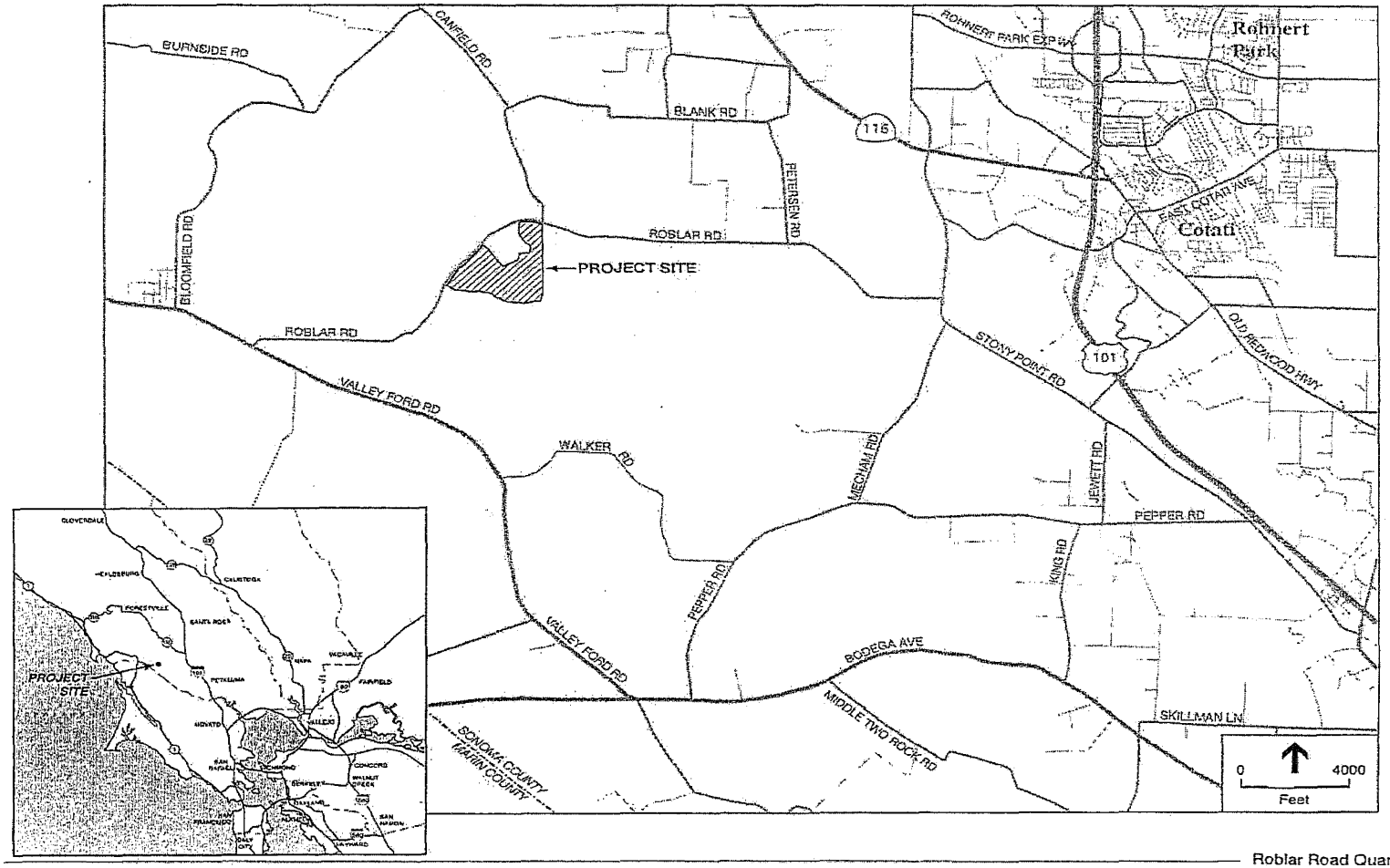
Approved Quarry Location



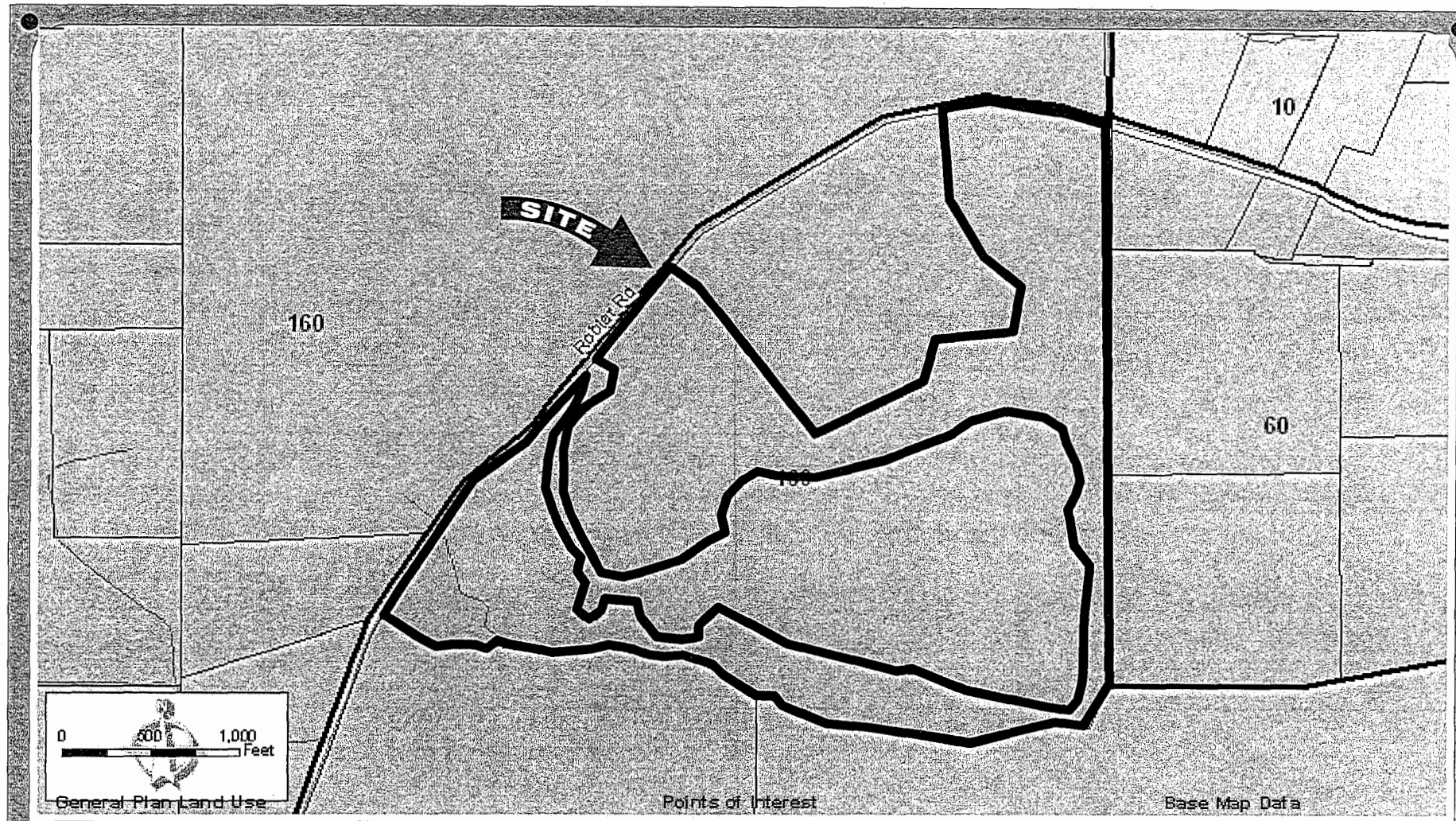
SOURCE: ESA

Roblar Road Quarry . 204334

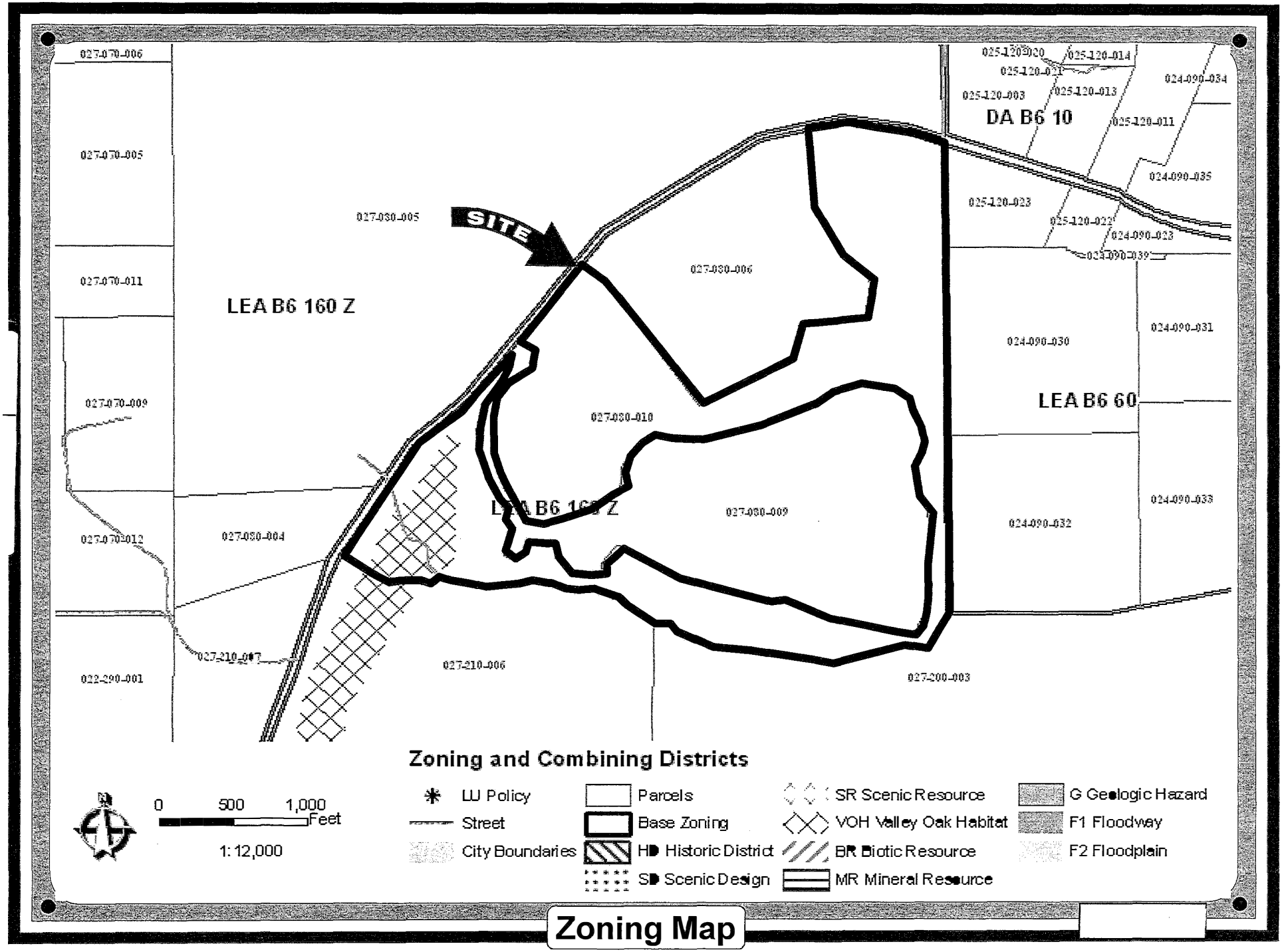
Figure III-1

Regional Map

EXHIBIT C



Land Use Map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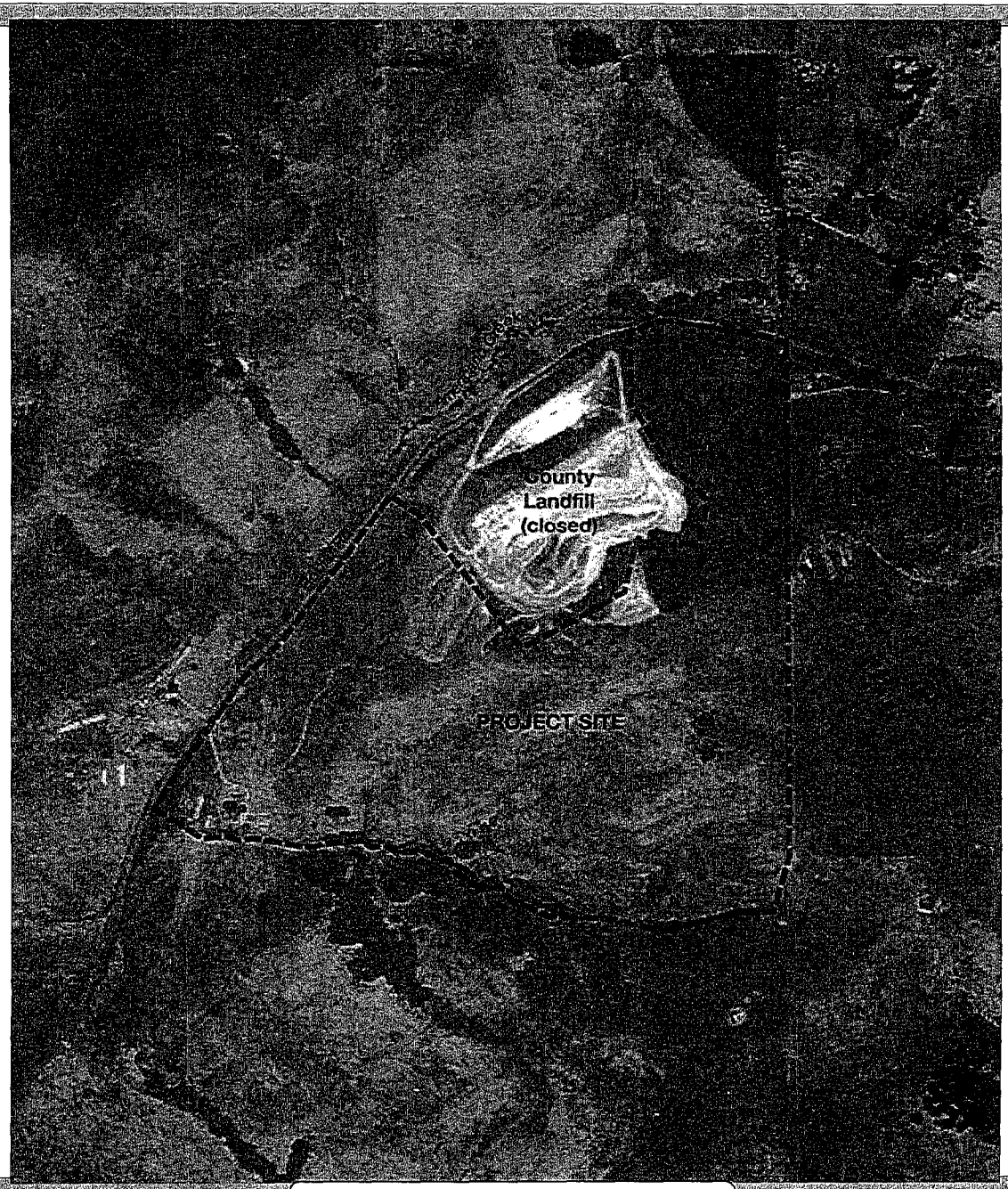
027-030-006
027-030-010
027-030-009
027-200-003
025-120-020
025-120-014
025-120-021
025-120-003
025-120-013
025-120-011
024-090-034
024-090-035
025-120-023
025-120-022
024-090-033
024-090-039
024-090-030
024-090-031
024-090-032
024-090-033
SITE
LEA B6 160 Z
DA B6 10
LEA B6 60
0 500 1,000 Feet
1:12,000
Zoning and Combining Districts
LU Policy
Street
City Boundaries
Parcels
Base Zoning
HD Historic District
SD Scenic Design
SR Scenic Resource
VOH Valley Oak Habitat
BR Biotic Resource
MR Mineral Resource
G Geologic Hazard
F1 Floodway
F2 Floodplain

Zoning Map



Aerial View

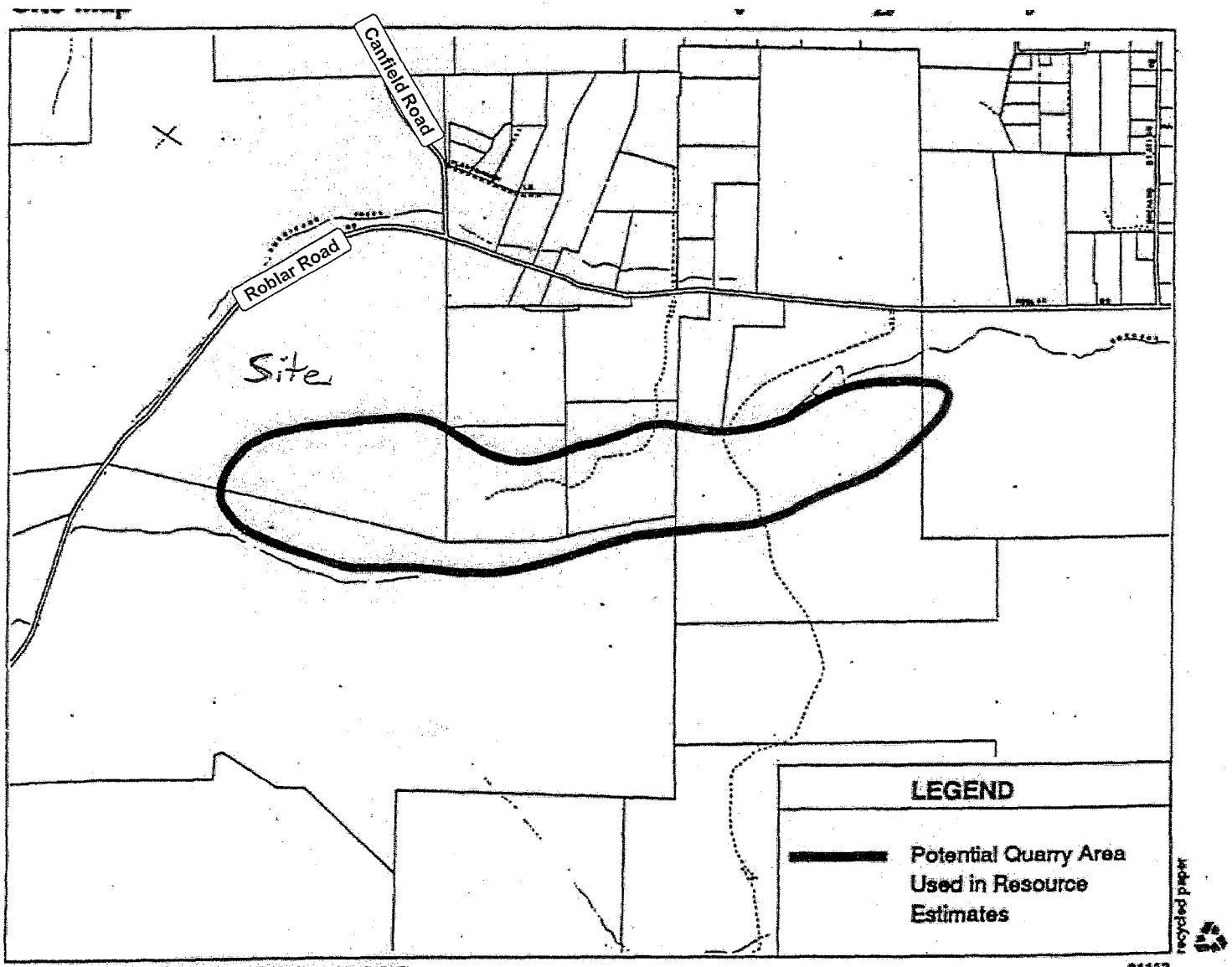
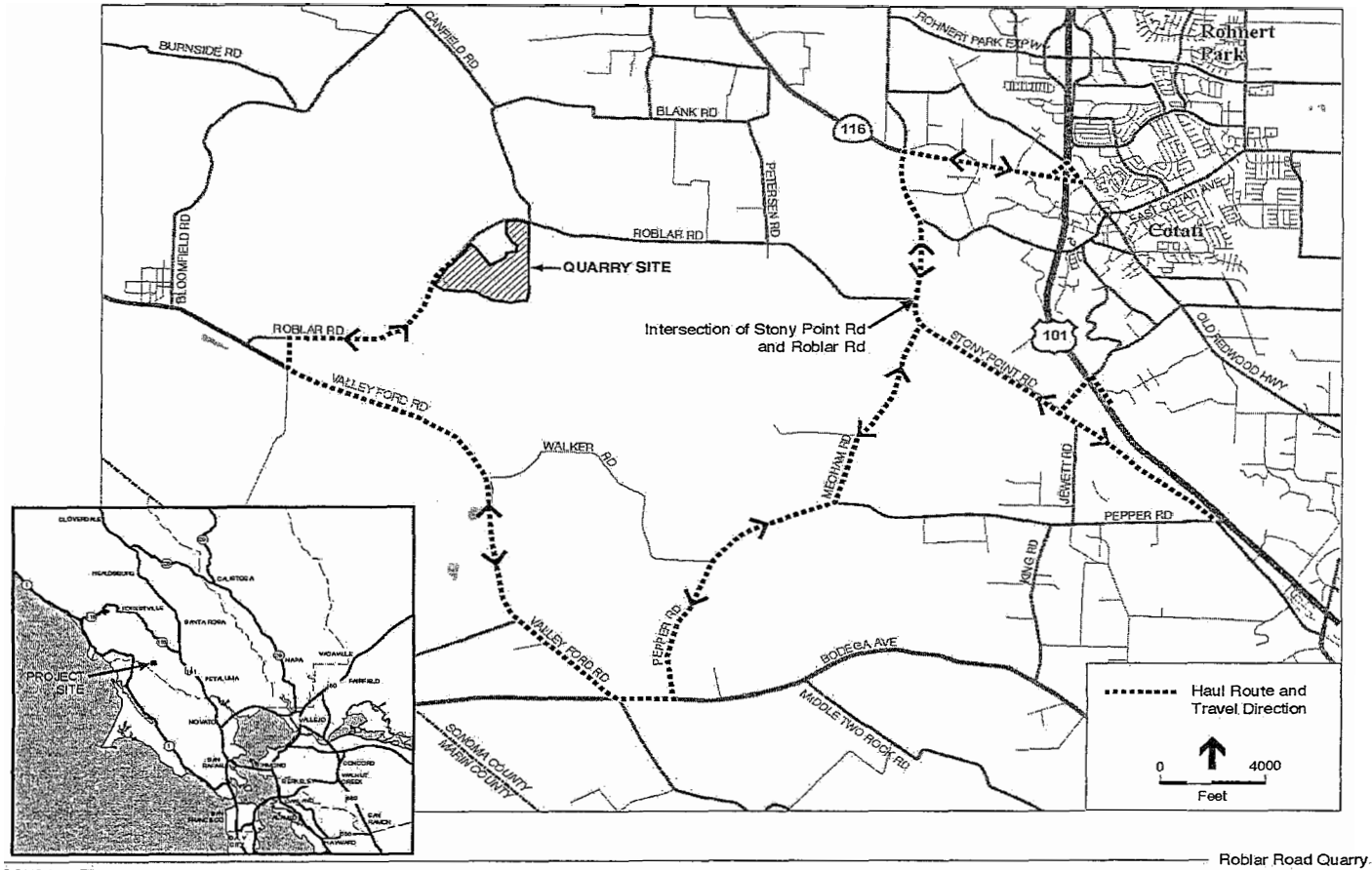


EXHIBIT F

5-67

ARM Plan Map

Approved Haul Routes

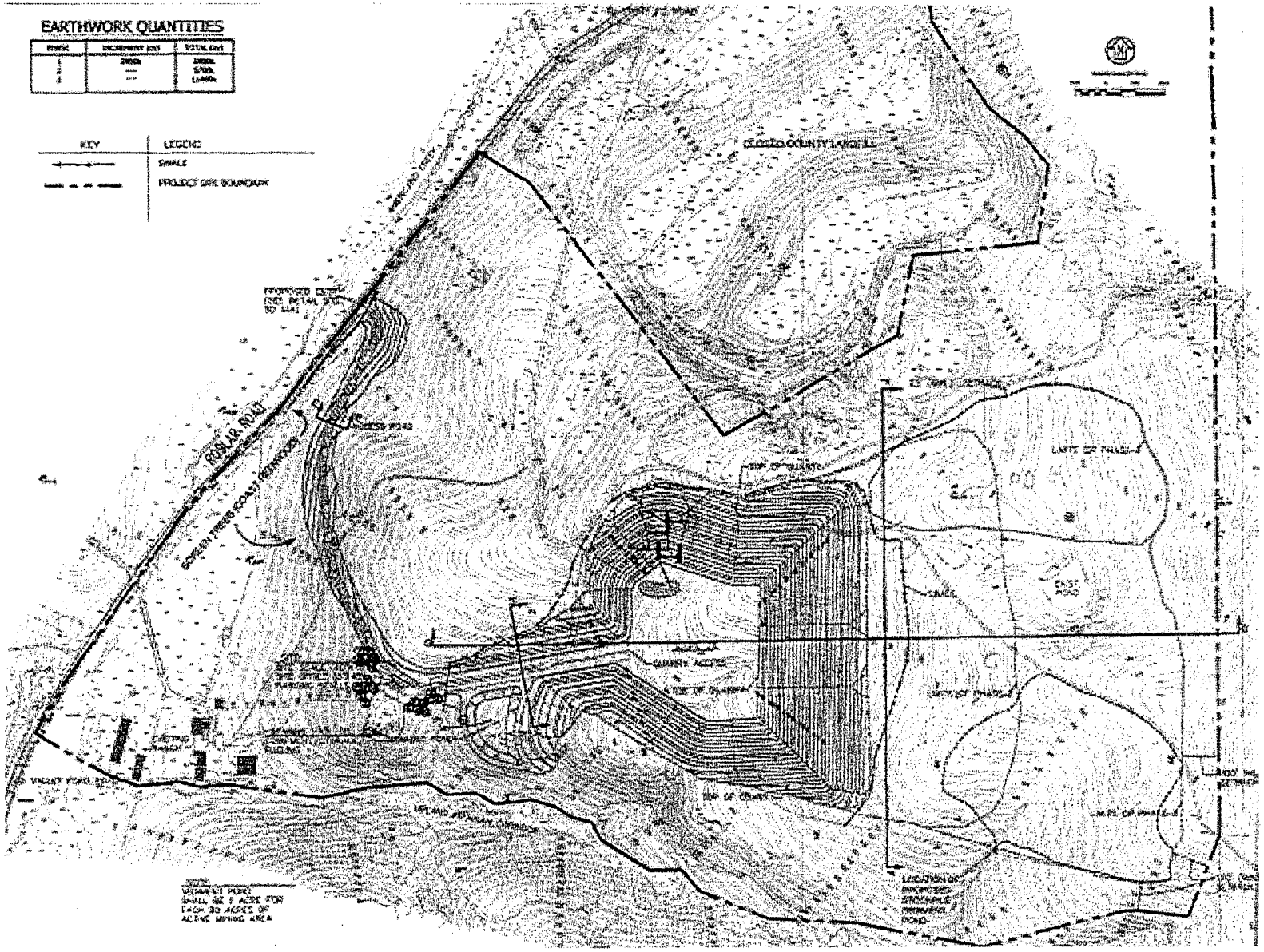


SOURCE: ESA

Roblar Road Quarry . 160752

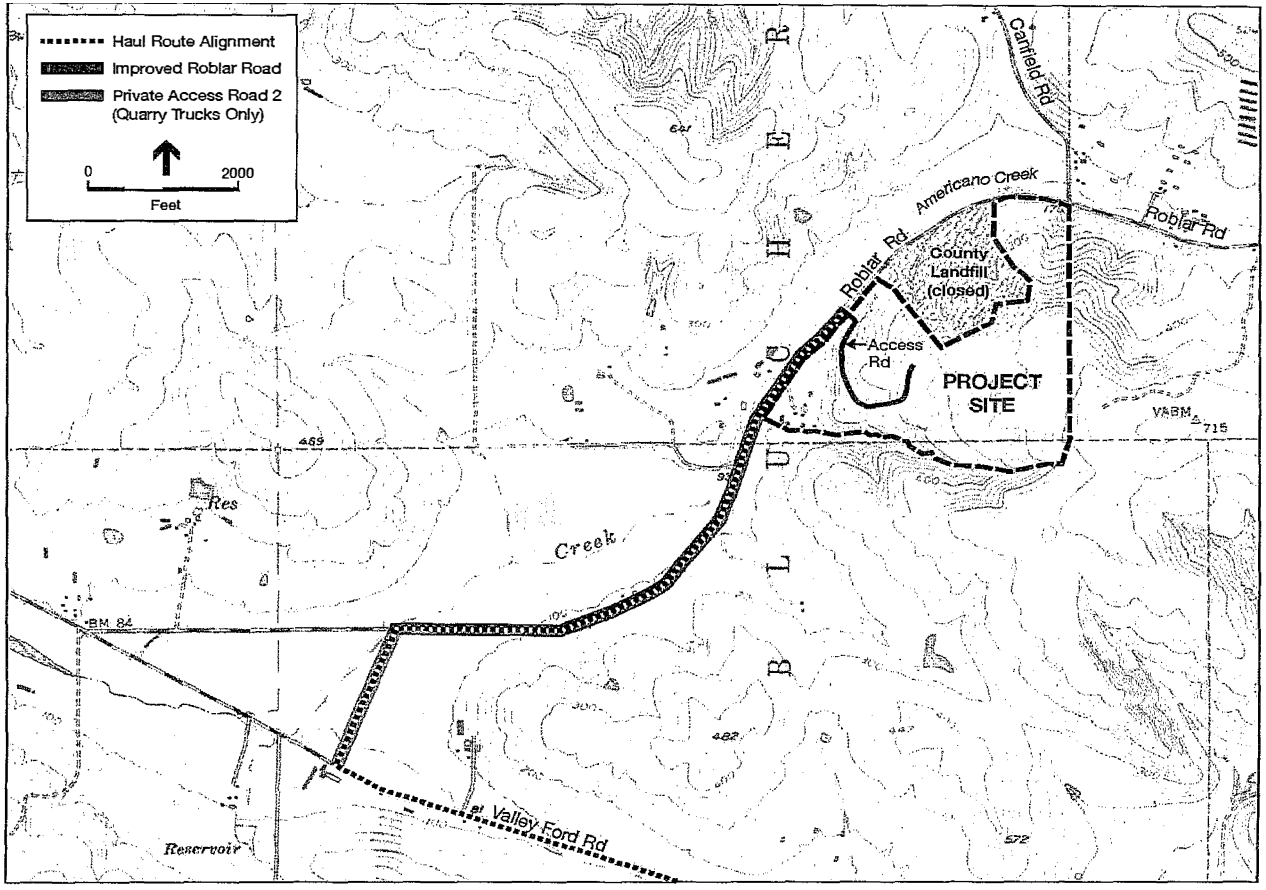
Figure 2-1

Project Location and Approved Haul Route



Phase 1 Grading and Drainage Plan

Approved Roblar Road Haul Route

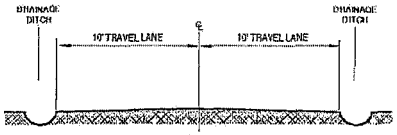


SOURCE: USGS; ESA

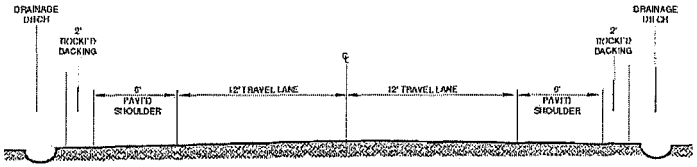
Roblar Road Quarry . 160752

Figure 2-2
Approved Haul Route Detail

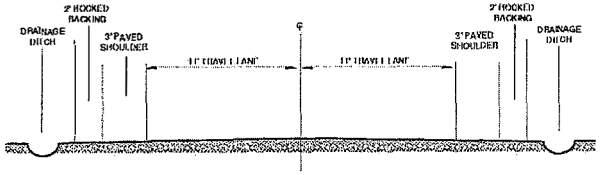
Roblar Road Cross Sections



A. Existing Conditions: 20' Paved Width



B. Currently Required per Conditions 49 and 59: 36' Paved Width



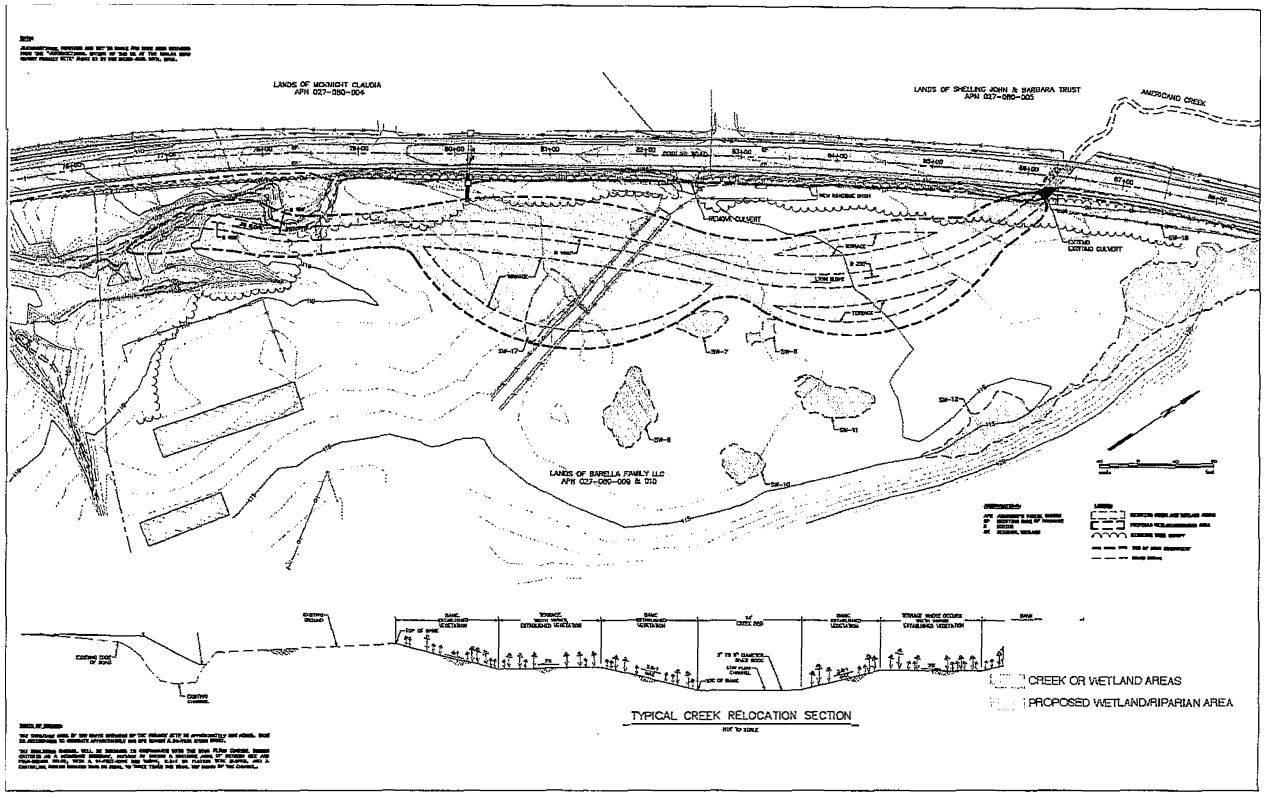
C. Proposed – 28' Paved Width

SOURCE: FSA

Roblar Road Quarry . 160752

Figure 2-6
Roblar Road – Existing (A), Currently Required (B), and Proposed (C) Road Cross-Sections

Relocation of Americano Creek

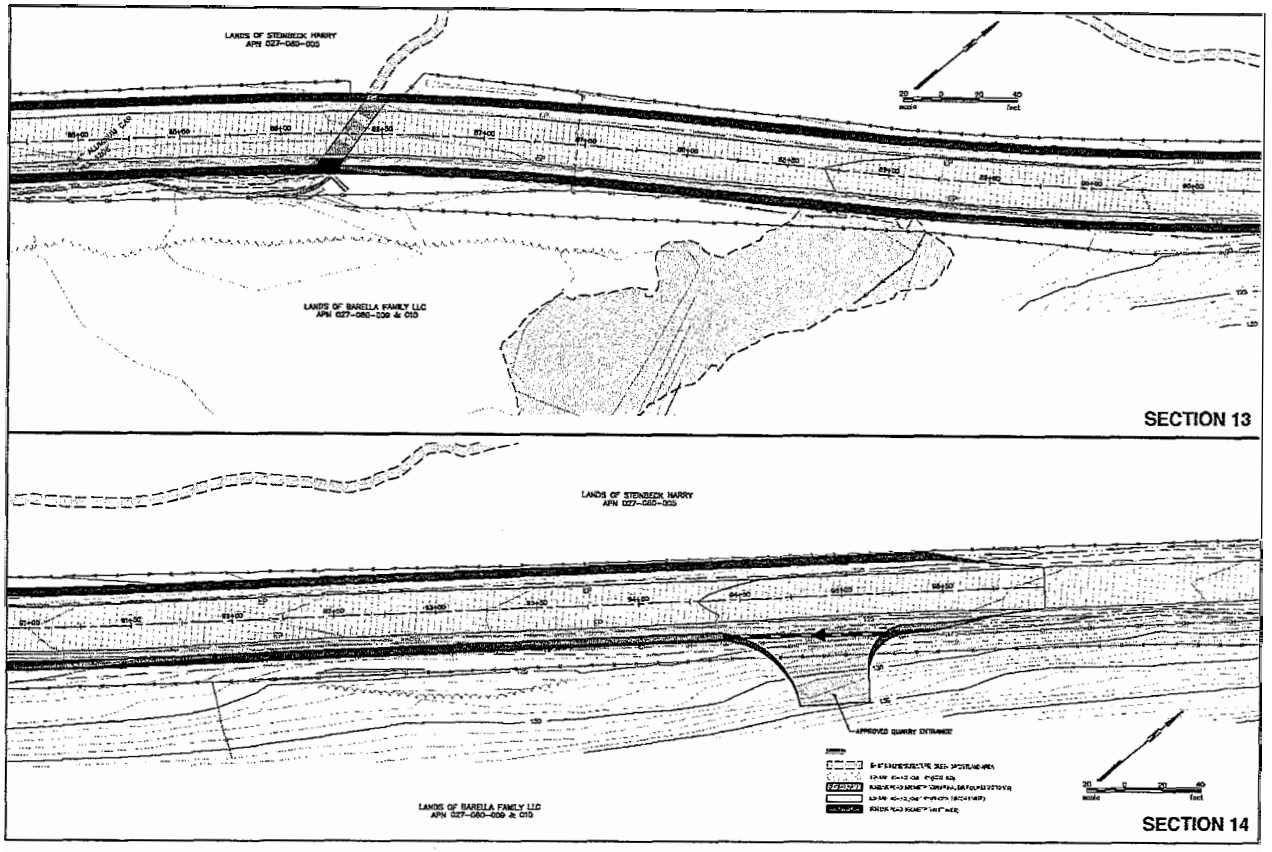


SOURCE: BKF

Roblar Road Quarry . 160752

Figure 2-8
Proposed Relocation of Americano Creek

Roblar Widening

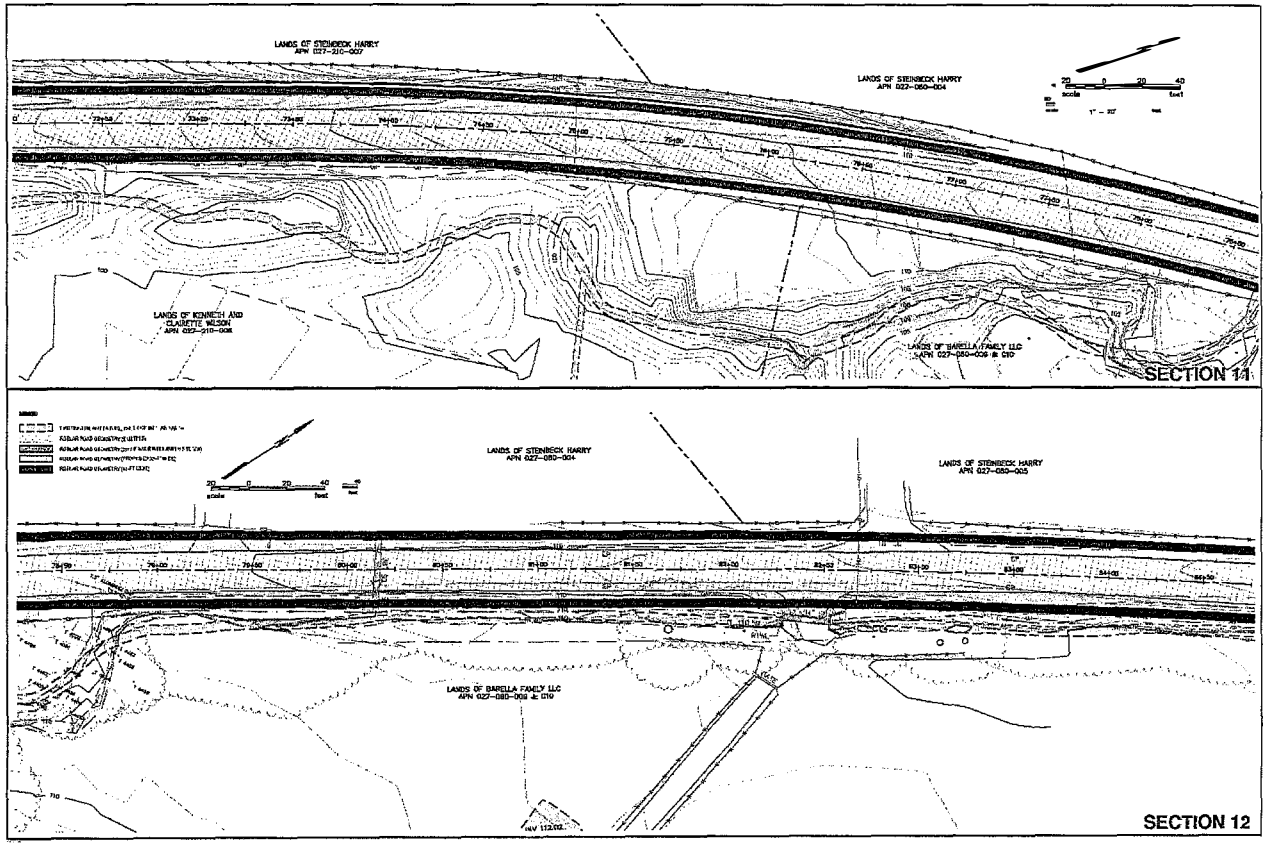


SOURCE: BKF

Roblar Road Quarry . 160752

Figure 2-7h
Proposed Roblar Road Improvements,
Sections 13 and 14

Roblar Widening

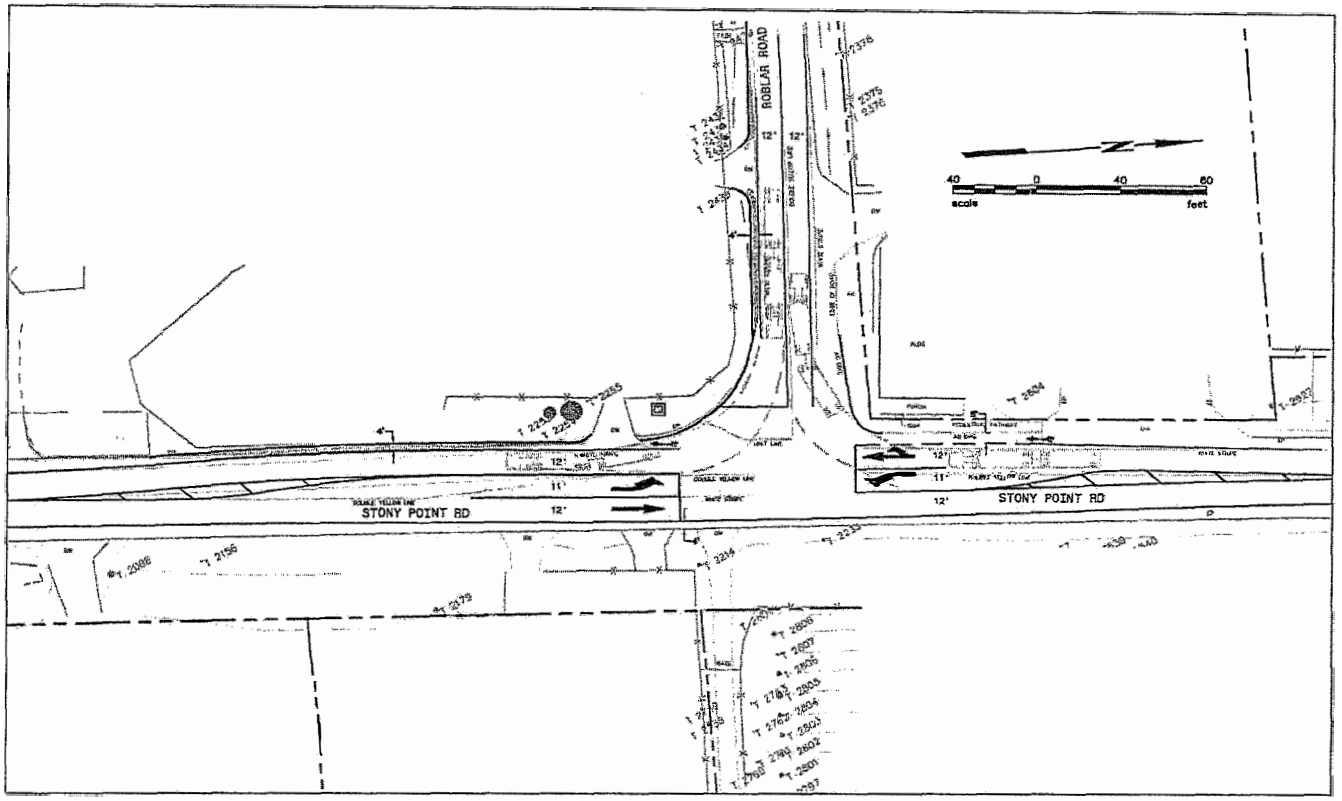


SOURCE: BKF

Roblar Road Quarry . 160752

Figure 2-7g
Proposed Roblar Road Improvements,
Sections 11 and 12

Proposed Intersection Design



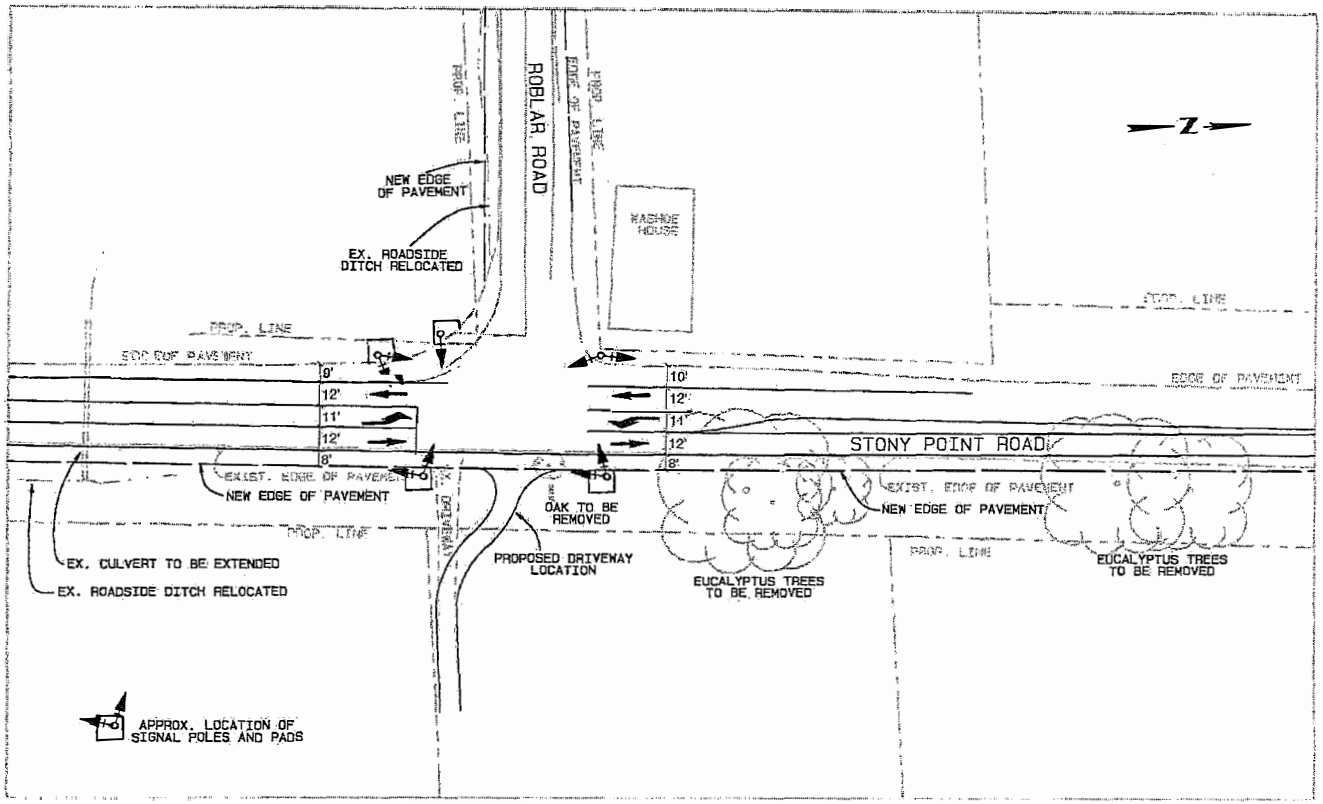
Roblar Road Quarry . 160752

SOURCE: BKF, 2016

Figure 2-5

Proposed Design for Stony Point Road/Roblar Road Intersection Signalization

County Preliminary Design



SOURCE: Sonoma County PRMD, 2005

Roblar Road Quarry . 160752

Figure 2-4

County Preliminary Design for Stony Point Road/Roblar Road Intersection Signalization

Aerial of Stony Point/Roblar Roads

SOURCE: Google Earth; ESA

Roblar Road Quarry . 160752

Figure 2-3
Stony Point Road/Roblar Road Intersection: Current Conditions

Integrated Waste
Road & Bridge Operations
Sonoma County Airport
Sonoma County Transit

Johannes J. Hoevertsz, Director

Memorandum

To: Blake Hillegas – Permit Sonoma

From: Jeff Clark – Traffic Engineer, DTPW
Cc:
Date: August 28, 2018
File No:
Subject: Roblar Road Quarry

You asked that I provide recommendations based on the Roblar Road Quarry proposal to amend its use permit. The addition of between 302 to 480 gravel trucks per 8-hour day to the segment of Roblar Road from west of Canfield Road (Quarry Site access) and Access Road 2 would result in increased exposure of existing bicycle users of Roblar Road to safety related issues. Currently this segment of Roblar Road carries 40 trucks per weekday. The quarry would increase the percentage of trucks from 2.3% on a weekday to between 15.0% to 22.0%.

Roblar Road is currently generally 20 feet wide with no paved shoulders. A gravel truck is 8.5 feet wide not counting mirrors, and about 10 feet with mirrors. As the current number of trucks on a weekday is 40 and typical number of bicycles varies 6 to 17 per day the current potential for a conflict between a truck and a bicycle is small. Increasing the number of trucks to between 340 to 520 per day would increase the potential for a conflict between a truck and bicyclist if mitigation is not imposed. The length of a truck (about 75 feet for double trailer truck) adds to this issue, as it takes longer for a truck to pass a bicycle. Therefore, the County should require the mitigation described in this memorandum, which will address these potential conflicts.

To address the bicycle/truck safety issue would require the widening of Roblar Road. In *A Policy on Geometric Design of Highways and Street*, American Association of State Highway and Transportation Officials (AASHTO), 2011 the recommended width for a rural roadway carrying over 2,000 vehicles per day is 40 feet (2 12-foot travel lanes and 2 8-foot shoulders). Because Roblar Road has been designated in the Sonoma County 2010 Bikeways Plan as a proposed Class II Bike Lane, five feet of the 8-foot shoulder would need to be paved to accommodate a Bike Lane. The 40-foot roadway section does not include widening needed to accommodate drainage facilities alongside the roadway. To accommodate drainage facilities and provide drivers that run off the roadway an area to recover *A Policy on Geometric Design of Highways and Street* calls for a slope of 1-foot vertical to 4 feet horizontal as the standard with slopes of 1-foot vertical to 3 feet horizontal as acceptable.

A Policy on Geometric Design of Highways and Street does provide for exceptions to the 40-foot roadway cross-section. The exceptions are:

1. On roadways to be reconstructed, an existing 22-foot traveled way may be retained where alignment and safety records are satisfactory.
2. Shoulder width may be reduced for design speeds greater than 30 mph as long as a minimum roadway

width of 30 feet is maintained.

The collision history for Roblar Road, between Valley Ford Road and Stony Point Road, for the period between 2011 and 2015 the collision rate is 0.64 collisions per million vehicle miles travelled (MVMT). The rate is lower than the collision rate for Sonoma County (1.23 collisions per MVMT), Caltrans District 4 (1.09 collisions per MVMT), and Caltrans Statewide (1.01 collisions per MVMT) for two-lane rural roadways. This would indicate that a 22-foot travelled way could be used on Roblar Road. This cross-section should be used only where right-of-way or other design constraints do not allow for the implementation of the standard 40-foot cross section.

To maintain a minimum roadway section necessary to accommodate a bike lane using a 22-foot travelled way the shoulders would need to be 5 feet. Within the 5-foot shoulder area 4 feet of it would need to be paved to accommodate a minimum acceptable bike lane width. Thus, although not the AASHTO recommendation, the minimum acceptable roadway cross-section for Roblar Road would be 2 11-foot travel lanes, 2 4-foot bike lanes, and 2 1-foot unpaved road backing areas or a 32-foot cross-section. This cross-section has been reviewed by the Sonoma County Bicycle and Pedestrian Advisory Committee and was found to be the minimum acceptable cross-section for Roblar Road. The 32-foot roadway section does not include widening needed to accommodate drainage facilities alongside the roadway. To accommodate drainage facilities and provide drivers that run off the roadway an area to recover *A Policy on Geometric Design of Highways and Street* calls for a slope of 1-foot vertical to 4 feet horizontal as the standard with slopes of 1-foot vertical to 3 feet horizontal as acceptable.

There are four horizontal curves on Roblar Road where additional pavement may be needed to accommodate vehicle offtracking. The necessary additional widening would need to be calculated using the design vehicle (gravel truck) and the centerline radius of the curve. *A Policy on Geometric Design of Highways and Street* provides methodology for determining the required widening to accommodate a gravel truck through the horizontal curves while a maintaining an acceptable clearance to bicycles and vehicles in the opposing lane.

The project applicant has not provided data to determine where an exception to the 40-foot standard cross-section is needed because of right-of-way or other design constraints. Data has not been provided regarding the design of the roadway through the horizontal curves on Roblar Road. To provide this information a design of Roblar Road should be completed. At a minimum the design should show existing right-of-way lines, areas where right-of-way can and cannot be acquired (that is, without condemnation), layout of the reconstructed roadway showing locations where design exceptions to the standard roadway cross-section are needed, locations where tree/vegetation removal is required, and layout of the roadway through the horizontal curves.

The reconstruction of the section of Roblar Road between the Quarry Site access and Access Road 2 from a 20-foot roadway with no paved shoulders to a roadway with 22 to 24 feet of travelled way with paved shoulders 4 to 6 feet) could result in increased speeds. Currently this section of Roblar Road has no posted speed limit. Thus, it has a *prima facie* speed limit of 55 mph except for the four horizontal curves where the advisory speeds vary between 30 mph and 45 mph. The reasons for the potential increased speeds would be drivers feeling more comfortable on the wider roadway and reconstruction of the roadway surface leading to better pavement. The potential for increased speeds would be a reason to monitor the post construction roadway speeds through the use of speed surveys.