSED, PROVIDED IT MEETS THE MATERIAL SPECIFICATIONS AND GRADATION FOR THE SPECIFIED APPLICATION.

2. ALL IMPORTED ROCK SHALL CONFORM TO THE FOLLOWING QUALITY REQUIREMENTS:
   A. ROCK SHALL BE RESISTANT TO WEATHERING AND WATER ACTION AND FREE OF ORGANIC OR OTHER UNSUITABLE MATERIAL. DO NOT USE SHALE, ROCK WITH SHALE SEAMS, OR OTHER FISSILE OR FISSURED ROCK THAT MAY BREAK INTO SMALLER PIECES IN THE PROCESS OF HANDLING AND PLACING.
   B. ROCK SHALL BE SUB-ROUNDED TO SUB-ANGULAR IN SHAPE.
   C. APPARENT SPECIFIC GRAVITY SHALL BE 2.5 MIN., PER AASHTO T85.
   D. ABSORPTION SHALL BE 4.2% MAX., PER AASHTO T85.
   D. DURABILITY INDEX SHALL BE 52 MIN., PER AASHTO T210.
   F. COLOR AND TEXTURE SHALL BE CONSTANT THROUGHOUT THE STOCKPILE.
   G. LENGTH ALONG PRIMARY AXIS SHALL BE 3.0' MIN.
   H. LENGTH ALONG SECONDARY AXIS SHALL BE 1.3' MIN.
   I. NO DIMENSION SHALL BE LESS THAN 1.0' OR GREATER THAN 3.0'.

3. SAMPLES OF ALL IMPORTED ROCK SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL, PRIOR TO STOCKPILING ON SITE.

4. ROCK PLACEMENT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
   A. PLACEMENT:
   ROCK USED IN BOULDER WEIRS SHALL BE INDIVIDUALLY PLACED WITH LONG AXIS PARALLEL TO FLOW, AND ARRANGED SO THAT EACH BOULDER ABOVE THE FOUNDATION COURSE HAS A 3-POINT BEARING ON UNDERLYING BOULDERS. BOULDERS SHALL BE PLACED SUCH THAT DOWN-SLOPE BOULDERS BUTTRESS UP-SLOPE BOULDERS. CONTRACTOR SHALL BE PREPARED TO REPOSITION INDIVIDUAL BOULDERS REPEATEDLY, TO OPTIMIZE THE FINAL WEIR BOULDER CONFIGURATION.
   ROCK SLOPE PROTECTION SHALL BE PLACED IN ACCORDANCE WITH SECTION 72 OF THE STATE STANDARD SPECIFICATIONS. LARGER ROCK SHALL BE PLACED NEAR THE BOTTOM OF THE EXCAVATION.
   B. ROCK SHALL BE PLACED TIGHTLY TO MINIMIZE VOIDS. BACKFILL VOIDS BETWEEN ROCK WITH NATIVE STREAMBED MATERIAL AND WATER-JET THE MIX TO ELIMINATE VOIDS.

WATERWAYS CONSULTING INC.
4039 SWIFT ST.
SANTA CRUZ, CA 95060
P=(831)421-9291 // FAX(800)619-6847
www.watways.com

PREPARED AT THE REQUEST OF:
ARTHUR CODY
380 FIELDBROOK LANE
WATSONVILLE, CA 95076

NOTES

CODY RESIDENCE
A.P.N 078-101-03
485 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA

DESIGNED BY:
DRAWN BY:
CHECKED BY:
DATE: 3/19/10
JOB NO.: 10-005

BAR IS ONE INCH ON ORIGINAL DRAWING, ADJUST SCALES FOR REDUCED PLOTS

C5

ATTACHMENT 2

• Engineering Geology
• Hydrogeology
• GIS Services

NOLAN ASSOCIATES

January 23, 2009 Job no. 08025

Arthur Cody
380 Fieldbrook Lane
Watsonville, CA 95076

Subject: Geologic Hazards Assessment

Project: Existing single family residence and ancillary structures
435 Hubbard Gulch Road
Ben Lomond, California
APN 078-101-03

Dear Mr. Cody:

At your request, we have completed our geologic hazards assessment for the subject property. The subject property suffered damage from a large-scale debris flow in 1986. We have previously performed a geologic update (Nolan Associates, report dated June 5, 2006) of a landslide report prepared for the property by Dr. Gary Griggs (report dated August 19, 1986). Subsequent to our geologic update for the Griggs report, Santa Cruz County determined that a complete geologic hazards evaluation of the existing house on the subject parcel was required. The purpose of this present investigation was to complete a geologic hazards assessment for the existing residence on the property, including a more in-depth evaluation of landslide hazards related to the 1986 landslide event. This letter presents our findings and recommendations.

INTRODUCTION

This letter presents the results of our geologic hazards assessment performed at the Project Site, near the town of Ben Lomond, in Santa Cruz County, California (Figure 1, Topographic Index Map). The Project Site is located on Assessor's Parcel Number (APN) 078-101-03, which occupies about 4.1 acres at 435 Hubbard Gulch Road. This letter is intended to be read in conjunction with our June 5, 2006 report.

The subject property is currently developed with one single family residence and a second ancillary structure. Marshall Creek flows eastward through the north central portion of the property (Figure 1). The single family residence and ancillary structure occupy the northern bank of Marshall Creek, situated from 20 to 30 feet above the creek channel.

P.O.Box 597 Santa Cruz, CA 95061 ◊ 1509 Seabright Avenue, Suite A2 Santa Cruz, CA · Tel. 831-423-7006 · Fax 831-423-7008
email: na@nolangeology.com

and the existence of this landslide scar, we are of the opinion that there may be some risk posed to the residence by landsliding on this slope. We have recommended that the project geotechnical engineer, Dees and Associates, prepare a quantitative stability evaluation for this slope and evaluate the impact of potential slope failures on the residence. The geotechnical analysis should consider slope stability both with and without the existing gabion structure.

Provided that the results of the geotechnical evaluation of slope stability at the existing residence indicate that the residence site is stable or can be made stable with engineered mitigation, we consider the risks posed by landsliding at the subject site to be "ordinary" (Appendix C).

CONCLUSIONS

Based on the information gathered and analyzed, the existing residence and appurtenances may be subject to landsliding and seismic shaking hazards. In our opinion, the existing site development is geologically acceptable and subject to "ordinary" risk, as defined in Appendix C, provided our recommendations are closely followed.

Our recommendations are intended principally to lower the risks posed to habitable structures by geologic hazards. This report in no way implies that the subject property will not be subject to earthquake shaking, landsliding, faulting or other acts of nature. Such events could damage the property and affect the property's value or its viability in ways other than damage to habitable structures. We have not attempted to investigate or mitigate all such risks and we do not warrant the project against them. We would be happy to discuss such risks with you, at your request.

RECOMMENDATIONS

1. We recommend that a diversion wall be constructed along the uphill side of the residence on the parcel. The proposed wall location is depicted on Plate 1 included here and on Plate 1 of our 1986 report. The wall should be at least four feet high, and should be designed to deflect fluidized earth debris flowing down the Marshall Creek drainage. The debris is likely to be moving at velocities between 10 and 12 feet per second.

2. The project engineers should review the findings of our deterministic and probabilistic seismic shaking evaluation and incorporate these findings into their analysis, where appropriate. Given the steep slope setting and the potential for strong seismic shaking to occur during the lifetime of the proposed structure, all structures should be designed to the most current standards of the California Building Code, at a minimum.

3. We recommend that the project geotechnical engineer perform a slope stability analysis of the slopes below the existing residence (utilizing cross sections provided in this report). Should the analysis indicate that any potential instability exists in soils underlying the existing residence, the

project geotechnical engineer should provide mitigating design measures to protect the home's foundation against any potential instability.

4. We recommend that all drainage from improved surfaces such as walkways, patios, and roofs at the rear of the building be captured by closed pipe or lined ditched and discharged towards the stream downslope of the proposed house. At no time should any concentrated discharge be allowed to spill directly onto the ground adjacent to the existing residence or to fall directly onto steep slopes. The control of runoff is essential for erosion control and prevention of water ponding against the foundation.

5. We request the privilege of reviewing final project plans for conformance with our recommendations. If we are not permitted such a review, we cannot be held responsible for misinterpretation or omission of our recommendations.

6. We recommend that we be requested to observe any excavations made during the course of implementing project plans, to evaluate the exposed conditions with respect to the geologic conditions summarized in this report and to provide additional recommendations, if necessary.

INVESTIGATIVE LIMITATIONS

1. Our services consist of professional opinions and recommendations made in accordance with generally accepted engineering geology principles and practices. No warranty, expressed or implied, including any implied warranty of merchantability or fitness for the purpose is made or intended in connection with our services or by the proposal for consulting or other services, or by the furnishing of oral or written reports or findings.

2. The analysis and recommendations submitted in this report are based on the geologic information derived from the steps outlined in the scope of services section of this report. The information is derived from necessarily limited natural and artificial exposures. Consequently, the conclusions and recommendations made in this report may be modified if new geologic information is made available, either through additional geologic investigations, through excavations made in the course of implementing any recommended design provisions at the site, or by excavations in the general vicinity of the project.

3. If any unexpected variations in soil conditions or if any undesirable conditions are encountered during construction of if the proposed construction will differ from that planned at the present time, Nolan Associates should be notified so that supplemental recommendations can be given.

4. The conclusions and recommendations noted in this report are based on probability and in no way imply the property will not possibly be subjected to ground failure or seismic shaking so intense that structures will be severely damaged or destroyed. The report does suggest that the

• Engineering Geology
• Hydrogeology
• GIS Services

NOLAN ASSOCIATES

March 29, 2010 Job no. 04017-SC

Mr. Arthur Cody
380 Fieldbrook Lane
Watsonville, CA 94076

Subject: **Gabion Wall Stabilization**
Cody Residence
435 Hubbard Gulch
Ben Lomond, California

References: Nolan Associates, January 23, 2009, Geologic Hazards Assessment, Existing Single Family Residence and Ancillary Structures, 435 Hubbard Gulch Road, Ben Lomond, California, APN 078-101-03. Job no. 04017-SC

Dear Mr. Cody:

At your request, we have reviewed the geologic setting of the existing gabion wall at the above referenced site. It is our understanding that Santa Cruz County has asked to have the project geologist comment on the potential impacts of leaving the existing, non-permitted gabion wall in place.

For this evaluation, I made field observations of the existing wall and the stream geometry adjacent to the wall. The bank on the side of the creek opposite the wall is made up mostly of rock. However there is one section of the bank that exposes mixed soil and smaller rock clasts. This portion of the bank appears to be eroding more rapidly than adjacent portions of the bank. It is apparent that some fill was placed at the toe of the gabion wall during the wall's construction. The fill has pushed the channel towards the opposing bank, redirecting stream flow into the opposing bank and possibly adding to erosion of the opposite bank.

In our opinion, leaving the gabion wall in place, provided that it is properly stabilized, will not lead to adverse impacts on the stream channel, if the fill at the toe of the wall is removed. We recommend that we be permitted to observe removal of the fill at the time of construction, so that we may identify the limits of the fill for the equipment operator. This observation will help

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email: na@nolangeology.com

ATTACHMENT 4

facilitate removal of the fill and help establish a stable channel configuration once the fill is removed.

Please contact our office if you have additional questions.

Very truly yours,
Nolan Associates

Jeffrey M. Nolan
Principal Geologist
C.E.G. No. 2247

cc: 1 copy to Addressee
1 copy to Becky Dees
3 copies to Annette Whelan

GEOTECHNCIAL INVESTIGATION
For
EXISTING ADDITION TO SINGLE FAMILYRESIDENCE

435 Hubbard Gulch Road, Ben Lomond
APN 078-101-03
Santa Cruz County, California

Prepared
For
ARTHUR CODY
Watsonville, California

Prepared By
DEES & ASSOCIATES, INC.
Geotechnical Engineers
Project No. SCR-0345
March 2009

ATTACHMENT 5

DISCUSSIONS & CONCLUSIONS

Based on the results of our investigation, the existing addition is feasible from a geotechnical standpoint provided the recommendations presented in this report and the Nolan Associates Geologic Investigation, dated January 23, 2009 are incorporated into the design and construction of the improvements. Structures designed in accordance with our recommendations and the recommendations of the geologic report will be subject to an "Ordinary" level of risk, as defined in the Scale of Acceptable Risks from Seismic and Non-Seismic Geologic Hazards", included in Appendix C.

Primary geotechnical concerns for the project include embedding foundations into firm sandstone, protecting the slope below the residence from erosion after the gabion basket retaining wall is removed, protecting the residence and addition from debris flow impact, and designing structures to withstand strong seismic shaking.

The existing residence and addition are supported on a combination pier and grade beam and spread footing foundation system. The downslope footing line closest to the creek consists of a concrete grade beam with drilled concrete piers. Construction documents by Haro, Kasunich & Associates indicate the piers are 10 to 13 feet deep and embedded into sandstone bedrock. The remaining foundation elements consist of shallow spread footings and isolated pier and post footings. Our borings indicate the spread footing foundations are embedded into soft to medium stiff fine silty sands and silts. To mitigate the potential for differential settlement, we recommend embedding all foundations into sandstone bedrock. Sandstone is located 1 to 9 feet below the existing grade below the residence. Recommendations for concrete piers and helix screw anchors are provided for underpinning the existing foundation. These recommendations may also be used for any new footings proposed for the residence.

The gabion basket retaining wall below the residence needs to be removed to meet current Fish and Game requirements. After removal of the baskets, the voids left by the baskets should be backfilled with compacted engineered fill, the slope surface should be compacted and the face should be protected from erosion.

The Nolan Associates report indicates there is still a debris flow potential on the slopes above Marshal Creek and debris flow material has the potential to flow through the gulch below the home. The geologic report recommends constructing a 4 foot high debris deflection wall to divert debris flow material around the residence. Design criteria for the deflection wall are included in the recommendation section of this report.

The residence will most likely experience strong seismic shaking during its design lifetime. Foundations and structures should be designed utilizing the most current seismic design standards.

RECOMMENDATIONS

The following recommendations should be used as guidelines for preparing project plans and specifications:

Site Grading

1. The soil engineer should be notified at least four (4) working days prior to any site clearing or grading to make arrangements for construction observation and testing services. The recommendations of this report are based on the assumption that the soil engineer will perform the required testing and observation during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. We understand grading will be limited to foundation excavations and grading necessary to remove the gabion basket retaining structure and return the slope to its condition. Grading other than indicated above should be reviewed on a case by case basis.

3. The existing gabion basket retaining structure should be removed to meet Fish and Game requirements. The rock from the baskets may be mixed with engineered fill and used to backfill the voids left by the baskets, the rock can be used as erosion facing on the surface of the slope or the rocks can be utilized elsewhere on the site at the owner's discretion. The wire baskets need to be removed from the flow path of the creek.

4. The voids left after the retaining structure is removed should be backfilled with engineered fill. Engineered fill should be placed in thin lifts not exceeding 6 inches in loose thickness and moisture conditioned to about 2 percent over optimum moisture content. Engineered fill should be compacted to at least 90 percent relative compaction.

5. The relationship between moisture content and dry unit weight shall be based on ASTM Test Designation D1557-00. The relative density and moisture content of the compacted soil shall be based on ASTM D2922-04.

6. Native soils may be used as engineered fill. Native soils should be moisture conditioned to about 2 percent over optimum moisture content prior to compaction. We estimate shrinkage factors of about 15 percent for the surface soils when used in engineered fills.

7. Imported soils used as engineered fill should be moisture conditioned to within 2 percent of optimum moisture content prior to compaction. Soils used for engineered fill should be free of organic material and contain no rocks or clods greater than 6 inches in diameter, with no more than 25 percent larger than 4 inches.

18. The foundation trenches should be kept moist and be thoroughly cleaned of slough or loose materials prior to pouring concrete.

19. Prior to placing concrete, foundation excavations should be observed by the soils engineer.

Pier and Grade Beam Foundations

20. Drilled piers should be embedded at least 3 feet into sandstone bedrock.

21. The concrete piers should be at least 12 inches in diameter and vertically reinforced their full length. The vertical reinforcement should be tied to the upper grade beam reinforcement. Steel reinforcement should be determined by the structural designer.

22. Piers designed in accordance with the above may be designed for an allowable end bearing of 3,000 psf plus a 1/3 increase for short term wind and seismic loads.

23. For passive lateral resistance, an equivalent fluid weight (EFW) of 200 pcf times 1.5 pier diameters may be used in the soil overlying the bedrock and an equivalent fluid weight (EFW) of 325 pcf times 2.0 pier diameters may be used in the sandstone. The top 2 feet of pier should be neglected in passive design.

24. Prior to placing concrete, pier excavations should be thoroughly cleaned and observed by the soil engineer.

Helix Screw Anchors

25. Helix screw anchors should penetrate all loose soil and fill and be embedded at least 3 feet into firm, sandstone.

26. The load capacity of Helix anchors may be determined using the torque resistance encountered during installation.

27. Helix anchors used as tiebacks should have a minimum overburden cover of 10 feet and the load bearing portion of tie back anchors should extend at least 5 feet into firm sandstone. Lateral anchors that do not meet the minimum embedment depths shall be replaced.

28. The design load for the tieback anchors should be determined by your designer. However, the maximum tension load should not exceed 60 kips unless a test anchor is installed to verify the anchors can meet the design loads.

29. The tieback anchors should be installed between 10 and 45 degrees from horizontal.

30. Ten (10) percent of all tiebacks should be tested by the contractor in the presence of the geotechnical engineer to 120 percent of their design load. The load should be held for

10 minutes. The anchor should not move more than 0.1 inch during the test. Any tiebacks that fail during testing must be replaced and retested by the contractor.

31. All anchor systems must be corrosion protected.

Grouted Tieback Anchors

32. Grouted tie back anchors may also be used to restrain lateral loads or replace Helix anchors that do not meet the minimum depth requirements.

33. For grouted tendon tieback anchors, the unbonded length should be 15 feet for tiebacks used to restrain the gabion basket retaining wall and 5 feet for tiebacks used to restrain the residence's foundation. The minimum anchor depth should be 5 feet longer than the unbounded zone.

34. The design load for the anchors should be determined by your designer. However, the maximum anchor load should not exceed 60 kips without a test anchor to verify the anchor can meet the design loads.

35. Grouted tendons may be designed using a soil unit weight of 113 pcf and a phi angle of 19 degrees in the unbonded zone.

36. The tieback anchors should be installed between 10 and 45 degrees from horizontal.

37. Ten (10) percent of all tiebacks should be tested by the contractor in the presence of the geotechnical engineer to 120 percent of their design load. The load should be held for 10 minutes. The anchor should not move more than 0.1 inch during the test. Any tiebacks that fail during testing must be replaced and retested by the contractor.

38. Grouted tendons should not be grouted in the unbonded zone prior to pull testing unless the unbonded zone is sleeved.

39. Tie backs should be locked off at 60 percent of the design load or per the recommendations of the designer.

40. All tieback anchor systems must be corrosion protected.

Basement Retaining Wall Lateral Pressures

41. The following retaining wall criteria are for the basement retaining wall at the back of the lower floor addition. These recommendations should not be used for other areas of the site without further geotechnical review.

42. The basement retaining walls should be designed to resist both lateral earth pressures and any additional surcharge loads.

43. Unrestrained retaining walls up to 10 feet high should be designed to resist an active equivalent fluid pressure of 60 pcf for level backfills and 75 pcf for sloping backfills inclined up to 3:1 (horizontal to vertical).

44. Restrained retaining walls should be designed to resist an at-rest earth pressure of 75 pcf for level backfills and 100 pcf for backslopes inclined to 3:1 (horizontal to vertical).

45. For seismic design of retaining walls, a dynamic surcharge load of 14 pcf, equivalent fluid weight, should be added to the above active lateral earth pressures. The seismic component only needs to be added where retaining walls retain soil and fill. A seismic surcharge is not required where retaining walls retain bedrock. The resultant force should be applied at a point located 0.3H above the base of the wall, where H is the height of the wall.

46. The above lateral pressures assume that the walls are fully drained to prevent hydrostatic pressure behind the walls. Drainage materials behind the wall should consist of Class 1, type A permeable material (Caltrans Specification 68-1.025) or an approved equivalent. The drainage material should be at least 12 inches thick. The drains should extend from the base of the walls to within 12 inches of the top of the backfill. A perforated pipe should be placed (holes down) about 4 inches above the bottom of the wall and be tied to a suitable drain outlet. Wall backdrains should be plugged at the surface with clayey material to prevent infiltration of surface runoff into the backdrains.

47. Retaining wall foundations should be designed in accordance with foundation section of this report.

Concrete Slabs-on-Grade

48. Concrete slabs-on-grade should be supported on a firm subgrade surface. Concrete slabs should not be constructed on top of the existing loose fill below the home. The loose fill should be removed and replaced as compacted engineered fill if concrete slabs are proposed.

49. All slabs-on-grade can be expected to suffer some cracking and movement. However, thickened exterior edges, a well-prepared subgrade including pre-moistening prior to pouring concrete, adequately spaced expansion joints and good workmanship should reduce cracking and movement.

50. Dees & Associates, Inc. are not experts in the field of moisture proofing and vapor barriers. In areas where floor wetness would be undesirable, an expert, experienced with moisture transmission and vapor barriers should be consulted. At a minimum, a blanket of 4 inches of free-draining gravel should be placed beneath the floor slab to act as a capillary break. In order to minimize vapor transmission, an impermeable membrane should be placed over the gravel. The membrane should be covered with 2 inches of sand or rounded

gravel to protect it during construction. The sand or gravel should be lightly moistened just prior to placing the concrete to aid in curing the concrete.

Site Drainage

51. Controlling surface runoff is important to the performance of the project and the adjacent slopes.

52. Surface drainage should include provisions for positive gradients so that surface runoff is not permitted to pond adjacent to foundations or other improvements. Where bare soil or pervious surfaces are located next to the foundation, the ground surface within 10 feet of the structure should be sloped at least 5 percent away from the foundation. Where impervious surfaces are used within 10 feet of the foundation, the impervious surface within 10 feet of the structure should be sloped at least 2 percent away from the foundation. Swales should be used to collect and remove surface runoff where the ground cannot be sloped the full 10 foot width away from the structure. Swales should be sloped at least 2 percent towards the discharge point.

53. Full roof gutters should be placed around the eves of the structure. Discharge from the roof gutters should be conveyed away from the downspouts and discharged away from improvements in a controlled manner.

54. The homesite is not suitable for retention of storm runoff. Concentrated runoff should be discharged into the creek below home.

Erosion Control

55. Drainage and erosion should be controlled at all times. During construction an engineered erosion control plan should be implemented at the site between October 15th and April 15th when erosion it most likely to occur. Following construction, all exposed earth should be protected from erosion until a permanent vegetative cover can be established.

Plan Review, Construction Observation, and Testing

56. Dees & Associates, Inc. should be provided the opportunity for a general review of the final project plans prior to construction to evaluate if our geotechnical recommendations have been properly interpreted and implemented. If our firm is not accorded the opportunity of making the recommended review, we can assume no responsibility for misinterpretation of our recommendations. We recommend that our office review the project plans prior to submittal to public agencies, to expedite project review. Dees & Associates, Inc. also requests the opportunity to observe and test grading operations and foundation excavations at the site. Observation of grading and foundation excavations allows anticipated soil conditions to be correlated to those actually encountered in the field during construction.

Dees & Associates
Geotechnical Engineers
501 Mission Street, Suite 8A Santa Cruz, CA 95060 Phone (831) 427-1770 Fax (831) 427-1794

March 23, ~~2009~~ 2010 Project No. SCR-0345

MR. ARTHUR CODY
380 Fieldbrook Lane
Watsonville, California 95076

Subject: Proposed Gabion Basket Mitigation

Reference: 435 Hubbard Gulch Road
APN 078-101-03
Santa Cruz County, California

Dear Mr. Cody:

Our firm prepared a geotechnical investigation for the site in March 2009. At the time of our report, the gabion wall was going to be removed. We understand you would now like to stabilize the existing gabion basket retaining wall located below the residence instead of removing the gabion wall as originally planned. Stabilization of the gabion wall would be accomplished by building a new concrete retaining wall in front of the existing gabion wall. This letter provides geotechnical recommendations and design criteria for stabilization of the gabion retaining wall with a new concrete retaining wall.

Preliminary plans by Patterson Associates indicate the new concrete retaining wall will be supported and restrained with grouted anchors. This letter provides recommendations for a grouted anchor supported retaining wall. Recommendations for alternative foundations, such as drilled piers or spread footings, can be developed if desired.

Soil Conditions

Test pits were attempted at the base of the gabion wall by Nolan Associates during their geologic investigation. The test pits indicated there was loose soil and possibly fill located below the existing gabion wall. The depth of loose soil is estimated to be 1 to 2 feet thick. The new concrete retaining wall should be supported on anchors that penetrate the loose soil and are embedded into the underlying sandstone bedrock. Vertical anchors should extend at least 3 feet into the underlying sandstone.

The new concrete retaining wall will be restrained with grouted tie back anchors. Lateral anchors should extend through all fill and soil and be embedded at least 5 feet into sandstone bedrock. Refer to the geologic cross sections by Nolan Associates for approximate bedrock depths.

12. All tieback anchor systems must be corrosion protected.

Grouted Micropiles

13. Micro piles should penetrate all fill and soil and be embedded at least 3 feet into dense bedrock.

14. A working bond stress of 100 psi may be used for compression loads in the dense sandstone bedrock. The top 1.5 feet of bedrock should be neglected in design. Lateral loads should be resisted using the grouted tieback criteria presented above.

15. Five percent (5) percent of all micropiles should be tested by the contractor in the presence of the geotechnical engineer to 1.7 times their design load. The load should be held for 1 minute. The pile should not move more than 0.1 inch during the test. Any piles that fail during testing must be replaced and retested by the contractor.

17. All micro pile systems must be corrosion protected.

Very truly yours,

DEES & ASSOCIATES, INC.

Rebecca L. Dees
Geotechnical Engineer
G.E. 2623

3/23/10

Copies: 4 to Addressee
1 to Nolan Associates
1 to Patterson & Associates

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
TOM BURNS, PLANNING DIRECTOR

May 5, 2009
(modified June 30, 2010)

Arthur Cody
380 Fieldbrook Lane
Watsonville, CA 95076

Subject: Review of the Engineering Geology Reports by Nolan and Associates, dated ~~March 23, 2009~~, January 23, 2009, and June 5, 2006, Project Number 08025
And, 3/29/10
Review of the Geotechnical Engineering Reports by Dees and Associates, dated March 23, 2009 (i.e. 2010) and March 2009, Project Number SCr-0345

Reference: Dees and Associates, November 13, 2009, Project Number SCr-0345

APN 079-101-03, Application #: 09-0131

Dear Applicant:

The purpose of this letter is to inform you that the Planning Department has accepted the subject report and the following items shall be required:

1. All construction shall comply with the recommendations of the reports.

2. The engineering geologist shall review the location of the debris wall on the project plans, and approve the location in the field before the final inspection of the Building Permit.

3. All fill slopes shall have an exposed surface no steeper in slope than two horizontal to one vertical. An exception to this rule allows the Planning Director to accept a steeper slope or require a flatter slope if he/she finds this consistent with stability and safety. If the proposed fill will be steeper than two horizontal to one vertical please provide surficial stability calculations by the geotechnical engineer as well as the global analysis already presented with the Dees and Associates report.

4. The proposed debris wall must function for the entire lifespan of the home and related structures, or approximately 50 to 75 years. The project civil engineers, and geotechnical engineer must design a debris wall that will last without maintenance for the life span of the structure. Alternatively, the project engineer must specify a periodic inspection and maintenance program with an endowment to assure maintenance of the wall before the issuance of the building permit.

5. Final plans shall reference the report and include a statement that the project shall conform to the report's recommendations. Grading plans prepared by a civil engineer

(over)

ATTACHMENT 7

shall provide a thorough and realistic representation of all grading necessary to complete this project

6. Prior to building permit issuance *plan review letters* shall be submitted to Environmental Planning. The authors of the reports shall write the *plan review letters*. The letters shall state that the project plans conform to the reports' recommendations.

7. Please provide an electronic copy of the soils engineering and engineering geology reports and addendum in .pdf format. These documents may be submitted on compact disk or emailed to pln829@co.santa-cruz.ca.us.

8. The attached declaration of geologic hazards must be recorded before the issuance of a building permit.

9. After completion of the final inspection of the improvements the applicant must request that the Notice of Dangerous Building be removed from the property.

After building permit issuance the soils engineer *must remain involved with the project* during construction. Please review the *Notice to Permits Holders* (attached).

Our acceptance of the report is limited to its technical content. Other project issues such as zoning, fire safety, septic or sewer approval, etc. may require resolution by other agencies.

Please call the undersigned at (831) 454-3175 if we can be of any further assistance.

Sincerely,

Joe Hanna CEG 1313
County Geologist

Carolyn Banti PE
Civil Engineer

Cc: Jessica Duktig, Resource Planner
Nolan Associates
Dees and Associates

Project Planner: Jessica Duktig
Application No.: 09-0131
APN: 078-101-03

Date: June 29, 2010
Time: 09:57:31
Page: 1

Environmental Planning Completeness Comments

Provide detail of the stability analysis cross-sections and results. Please include the strength values for each distinct material analyzed, and the out put of the analysis so that the County staff can review stability analysis. Indicate if groundwater was considered as a contributing factor in the analysis.

Demonstrate that the reconstructed embankment fill used to replace the gabion baskets will be surficially stable, and will resist stream erosion (County Code Section 16.22.050 (e), and Section J107 of the County Building Code).

Indicate removal of all artificial fill from the riparian corridor (County Code Section 16.22.050 (e)), and from the area of Floodway setback of 20 feet back from the edge of the embankment (16.10.010 g).

Except for the impact wall, all new or unpermmitted construction must be setback 20 from the creek embankment (16.10.010 g) to avoid the jurisdictional floodway.
========= REVIEW ON MAY 11, 2009 BY JOSEPH L HANNA =========

Environmental Planning Miscellaneous Comments

========= REVIEW ON MAY 11, 2009 BY JOSEPH L HANNA =========
NO COMMENT

Code Compliance Completeness Comments

========= REVIEW ON APRIL 21, 2009 BY KEVIN M FITZPATRICK =========
NO COMMENT
========= UPDATED ON APRIL 21, 2009 BY KEVIN M FITZPATRICK =========
NO COMMENT
this addresses only part of the violation, however, this work must be completed first. (KMF)

Code Compliance Miscellaneous Comments

========= REVIEW ON APRIL 21, 2009 BY KEVIN M FITZPATRICK =========

Dpw Drainage Completeness Comments

========= REVIEW ON MAY 6, 2009 BY TRAVIS RIEBER =========
1. The project is required to hold to pre-development rates for a broad range of storms up through the 10 year event. Because it is non-permitted work, significant portions of the existing building and pavements will not be recognized for exemption as a pre- development condition. The present proposal to pipe all building runoff creates an unmitigated impact. It is feasible to provide required mitigations fully in agreement with site geotechnical concerns. Please provide effective mitigation measures.

2. Where possible, impervious surfacing is required to be minimized.

2. For fee calculations please provide tabulation of existing impervious areas and new impervious areas resulting from the proposed project. Make clear on the plans by shading or hatching the limits of both the existing and new impervious areas. To receive credit for the existing impervious surfaces please provide documentation such as assessor-s records, survey records, aerial photos or other official records that will help establish and determine the dates they were built.

Note: A drainage fee will be assessed on the net increase in impervious area. Reduced fees are assessed for semi-pervious surfacing to offset costs and encourage more extensive use of these materials.

Please call the Dept. of Public Works, Storm Water Management Section, from 8:00 am to 12:00 noon if you have questions.

WATERWAYS CONSULTING

Ecological Restoration Design - Civil Engineering - Natural Resource Management

STORM DRAINAGE CALCULATIONS

FOR ARTHUR CODY RESIDENCE

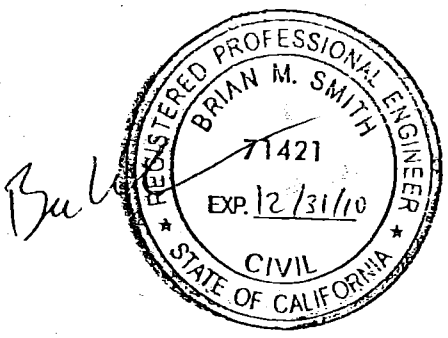
LOCATED ON APN 078-101-03
435 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA

Date: 05/4/2010

Project No. 10-005

Calculated By: B.M.S.

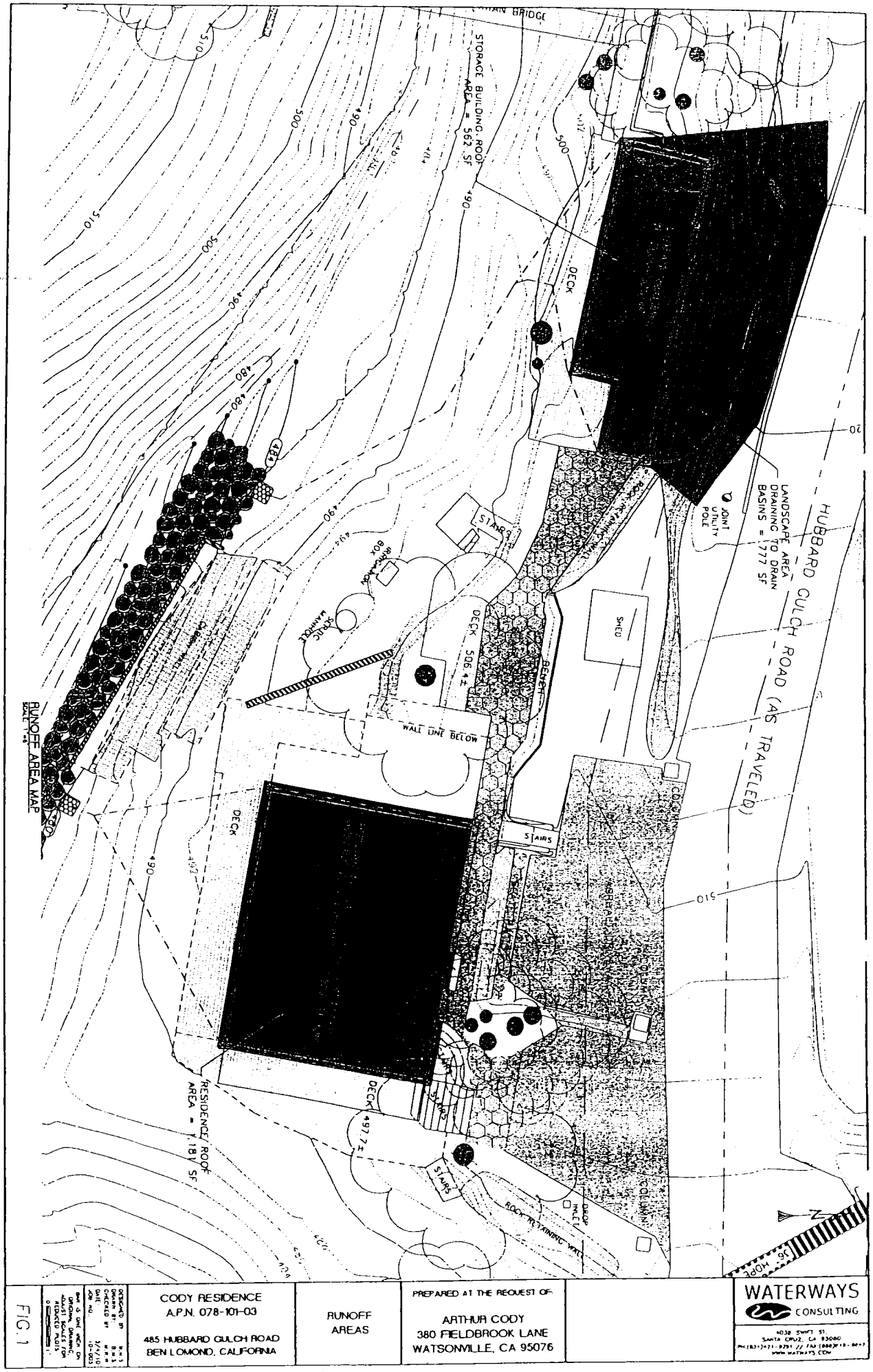
Checked By: M.W.W.



5/20/10

403B Swift St, Santa Cruz, CA 95060, Ph: 831-421-9291 // 522 SW 5th Ave, Ste 1022 Portland, OR 97204, Ph: 503-227-5979

ATTACHMENT 9


RUNOFF AREA MAP
SCALE 1"=8'
STORAGE BUILDING ROOF AREA = 562 SF
RESIDENCE ROOF AREA = 1181 SF
LANDSCAPE AREA DRAINING TO DRAIN BASINS = 1777 SF
HUBBARD GULCH ROAD (AS TRAVELED)
DECK
STAIRS
SHED
WALL UNE BELOW
ROCK RETAINING WALL
JOINT UTILITY POLE
N
CODY RESIDENCE
A.P.N. 078-101-03
485 HUBBARD GULCH ROAD
BEN LOMOND, CALIFORNIA
RUNOFF AREAS
PREPARED AT THE REQUEST OF:
ARTHUR CODY
380 FIELDBROOK LANE
WATSONVILLE, CA 95076
WATERWAYS CONSULTING
FIG. 1

Job No.	10-005	Calcs by: B.M.S.
Project	Cody Residence (APN 078-101-03)	Checked by: MWW
Date	5/1/2010	

HYDROLOGY CALCULATIONS - Main Residence

Objective: To determine flow to the proposed storm drain system at the main residence.

GENERAL NOTES:

1. All calculations are based on the latest edition of the County of Santa Cruz Design Criteria (June, 2006).

CALCULATIONS

B. Time of Concentration: Santa Cruz County Design Criteria:

Choose minimum time of concentration

Tc =	10 min

B. Rational Method Hydrology

$Q = C_a C i A$

where:

C_a = Antecedent Moisture Factor
C = Runoff Coefficient
i = Rainfall intensity (in/hr)
A = Contributing area (acres)

Table A. Existing Conditions Hydrologic Results (Net increase to Impervious Area

Parameter	10-year	25-year	50-year	100-year	Reference
(acres)=	0.03				Fig. 1
C_a =	1	1.1	1.2	1.25	Fig. SWM-1
C =	0.9				Fig. SWM-1
P_{60} (in/hr) =	2.2				Fig. SWM-2
i factor =	1	1.2	1.35	1.5	Fig. SWM-3
i (in/hr) =	2.79	3.34	3.76	4.18	Fig. SWM-3
Q (cfs) =	**0.07**	**0.09**	**0.11**	**0.13**	Eqn. Q=(Ca)(C)(i)(A)

Table B. Pipe Sizing Results

Min. Pipe Dia. To convey 100-year proposed flow in storm drain network at 2% slope	3"	see attached calc

NOTES

1. Design Flow for pipe network is the 100-yr

Manning Pipe Calculator

Calculation to determine min. pipe diameter to convey 100-yr discharge at the new residence.

Assumptions:
100-yr discharge calculated using total drainage area reaching storm drain network.
Min. Slope = 2% per drainage plans
n-value = 0.012 per FIG. SWM-5

Given Input Data:

Shape	Circular
Solving for	Diameter Full
Diameter	0.2462 ft
Depth	0.2462 ft
Flowrate	0.1300 cfs
Slope	0.0200 ft/ft
Manning's n	0.0120

Computed Results:

Area	0.0476 ft2
Wetted Area	0.0476 ft2
Wetted Perimeter	0.7735 ft
Perimeter	0.7735 ft
Velocity	2.7302 fps
Hydraulic Radius	0.0616 ft
Percent Full	100.0000 %
Full flow Flowrate	0.1300 cfs
Full flow velocity	2.7302 fps

Result:
A 4 inch dia. pipe will convey the 100-yr discharge at a 2% slope.
Storm drain network will be constructed of 4 inch diameter pipe

Job No.	10-005	Calcs by: B.M.S.
Project	Cody Residence (APN 078-101-03)	Checked by: M.W.W.
Date	5/1/2010	

HYDROLOGY CALCULATIONS - Storage Building

Objective: To determine flow to the proposed storm drain system at storage building.

GENERAL NOTES:

1. All calculations are based on the latest edition of the County of Santa Cruz Design Criteria (June, 2006).

CALCULATIONS

A. Weighted Runoff Coefficient

Description	Area (sf)	Runoff Coeff.
Areas		
Storage bldg Roof Area	562	0.9
Landscape Area	777	0.3

Total Area (sf)	**1339**	**0.552 <---- Weighted Coeff.**
Total Area (acres)	**0.03**	

B. Time of Concentration: Santa Cruz County Design Criteria:

Choose minimum time of concentration

Tc =	10 min

C. Rational Method Hydrology

$Q = C_a C i A$

where:

C_a = Antecedent Moisture Factor
C = Runoff Coefficient
i = Rainfall intensity (in/hr)
A = Contributing area (acres)

Table A. Combined Hydrologic Results

Parameter	10-year	25-year	50-year	100-year	Reference
A (acres)=	0.03				Fig. 1
C_a =	1	1.1	1.2	1.25	Fig. SWM-1
C =	0.552				see calc above
P_{60} (in/hr) =	2.2				Fig. SWM-2
i factor =	1	1.2	1.35	1.5	Fig. SWM-3
i (in/hr) =	2.79	3.34	3.76	4.18	Fig. SWM-3
Q (cfs) =	**0.05**	**0.06**	**0.08**	**0.09**	Eqn. Q=(Ca)(C)(i)(A)

Table B. Pipe Sizing Results

Min. Pipe Dia. To convey 100-year proposed flow in storm drain network at 2% slope	2.6 in	see attached calc

NOTES

1. Design Flow for pipe network is the 100-yr

ATTACHMENT 9

Manning Pipe Calculator

Calculation to determine min. pipe diameter to convey 100-yr discharge at the storage building.

Assumptions:
100-yr discharge calculated using total drainage area reaching storm drain network.
Min. Slope = 2% per drainage plans
n-value = 0.012 per FIG. SWM-5

Given Input Data:

Shape	Circular
Solving for	Diameter Full
Diameter	0.2145 ft
Depth	0.2145 ft
Flowrate	0.0900 cfs
Slope	0.0200 ft/ft
Manning's n	0.0120

Computed Results:

Area	0.0361 ft2
Wetted Area	0.0361 ft2
Wetted Perimeter	0.6739 ft
Perimeter	0.6739 ft
Velocity	2.4904 fps
Hydraulic Radius	0.0536 ft
Percent Full	100.0000 %
Full flow Flowrate	0.0900 cfs
Full flow velocity	2.4904 fps

Result:
A 4 inch dia. pipe will convey the 100-yr discharge at a 2% slope.
Storm drain network will be constructed of 4 inch diameter pipe

ECOSYSTEMS WEST
CONSULTING GROUP

July 29, 2010

Matt Johnston
Planning Department
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Re: Biological Review of the Proposed Retaining Wall and Site Review Code Compliance Violation on the Arthur Cody Property, Application No. 09-0131

Dear Matt:

This letter summarizes my review and comments on the proposal to construct a 25-foot long diversion and 42+ foot long reinforcement retaining wall on and in front of existing gabion baskets along Marshall Creek below the existing house structure located at 435 Hubbard Gulch Road in Ben Lomond, California (APN 078-101-03). In addition, the owner is proposing to remove a portion of a non-permitted deck and room addition from the existing structure to clear a code compliance violation. The existing home and guest cottage sit on the upper north bank of Marshall Creek south of Hubbard Gulch Road.

A site visit was conducted by me and Matt Johnston, Deputy Environmental Coordinator with the County of Santa Cruz Planning Department, on July 6, 2010. During the course of this visit we viewed the slope area proposed for the addition of the retaining wall and diversion wall. Currently the toe of the slope just above the perennially flowing stream on Marshall Creek supports a staked linear array of gabion baskets that are meant to prevent undercutting by the stream of the bank above. The baskets and slope above support a dense stand of horsetail (*Equisetum arvensis*) and non-native grasses. Dense stands of French broom occur on the disturbed slopes below the house and above the existing retaining wall. Scattered arroyo willows (*Salix lasiolepis*) occur along the stream channel near the high water mark. The dominant vegetation at the top of the bank is characterized as mixed evergreen redwood forest plant community. The typical trees include coast redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), madrone (*Arbutus menziesii*), tan oak (*Lithocarpus densiflorus*), and coast live oak (*Quercus agrifolia*).

No special-status plants or animals were observed or have records of occurring in the vicinity of the project area. Substrates and plants communities surrounding the parcel do not typically support special-status plants known to occur in the vicinity of project area. Marshall Creek is not a recognized anadromous salmonid stream corridor and does not provide habitat for breeding special-status amphibians or reptiles, such as California red-legged frog or western pond turtle. The riparian habitat within the parcel boundaries on this reach of the stream corridor is generally open and sparsely vegetated. The bank slopes are very steep and nearly vertical in the lower edge of the stream. Due to long-term disturbance below the existing house and some slope slumping on the house side of the creek, vegetation cover is characterized by a dominance of weedy invasives and annual erosion control cover species.

819½ Pacific Avenue, Suite 4, Santa Cruz, CA 95060
Phone: 831-429-6730 * Fax: 831-429-8742

ATTACHMENT 10

The proposed development features are depicted on site plans prepared by Ron Ragsdale (Plan Sheets A1-A6), Patterson and Associates Engineering and Design Services (Plan Sheets S1-S3), and Waterways Consulting, Inc.(Plan Sheets C1-C5) dated May 21, 2010, April 6, 2010, and May 19, 2010 respectively. Of most interest to this reviewer was the plan sets prepared by Waterways Consulting that depict the proposed locations of the gabion wall support structure, rock slope protection, new diversion wall, storm drains, and the temporary stream bypass. Since the locations of these features are on the disturbed bank below the existing structures, no significant long-term impact to the riparian habitat on and adjacent to the parcel is anticipated. Sheet C4 shows the proposed erosion control measures including silt fencing and temporary diversion features during the construction of the retaining wall. I believe that the implementation of these proposed protection and stream management measures will minimize or avoid altogether significant impacts to the stream corridor. I recommend that following the completion of construction of the slope stabilization and storm water collection and culvert features, that the slope be planted with native vegetation, including riparian plant species and mixed evergreen forest species. Also, the stands of French broom should be eradicated from the stream corridor and adjacent to the house.

If these measures are followed, this reviewer believes no significant impacts should result to riparian habitat on or adjacent to the property from the proposed development.

Should you require further clarification of this review, please don't hesitate to contact me.

Sincerely,

Bill Davilla
Principal