STEVENS CREEK QUARRY, INC.

STEVENS CREEK QUARRY RECLAMATION PLAN AMENDMENT

California Mine ID No: 91-43-0007

LEAD AGENCY

Santa Clara County
Planning Office, County Government Center
70 West Hedding Street
San Jose, California 95110

OPERATOR

Stevens Creek Quarry, Inc.
12100 Stevens Canyon Road
Cupertino, California 95014

PREPARED BY

Resource Design Technology, Inc.
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762

MAY 2007

REVISED JANUARY 2008

1253-07p(e,)

Name and Address of Owner/Operator

Stevens Creek Quarry, Inc.
12100 Stevens Canyon Road
Cupertino, California 95014
Contact: John Kolski
Telephone: (408) 253-2512
Facsimile: (408) 257-4614

Name and Address of Agent

Stevens Creek Quarry, Inc.
12100 Stevens Canyon Road
Cupertino, California 95014
Contact: John Kolski
Telephone: (408) 253-2512
Facsimile: (408) 257-4614

STATEMENT OF RECLAMATION RESPONSIBILITY

I certify that the information in this Reclamation Plan is correct, to the best of my knowledge, and that all of the owners of possessory interest in the property in question have been notified of the planned operation and potential uses of the land after reclamation. I also certify that I am authorized on behalf of Stevens Creek Quarry, Inc. to accept responsibility for reclaiming the mined lands described and submitted herein, with any modification required by Santa Clara County and agreed to as Conditions of Approval.

Signed this ____ day of January, 2008.

Richard Voss
for Stevens Creek Quarry, Inc. (Owner/Operator)

TABLE OF CONTENTS

LIST OF FIGURES

APPENDICES

EXHIBITS

SUMMARY

Operation Name:	Stevens Creek Quarry
California Mine Identification Number:	91-43-0007
Mine Operator:	Stevens Creek Quarry, Inc.
Street Address or P.O. Box:	12100 Stevens Canyon Road
City, State, Zip Code:	Cupertino, California 95014
Telephone Number:	(408) 253-2512
Contact Person:	John Kolski
Parcels:	351-18-039 (62.43 ac), 351-10-019 (40 ac), 351-10-020 (40 ac), 351-18-038 (20.02 ac), 351-10-040 (4.46 ac)
Owner of Property Name:	Stevens Creek Quarry, Inc.
Owner of Mineral Rights:	Stevens Creek Quarry, Inc.
Street Address or P.O. Box:	12100 Stevens Canyon Road
City, State, Zip Code:	Cupertino, California 95014
Telephone Number:	(408) 253-2512
Parcels:	351-10-017 (40 ac), 351-10-039 (35.55 ac)
Owner of Property Name:	Hanson Permanente Cement, Incorporated
Owner of Mineral Rights:	Hanson Permanente Cement, Incorporated
Street Address or P.O. Box:	24001 Stevens Creek Blvd.
City, State, Zip Code:	Cupertino, CA 95014
Location:	Approximately 15 miles south of the City of San Jose and immediately southwest of the City of Cupertino, California.
Section, Township and Range:	Sections 21 and 28, Township 7 South, Range 2 West, Mount Diablo Base and Meridian
Latitude and Longitude (at center of site):	Latitude: N 37°18'3.2" Longitude: W 122°5'23.4"

Directions to the Site:	From San Jose, take CA-87 South, then merge onto I-280 towards San Francisco. Exit on Foothill Expressway toward Grant Road. Take ramp toward Foothill Blvd. Turn Left onto Foothill Expwy/CR-G5 E, which becomes N. Foothill Blvd. N. Foothill Blvd. becomes Stevens Canyon Road.
Total Site Acreage:	167 acres
Total Area to be Mined:	Approximately 147 ± acres (area within surface disturbance boundary)
Total Area to be Reclaimed:	Approximately 147 ± acres (includes second use facilities that remain)
Potential Land Use After Reclamation:	These parcels will be reclaimed to an open space condition suitable for future development as allowed under the County Zoning Code.

1.0 PURPOSE AND OBJECTIVES

1.1 Purpose of Plan Amendment

The Reclamation Plan modification for Stevens Creek Quarry has been prepared in accordance with the requirements of the California Surface Mining and Reclamation Act (SMARA, or the statute) found in California Public Resources Code (PRC) Section 2710 *et seq.*, Title 14 of the California Code of Regulations (CCR) Section 3500 *et seq.* and Santa Clara County's (the Lead Agency) implementing ordinance.

The Reclamation Plan for Stevens Creek Quarry was approved by Santa Clara County on December 6, 1983. Copies of the approved plan are included in Appendix A, Approved Reclamation Plan. This Amendment corrects minor discrepancies between actual and planned activities shown on the 1983 plan. (See Figure 5, Reclamation Plan Amendment Areas.) The operator has also taken this opportunity to update its revegetation planting palette.

1.2 Reclamation Objectives

The Reclamation Plan for this site includes actions designed to meet physical reclamation treatment objectives for disturbed lands:

- Provide for long-term stability of slopes;
- Prevent wind and water erosion by stabilizing the soil surface through proper grading and drainage; and
- Implement a revegetation program that is designed to establish self-sustaining vegetation cover.

1.3 Potential Second Land Use

1.3.1 Land Use Goal

SMARA requires a description of the "proposed use or potential uses" of a mined site after reclamation. Post-mining use reclaims the parcels to an open space condition suitable for future development as allowed under the applicable Zoning Ordinance at reclamation.

1.3.2 Reclamation Overview

In accordance with the approved Reclamation Plan, following mining the Operator will reclaim the excavation to a revegetated open space site. Cut surfaces will be completed to a minimum overall slope grade not to exceed 1.5:1 as specified in the slope stability report to ensure long-term stability. Revegetation is aimed primarily at erosion control, and the planting palette has proved successful on previous slopes without soil placement or amendment, which limits erosion and sedimentation concerns. Sediment basins which provide for post-reclamation sediment captured from site runoff will remain. Further, developed surfaces and access roads will remain for subsequent land uses. Grading will be completed in such a manner as to ensure proper drainage. Copies of the approved plans are included in Appendix A.

2.0 SITE DESCRIPTION AND BACKGROUND

2.1 Site Location and Size

Stevens Creek Quarry is located approximately 15 miles south of San Jose, California (see Figure 1, Regional Location, and Figure 2, Site Location), at the southwestern limits of Santa Clara County. The mine operations and processing areas occupy approximately 147 ± acres of a 167 ±-acre site on portions of Assessor's Parcel Numbers 351-18-039, 351-10-019, 351-10-020, 351-10-040, located within Sections 21 and 28, Township 7 S, Range 2 W Mount Diablo Base and Meridian. Parcel survey data is shown in Appendix B, Parcel Survey Data.

2.2 Existing Land Use

Land use on the site and surrounding properties is visible in Figure 3, Parcel A – Existing Conditions Aerial Photograph and Figure 4, Parcel B – Existing Conditions Aerial Photograph. The existing land uses on these parcels include mining and materials recycling. Mining activity has been continuous at the site for over 50 years. A Reclamation Plan for the Stevens Creek Quarry, Inc. (RP#1253-16-62-83-P-83A) was approved by the Santa Clara County Board of Supervisors on December 6, 1983. Stevens Creek Quarry operates its mining and processing operations based on a vested right for a non-conforming use for Parcel B. The Parcel A site is operated under a Use Permit approved by the Santa Clara County Board of Supervisors September 10, 1996 (see Appendix C, Resolution and Mediated Agreement).

3.0 DESCRIPTION OF APPROVED RECLAMATION PLAN

Current 2007 topography and conditions at the site is shown in Figure 3 and 4 and on Sheet 1, 2007 Site Conditions Aerial Photograph. The approved Reclamation Plan topography is shown in Appendix A. The plan encompasses a mining operations area encompassing approximately 51 acres on Parcel A, and up to 96 acres over Parcel B. Processing operations areas, settling/stormwater ponds, mine shop, administration, and improved surfaces are identified within these surface disturbance boundaries.

The topography of the completed Parcel A is best described as a level pad area, and for Parcel B as a broad valley, oriented north-south. The ponds will remain as a series of lakes.

The operation would not excavate to depths that are below the local groundwater table that could create a water surface at reclamation. The quarry floor is planned at elevations ranging from approximately 650 to 750 feet above mean sea level, with gently sloping floors that drain southerly and westerly.

Cut slopes are approved for final grades not to exceed 1.5:1 overall, in accordance with the slope stability report (see Appendix D, Slope Stability Report). Where materials are extracted at angled creating steeper cuts, the operator as a matter of practice places engineered fill at a 2:1 slope angle, or flatter.

4.0 PLAN AMENDMENTS

4.1 Mining Boundary Adjustment

Stevens Creek Quarry, Inc. has entered into an agreement with the adjacent landowner to extend Parcel B mining easterly. The mining is limited by the existence of a power line corridor and related structures to a wedge-shaped area encompassing approximately 9 acres. This slope lay-back enables the operator to recover additional reserves within the Parcel B quarry.

At the western limits of Parcel B, there is a small area encompassing 1.5 acres where fill has been temporarily placed on the adjacent parcel (same landowner as the easterly side of Parcel B). The landowner has consented that the fill can remain until reclamation. This fill would be removed at reclamation, and the area returned to its approximate pre-existing topography. Revegetation would be completed by the operator.

4.2 Updated Mine and Reclamation Maps

Figures 6 – 15 include updated mine plans, reclamation plans and associated cross-sections for both Parcels A and B. (See also Sheets 1 – 3.)

Mine plan cross-sections depicting operational and planned configurations of quarried slopes are shown in Figures 7, Parcel A - Mine Plan Cross-Sections and Figure 9, Mine Plan Cross-Sections (and on Sheet 2, Mine Plan and Cross-Sections). The quarry walls are designed and constructed at a reclaimed grade not to exceed 1.5:1 for a stable final slope condition consistent with the slope stability report.

The mining depth varies, as surface elevation varies throughout the hillside site. The maximum depth of cut is in approximately the center of Parcel B, where the current floor elevation of approximately 950′ amsl, will be cut to an elevation of approximately 700′ amsl (a depth of 250′).

The geologic materials at the Stevens Creek Quarry vary, and areas of non-marketable "waste" are periodically encountered. This material is designated to be used in construction of final slopes surrounding the floor of Parcel B. Lower slopes would be cut to a temporary angle of 0.5:1. Stockpiled and actively mined waste rock would be placed as engineered fill over these slopes at a grade of 2:1 or flatter.

Figure 14, also shows that the floor of Parcel B may eventually be elevated by backfill of imported materials. The quarry is located in a region where sites are needed to place construction fill removed from development sites. Stevens Creek Quarry plans to utilize Parcel B concurrent with mining operations as a site accepting construction fill. If fill is imported to raise the floor of the Parcel B mining area to an elevation of 860 feet, or up to 900 feet. Such backfilling, to the extent it occurs, may return the excavation closer to the elevations that occurred prior to mining.

4.3 Modified Revegetation Planting Palette

The approved Reclamation Plan incorporated a list of species to be planted that are primarily ornamental exotic plants. Many of these would require irrigation for establishment and maintenance. Stevens Creek Quarry, Inc. desires that the revegetation planting palette be updated to include primarily native plants that are common to the area and would have a better rate of success on the quarry slopes and floor. Figure 16, Parcel A – Revegetation Plan and Figure 17, Parcel B – Revegetation Plan shows the revegetation planting scheme for each parcel.

Species to be planted will consist of shrubs and trees that have evidenced good success on disturbed soils, and are prompt generating grasses that are acclimated to local conditions. Species removed from the approved plan are shown as ~~Strikeouts~~ in Table 1, Revised Revegetation Palette, and species additions are Underlined.

Modifications to the mix of grasses may be employed based on actual availability from suppliers, cost, and improved seed success rates, and species determined most suitable to agricultural production.

Performance standards to be met prior to release of revegetation financial assurance shall include a grasses and forbs cover value of 75%, and a species richness of five (5) species.

TABLE 1
REVISED REVEGETATION PALETTE

Scientific Name	Common Name
GRASSES, FORBES, AND LEGUMES	
Achillea millifolium	White Yarrow
Bromus carinatus	California Bromegrass
~~*Bromus mollis*~~	~~Blando Brome~~
Clarkia purpurea	Farewell to Spring
Elymus glaucus	Blue Wildrye
~~*Escholtzia californica*~~	~~California Poppy~~
~~*Festuca megalura*~~	~~Zorro Fescue~~
~~*Lolium multiflorum*~~	~~Italian Ryegrass~~
Lotus purshianus	Spanish Clover – inoc.
Lotus scoparius	Deerweed
Lupinus nanus	Sky Lupine
Nassella pulchra	Purple Needlegrass
Oenothera hookeri	Evening Primrose
~~*Pennisetum villosum*~~	~~Fountain Grass~~
Plantago erecta	Santa Clara Plantain
~~*Trifolium hirtum*~~	~~Rose Clover – inoc.~~
Vulpia microstachys	Three Weeks Fescue
TREES AND SHRUBS	
Adenostoma fasciculatum	Chamise
Arbutus x.	Hybrid Strawberry tree, similar to Madrone trees
Artemisia californica	California Sagebrush
~~*Atriplex semibaccata*~~	~~Australian Saltbrush~~
Baccharis pilularis	Coyote Brush
Baccharis pilularis consanguinea	Chaparrel Broom
~~*Ceanothus megacarpus*~~	~~California Lilac Buckbrush~~
~~*Cupressus arizonica*~~	~~Arizona Cypress~~
Eriogonum fasciculatum	California Buckwheat
Heteromeles arbutifolia	Toyon
Mimulus auranticus	Sticky monkeyflower
Pinus halapensis	Aleppo Pine
~~*Rhamnus californica*~~	~~Coffeeberry~~
~~*Salvia leucophylla*~~	~~Gray Sage~~
Schinus molle	California Pepper
CONTAINER PLANTS	
~~*Acer macrophyllum*~~	~~Bigleaf Maple~~
Aesculus californica	California Buckeye
~~*Alnus rhombifolia*~~	~~While Alder~~
~~*Populus fremontii*~~	~~Cottonwood~~
Quercus agrifolia	Coast Live Oak
~~*Quercus lobata*~~	~~Valley Oak~~

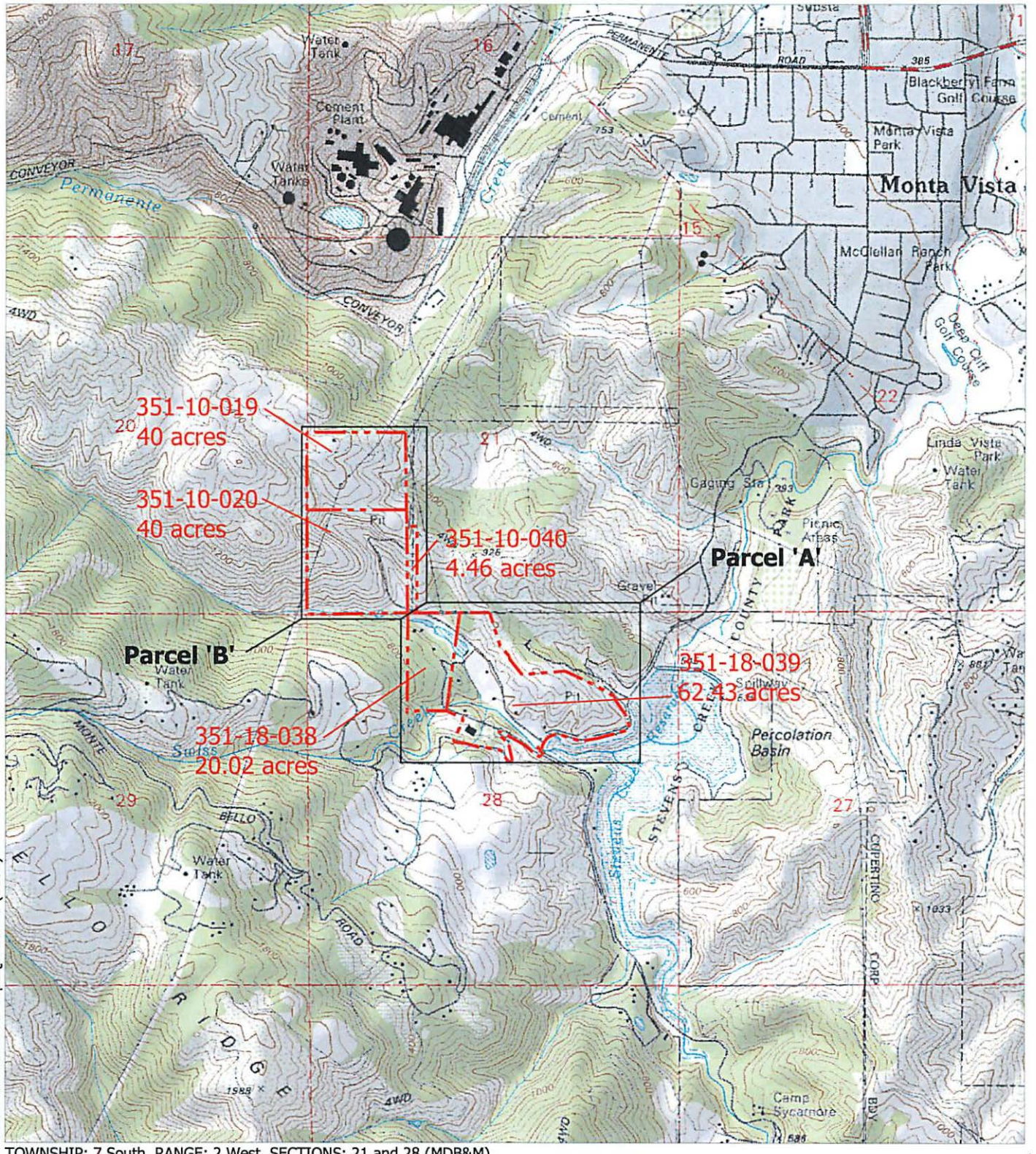
N

0 15 miles

SCALE: 1" = 15 miles

Figure 1
Regional Location
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



SOURCE: DeLorme TopoQuads 2.0 (2002)

TOWNSHIP: 7 South, RANGE: 2 West, SECTIONS: 21 and 28 (MDB&M)

- Assessors Parcels

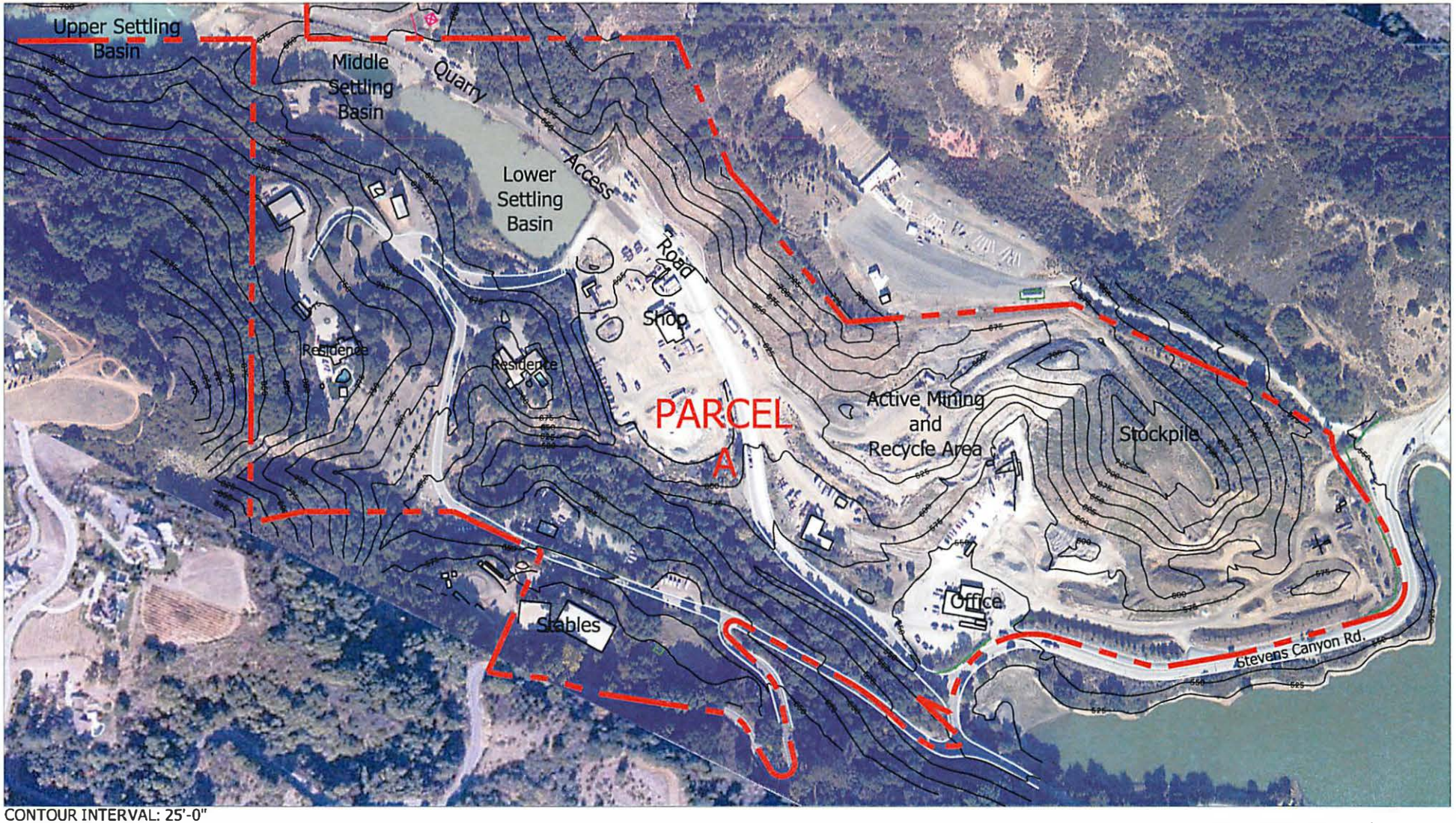
N

0 2000'

SCALE: 1" = 2000'-0"

Figure 2
Site Location
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



TOPOGRAPHY AND AERIAL PHOTOGRAPH SOURCE: Aero-Geodetic Corporation (10-26-06)

CONTOUR INTERVAL: 25'-0"

- Site Boundary

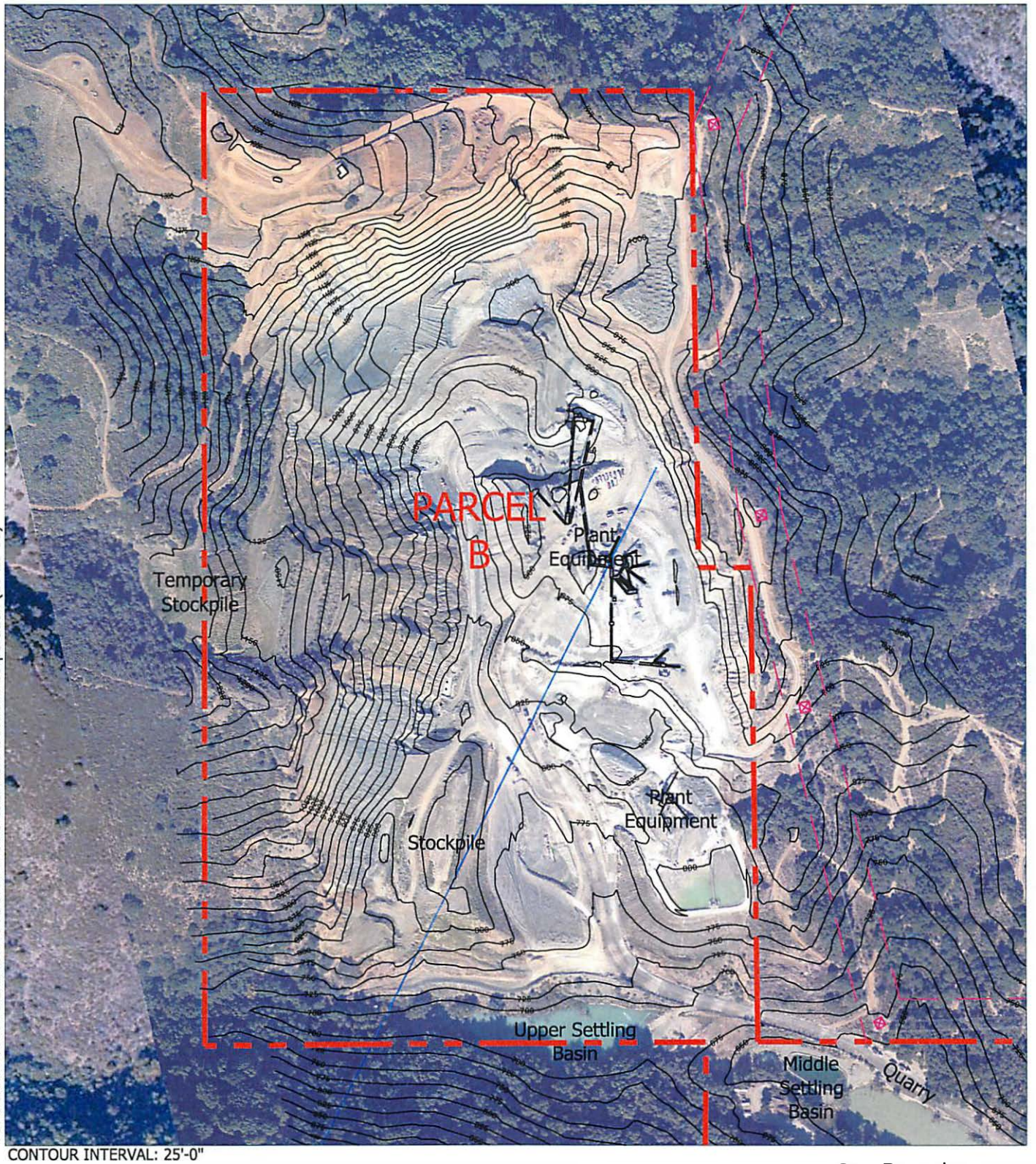
N

0 400'

SCALE: 1" = 400'-0"

Figure 3
Parcel A
Existing Conditions Aerial Photograph
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



TOPOGRAPHY AND AERIAL PHOTOGRAPH SOURCE: Aero-Geodetic Corporation (10-26-06)

CONTOUR INTERVAL: 25'-0"

- Site Boundary

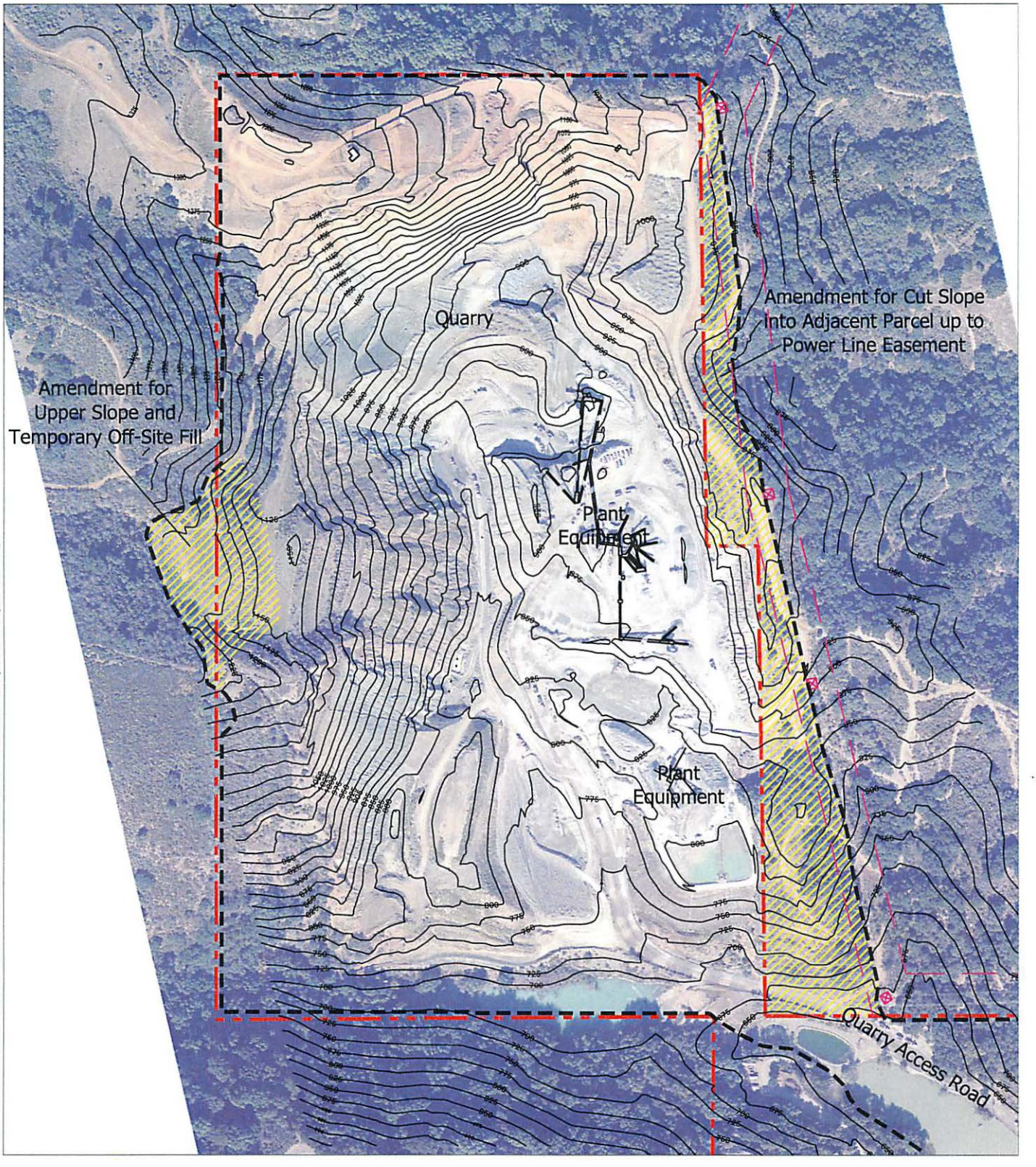
N

0 400'

SCALE: 1" = 400'-0"

Figure 4
Parcel B
Existing Conditions Aerial Photograph
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



TOPOGRAPHY AND AERIAL PHOTOGRAPH SOURCE: Aero-Geodetic Corporation (10-26-06)

N

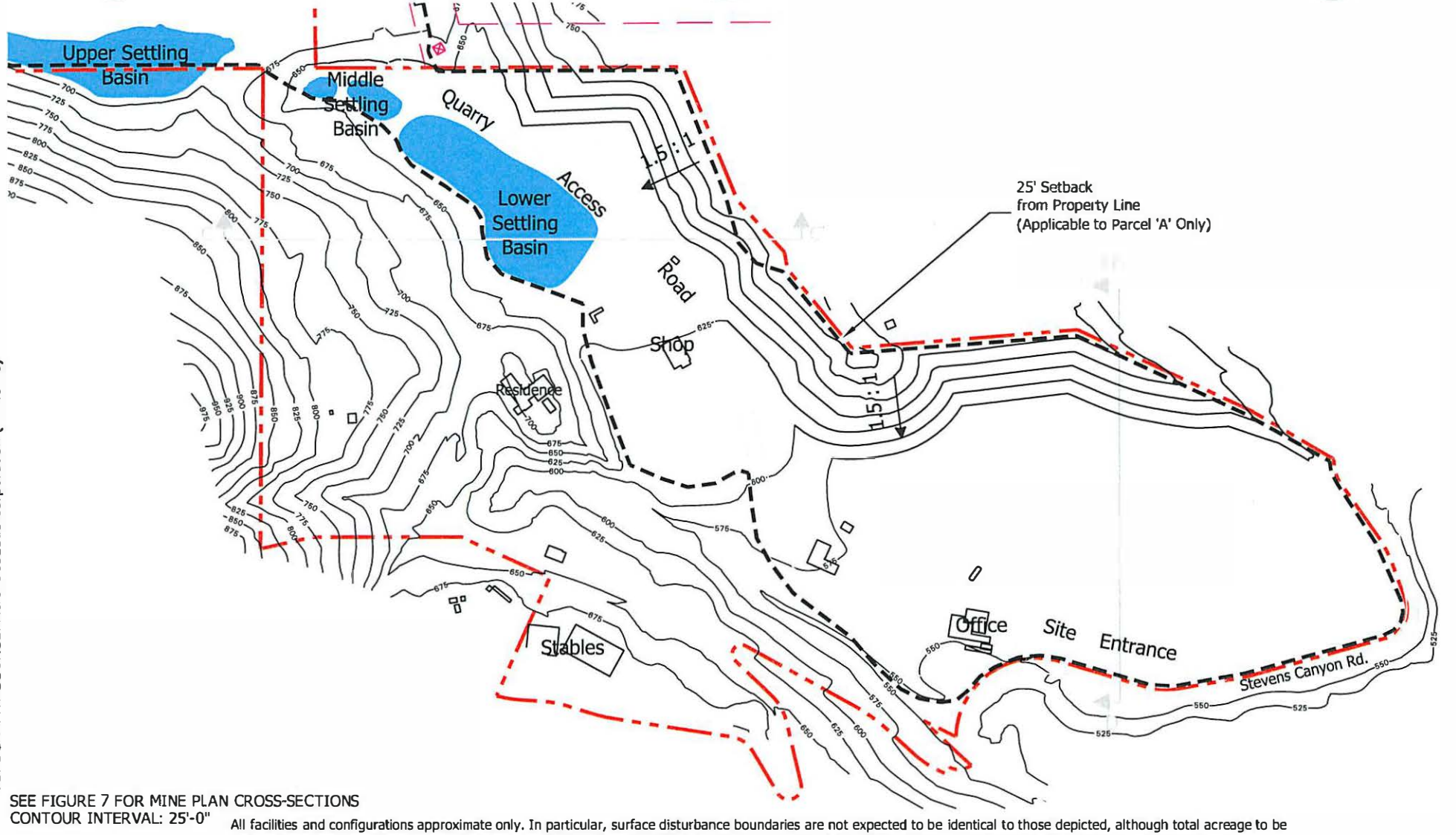
0 400'

SCALE: 1" = 400'-0"

- Site Boundary
- Surface Disturbance Boundary
- Area of Amendment

Figure 5
Reclamation Plan
Amendment Areas
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



TOPOGRAPHY SOURCE: Aero-Geodetic Corporation (10-26-06)

SEE FIGURE 7 FOR MINE PLAN CROSS-SECTIONS

CONTOUR INTERVAL: 25'-0"

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

N

0 400'

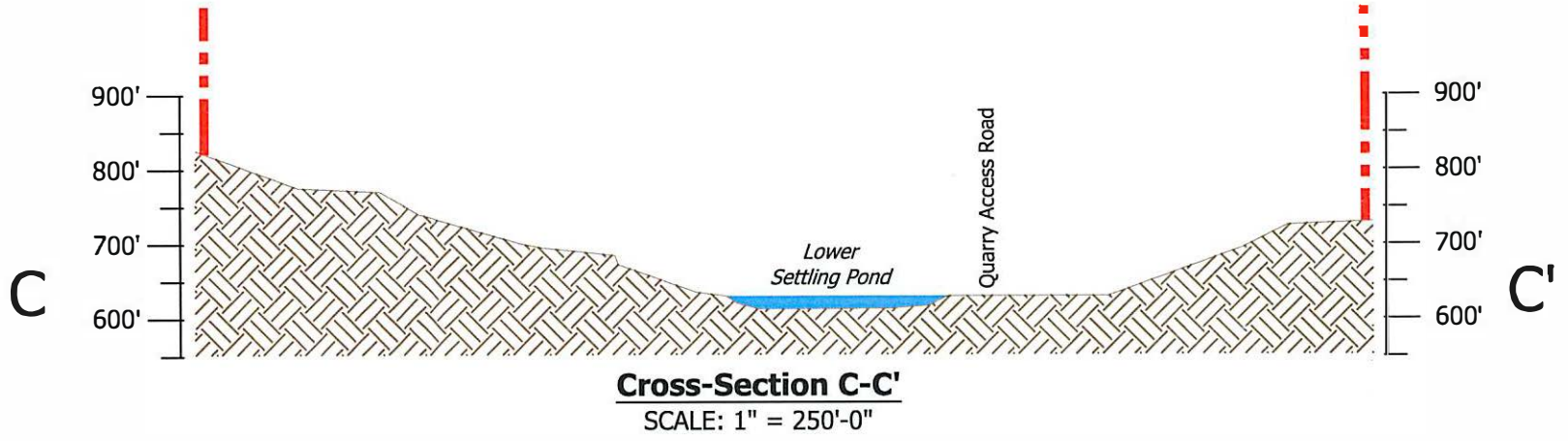
SCALE: 1" = 400'-0"

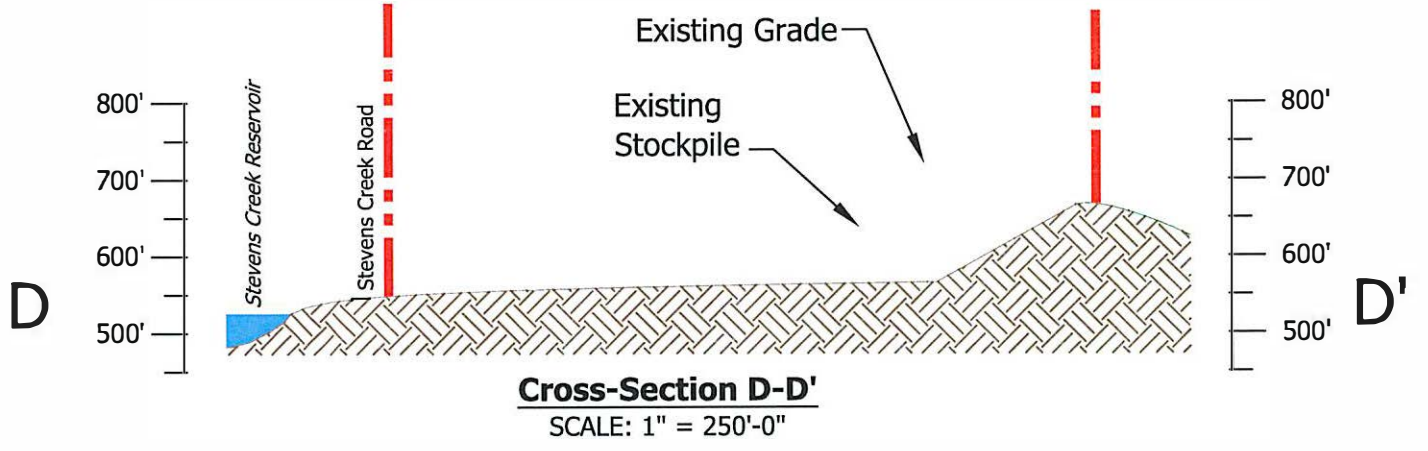
- Site Boundary
- Surface Disturbance Boundary
- 100' Power Line Easement

Figure 6
Parcel A
Mine Plan

STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.

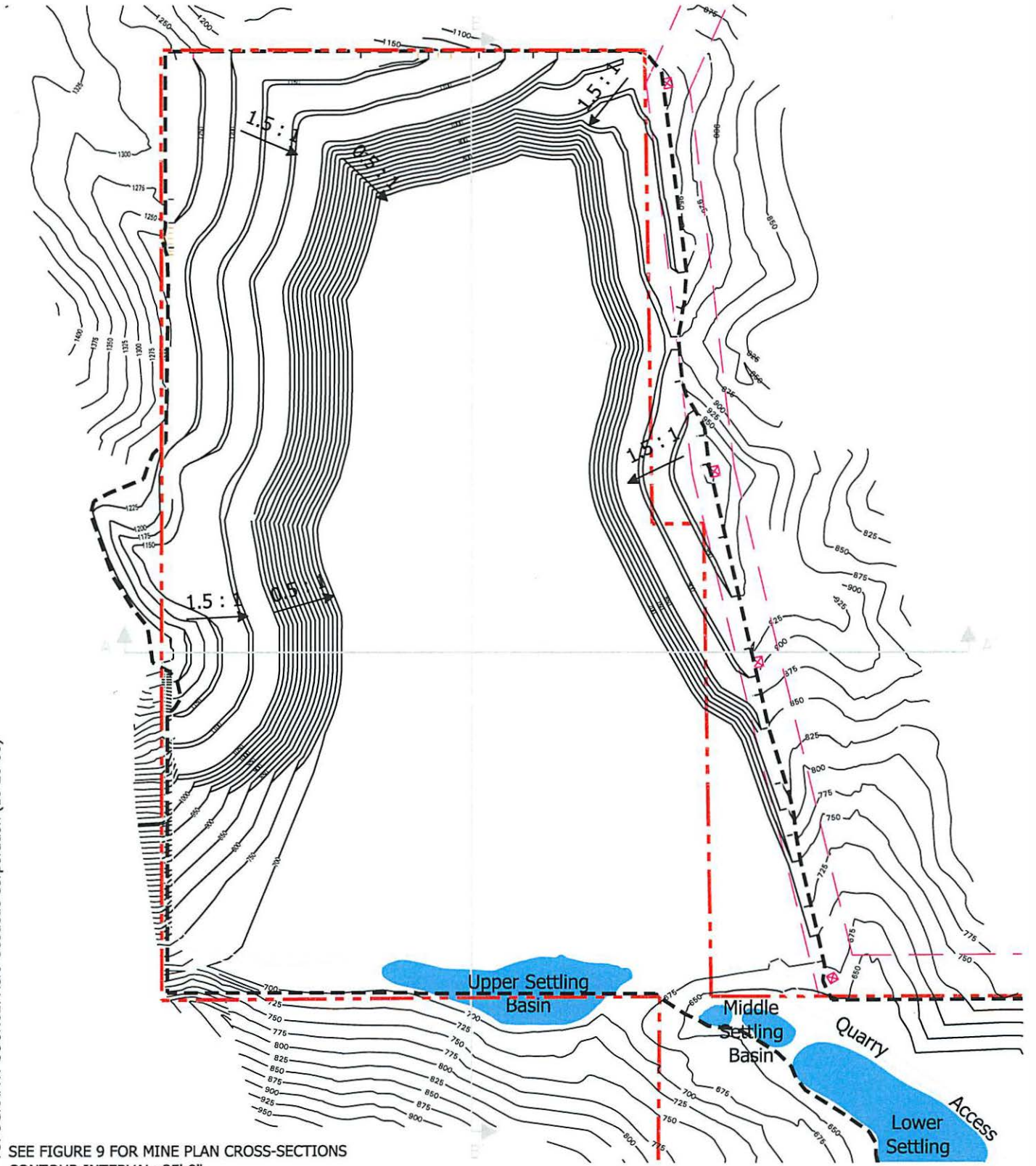




SEE FIGURE 6 FOR MINE PLAN CROSS-SECTION LOCATIONS

Figure 7
Parcel A
Mine Plan Cross-Sections
STEVENS CREEK QUARRY

RESOURCE DESIGN
TECHNOLOGY, INC.



TOPOGRAPHY SOURCE: Aero-Geodetic Corporation (10-26-06)

SEE FIGURE 9 FOR MINE PLAN CROSS-SECTIONS

CONTOUR INTERVAL: 25'-0"

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

N

0 400'

SCALE: 1" = 400'-0"

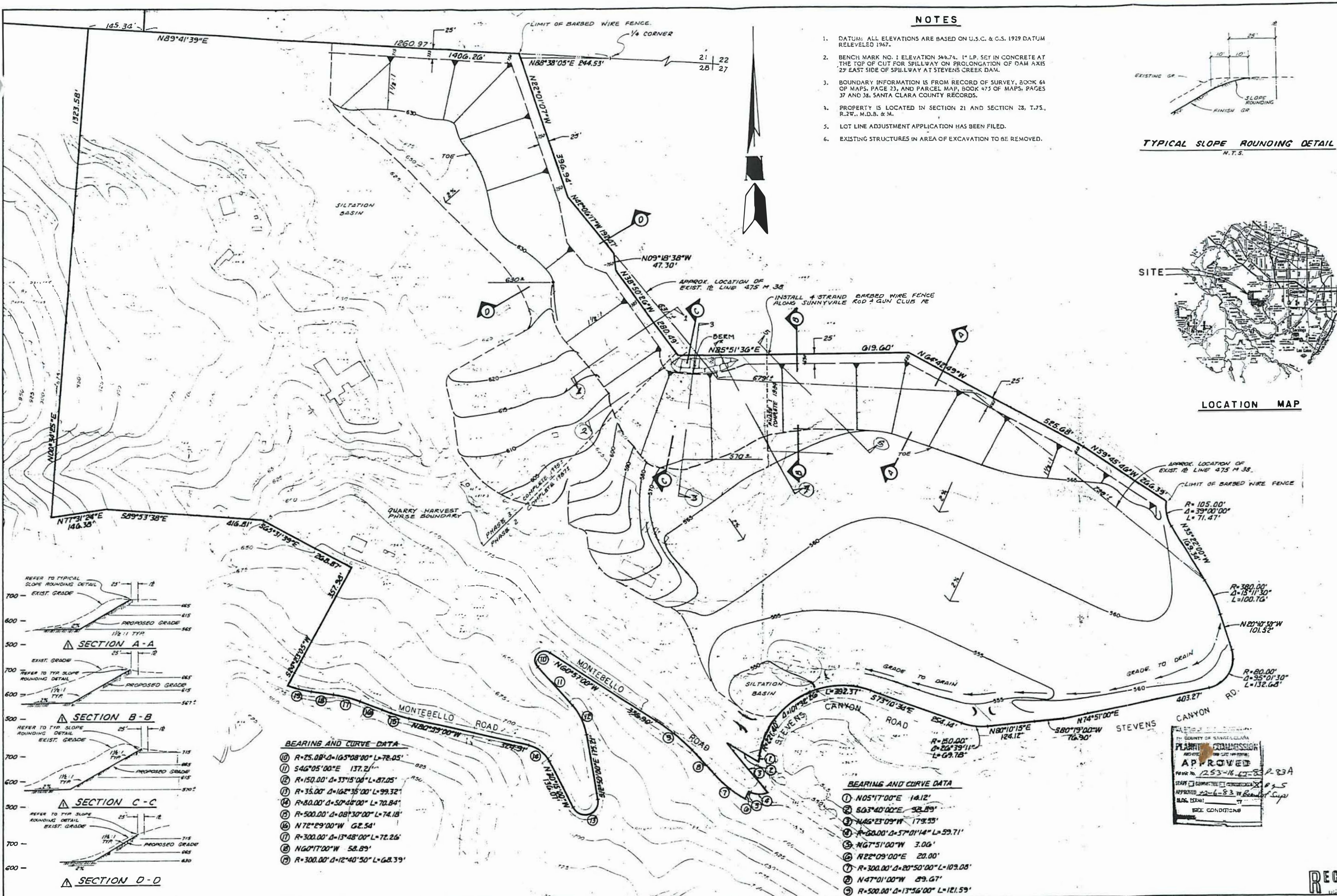
- Property Boundary
- Surface Disturbance Boundary
- Quarry Access Road
- 100' Power Line Easement

Figure 8
Parcel B
Mine Plan
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.

NOTES

1. DATUM: ALL ELEVATIONS ARE BASED ON U.S.C. & G.S. 1929 DATUM RELEVELED 1967.
2. BENCH MARK NO. 1 ELEVATION 546.74. 1" I.P. SET IN CONCRETE AT THE TOP OF CUT FOR SPILLWAY ON PROLONGATION OF DAM AXIS 25' EAST SIDE OF SPILLWAY AT STEVENS CREEK DAM.
3. BOUNDARY INFORMATION IS FROM RECORD OF SURVEY, BOOK 64 OF MAPS, PAGE 23, AND PARCEL MAP, BOOK 475 OF MAPS, PAGES 37 AND 38, SANTA CLARA COUNTY RECORDS.
4. PROPERTY IS LOCATED IN SECTION 21 AND SECTION 28, T.7S., R.2W., M.D.B. & M.
5. LOT LINE ADJUSTMENT APPLICATION HAS BEEN FILED.
6. EXISTING STRUCTURES IN AREA OF EXCAVATION TO BE REMOVED.



COUNTY OF SANTA CLARA PLANNING COMMISSION
APPROVED
FILE NO. 1253-16-62-83 P-83A
STAFF ☐ COMMITTEE ☐ COMMISSION ☒ 8-5
APPROVED 12-6-83 BY Board of Sups
BLDG. PERMIT
SEE CONDITIONS

RECEIVED OCT 06 1983 COUNTY OF SANTA CLARA PLANNING COMMISSION

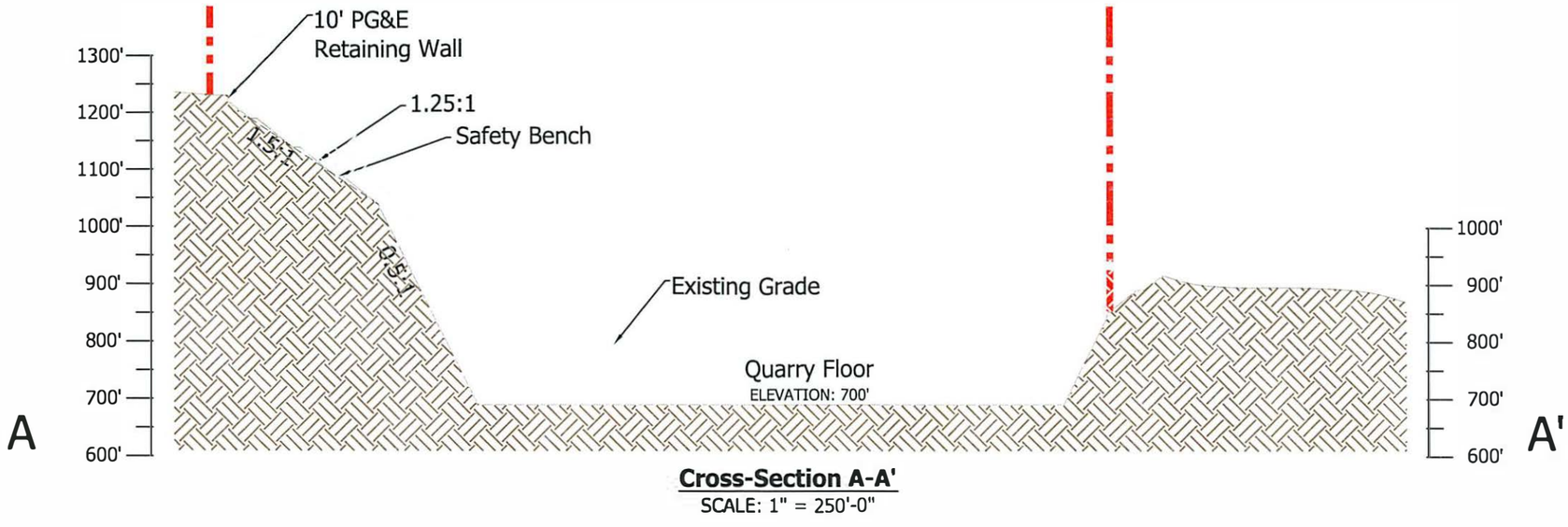
mark	date	by	description
△	10-5-83	DAL	TOP/TOE OF CUT @ ℄ ANGLE PT.

RECLAMATION PLAN
STEVENS CREEK QUARRY, INC.

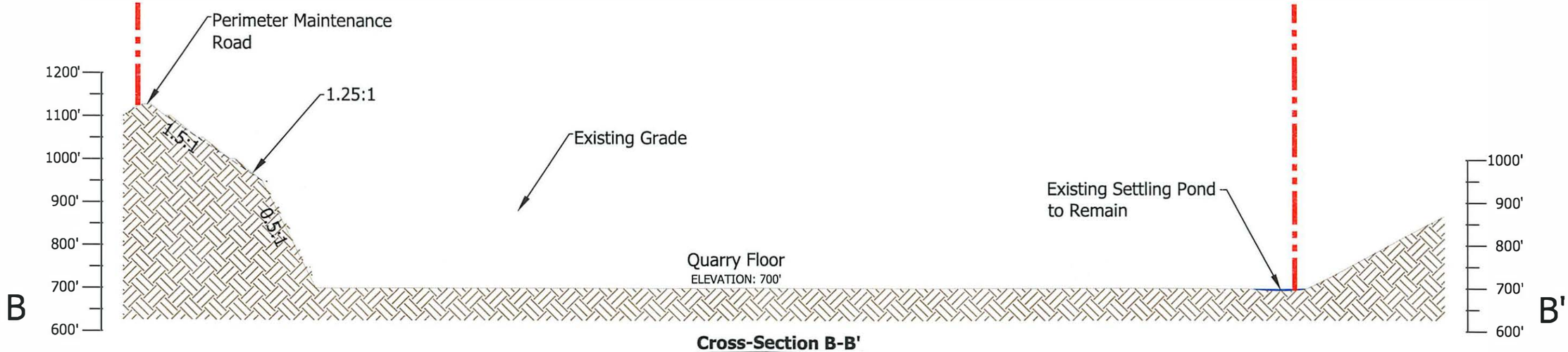
RUTH AND GOING, INC.
architecture • engineering • planning
919 The Alameda San Jose California 95126 (408) 297-8273

drwn RJB / PH
ch'kd
dept. CIVIL
scale 1" = 100'
reg. no. 13138
date MAY 1983
SHEET 1 OF 5 SHEETS
job no. 16,512-140

OCT 6 1983



Cross-Section A-A'
SCALE: 1" = 250'-0"

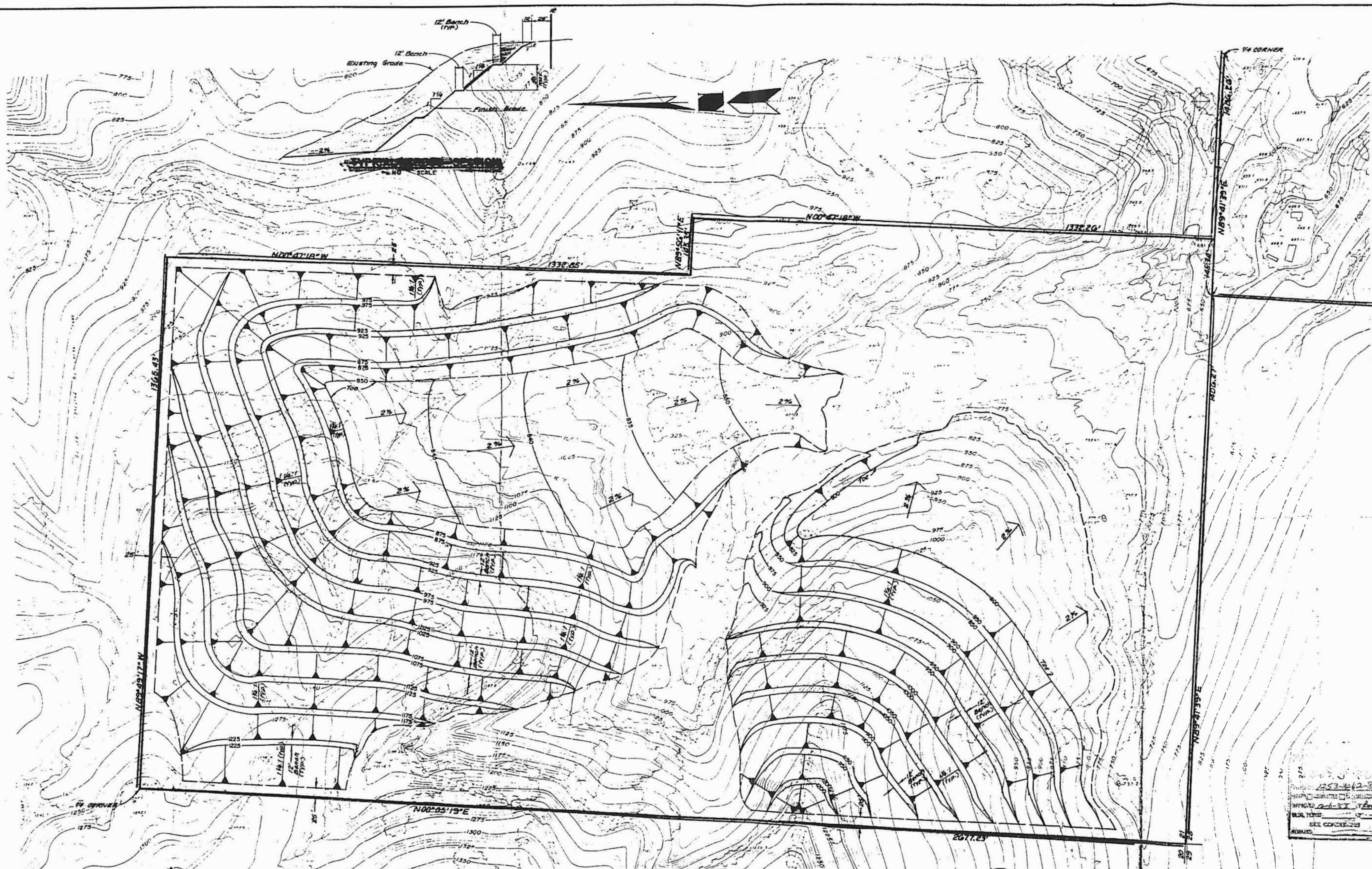


Cross-Section B-B'
SCALE: 1" = 250'-0"

SEE FIGURE 8 FORMINE PLAN CROSS-SECTION LOCATIONS

Figure 9
Parcel B
Mine Plan Cross-Sections
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



AREA #2

REV. I

revisions			
mark	date	by	description
△	6/29/83	R.A.S.	12' Bench & Cross Section

RECLAMATION PLAN

STEVENS CREEK QUARRY, INC.

drawn R.J.B. / P.H.
ch'kd [illegible]
dept. CIVIL
scale 1" = 100'
reg. no. 13138

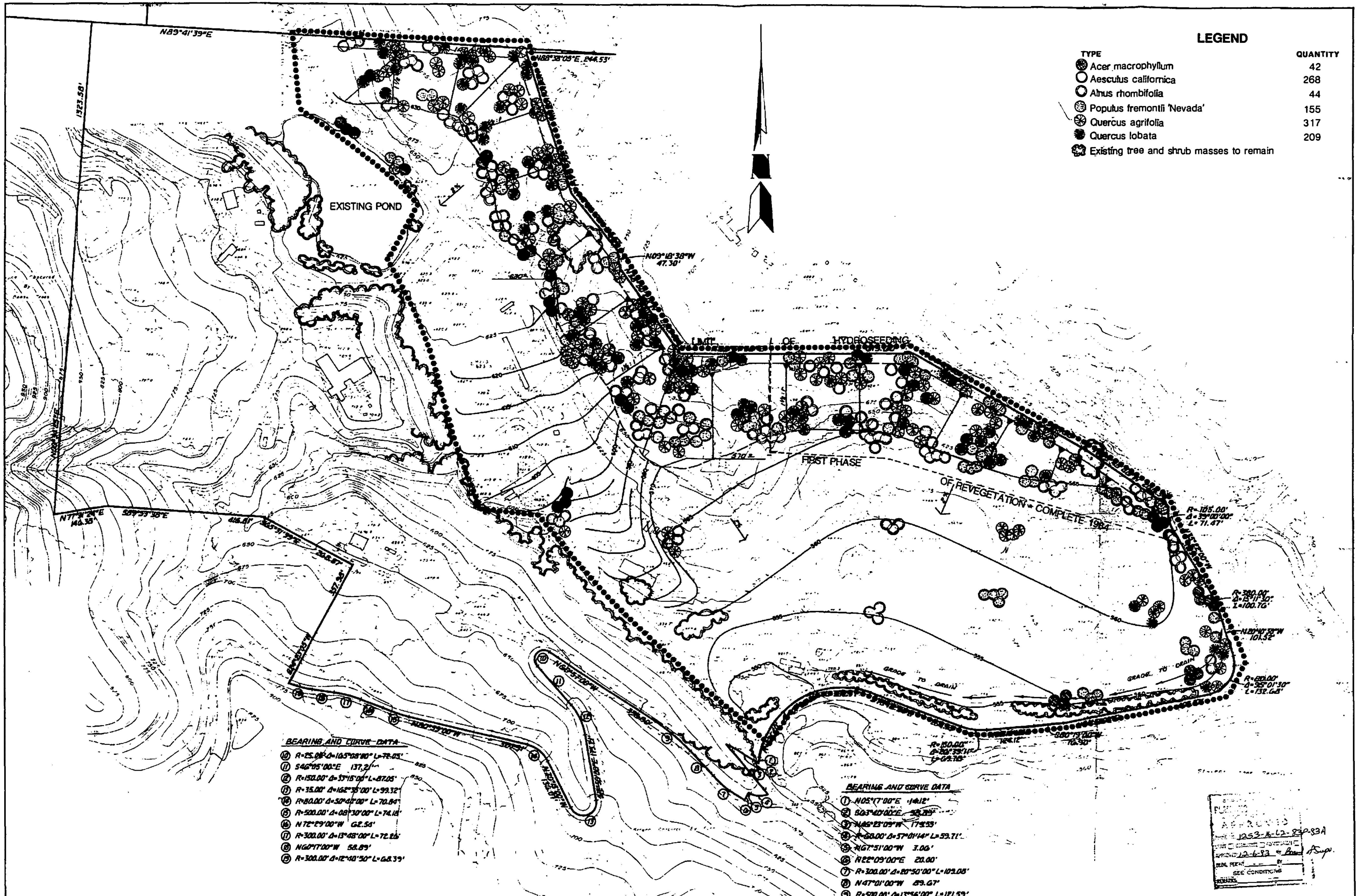
date MAY 1983

SHEET 2 OF 5 SHEETS

job no. 16512-140

RUTH AND GOING, INC.
architecture • engineering • planning
919 The Alameda San Jose California 95126 (408) 297-8273

Rev I



RUTH AND GOING, INC.
architecture • engineering • planning

919 The Alameda San Jose California 95126 (408) 297-8273

REVEGETATION PLAN

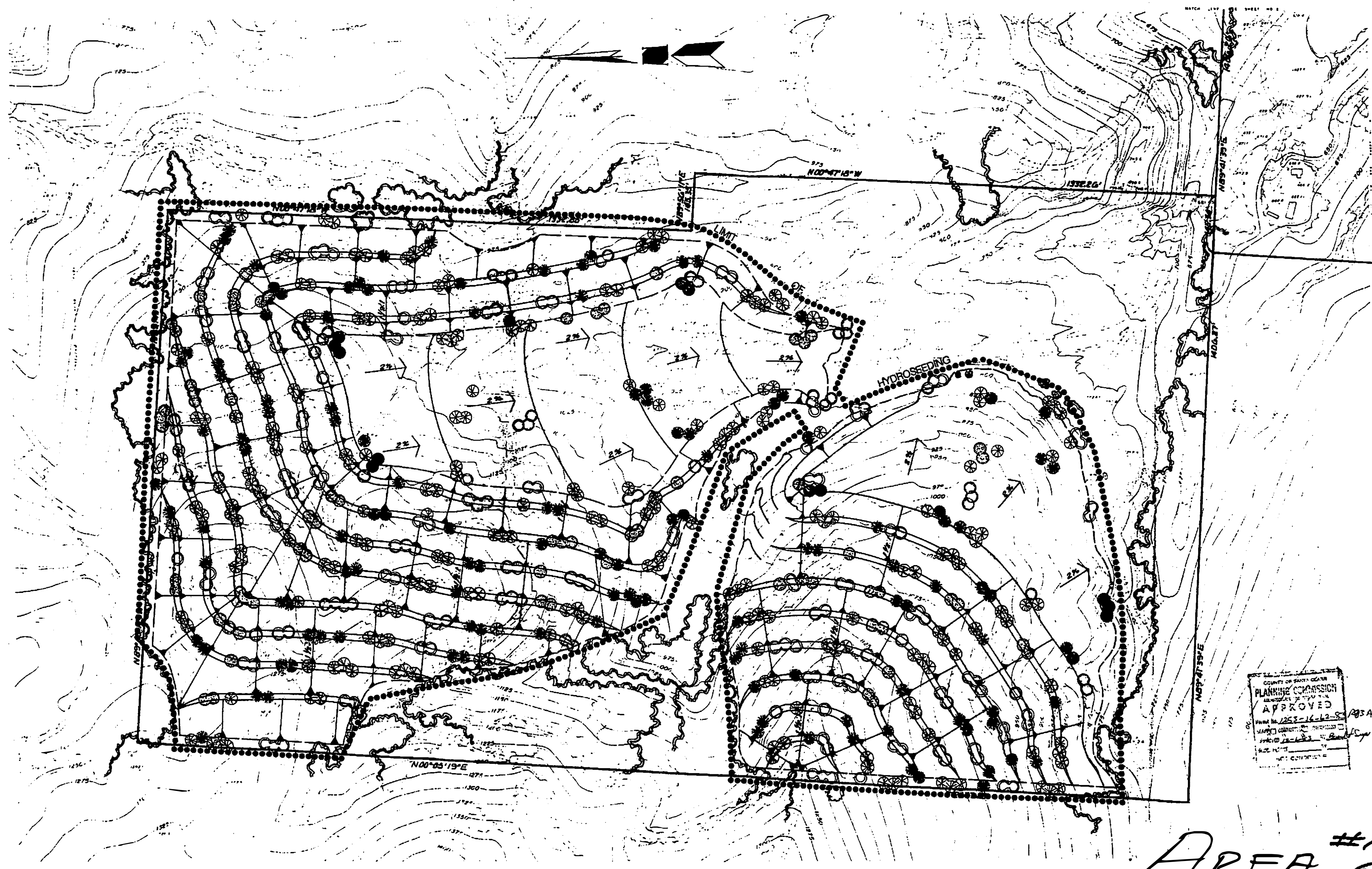
STEVENS CREEK QUARRY, INC.

revisions			
mark	date	by	description

drawn
chk'd
dept. PLANNING
scale 1"=100'-0"
reg. no.

date

SHEET
3
OF 5 SHEETS
job no. 16512-102



REVEGETATION PLAN

STEVENS CREEK QUARRY, INC.

revisions			
mark	date	by	description

drawn RS
chk'd JHS
dept. PLANNING
scale 1"=100'

date

SHEET
4
OF 5 SHEETS
job no. 16512-182

RUTH AND GOING, INC.
architecture • engineering • planning
919 The Alameda San Jose California 95126 (408) 297-8273

REVEGETATION NOTES

RECLAMATION AND REVEGETATION OF THE QUARRY SITE SHALL PROCEED WITH TWO CONCURRENT PROCESSES. FIRST, ALL AREAS TO BE REVEGETATED SHALL HAVE SLOPES GRADED TO FAIRLY UNIFORM GRADES TO ELIMINATE EXCESSIVE FURROWING. SOME FURROWS PARALLEL TO CONTOURS SHOULD BE PROVIDED TO ASSIST IN SEED GERMINATION AND ESTABLISHMENT. THIS SHALL BE FOLLOWED BY THE APPLICATION OF A HYDROSEED MIX TO PROVIDE QUICK COVER FOR EROSION CONTROL AND THATCH BUILDUP. ALSO INCORPORATED INTO THIS HYDROSEED MIX SHALL BE SOME SHRUB AND TREE SEEDS TO PROVIDE FOR FUTURE SUCCESSION GROWTH. SECONDLY, CONTAINER PLANTINGS OF NATIVE AND NATURALIZED PLANT MATERIALS SHALL BE PLANTED TO PROVIDE FUTURE SCREENING AND WILDLIFE HABITATS. PLANTING OF THESE CONTAINER MATERIALS SHALL BE IN RANDOM GROUPINGS TO CREATE A NATURALIZED LANDSCAPE WHEN MATURE.

AREAS SHOWN TO BE REVEGETATED SHALL BE PLANTED OR HYDROSEEDED/MULCHED IN THE LATE FALL TO TAKE ADVANTAGE OF WINTER RAINS. OPTIMUM PERIOD FOR REVEGETATION IS LATE OCTOBER TO LATE NOVEMBER.

IN AREAS TO BE REVEGETATED, PLANTING AND HYDROSEEDING SHALL COMMENCE AS SOON AS POSSIBLE UPON COMPLETION OF QUARRY OPERATIONS IN THE IMMEDIATE AREA AND AS SEASONAL CONSTRAINTS ALLOW.

UPON COMPLETION OF QUARRY OPERATIONS AND PRIOR TO THE START OF REVEGETATING A SOIL ANALYSIS SHALL BE PERFORMED. FERTILIZATION RATES SHALL BE AMENDED AS NEEDED TO BRING INTO CONFORMANCE WITH THE SOIL ANALYSIS REPORT RECOMMENDATIONS.

ALL CONTAINER PLANTS SHALL RECEIVE SUPPLEMENTAL WATERING THROUGH THE FIRST YEAR.

MATERIALS

HYDROSEED MIXTURE:

THE FOLLOWING HYDROSEED MIX SHALL BE APPLIED TO ALL AREAS TO PROVIDE QUICK COVER AND EROSION CONTROL WITH SUCCESSIONAL SHRUBS AND TREE SPECIES FOR FUTURE SCREENING.

GRASSES, FORBS AND LEGUMES:		RATE lb/ac
Bromus mollis	Blando Brome	40
Eschscholzia californica	California Poppy	3
Festuca megalura	Zorro Fescue	15
Lolium multiflorum	Italian Ryegrass	40
Lupinus nanus	Sky Lupine	5
Pennisetum villosum	Fountain Grass	8
Trifolium hirtum (innoculate needed)	Rose Clover	8
TREES AND SHRUBS:		
Adenostoma fasciculatum	Chamise	3
Atriplex semibaccata	Australian Saltbrush	3
Baccharis pilularis consanguinea	Chaparrel Broom	2
Ceanothus megacarpus	California Lilac Buckbrush	3
Cupressus arizonica	Arizona Cypress	2
Eriogonum fasciculatum	California Buckwheat	3
Heteromeles arbutifolia	Toyon	2
Pinus halepensis	Aleppo Pine	2
Rhamnus californica	Coffeeberry	2
Salvia leucophylla	Gray Sage	2

THE FOLLOWING MATERIALS SHALL BE MIXED WITH THE HYDROSEED SLURRY AND APPLIED AT SPECIFIED RATES.

GRO-POWER PLUS FERTILIZER	500 lbs/ac
GRO-POWER CONTROLLED RELEASE 12-8-8	500 lbs/ac

THE FOLLOWING MATERIALS SHALL BE HYDROMULCHED OVER THE HYDROSEEDED AREAS. DO NOT MIX SEED AND MULCH TOGETHER IN ONE APPLICATION. MULCH SHALL BE APPLIED OVER SEED TO INSURE PROPER SEED/GROUND CONTACT.

WOOD CELLULOSE FIBER MULCH	2000 lbs/ac
TERRA TACK II ORGANIC STABILIZER	45 lbs/ac

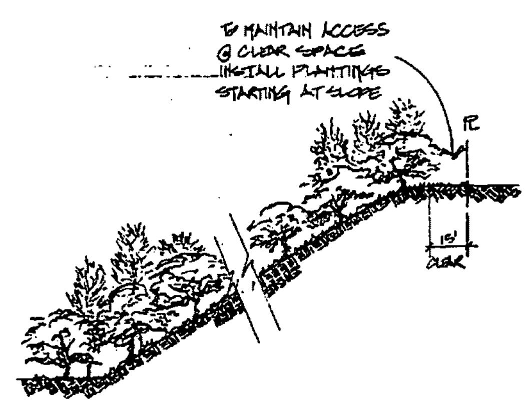
30-45 DAYS AFTER HYDROSEEDING APPLY THE FOLLOWING

GRO-POWER PLUS	15 lbs/1000 sq ft
GRO-POWER CONTROLLED RELEASE 12-8-8	15 lbs/1000 sq ft

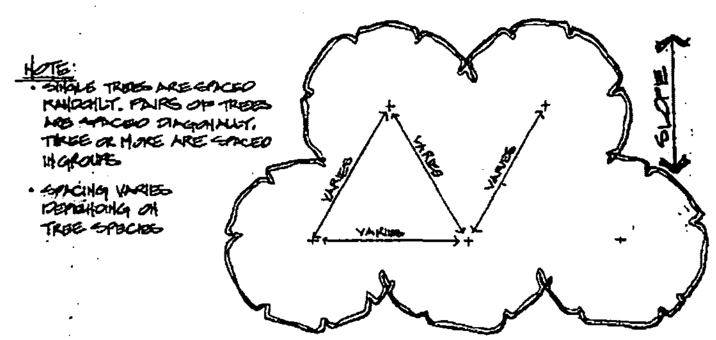
CONTAINER PLANTS:

TREES:		SIZE	SPACING
Acer macrophyllum	Bigleaf Maple	1 gal	40'
Aesculus californica	California Buckeye	1 gal	20'
Alnus rhombifolia	White Alder	1 gal	20'
Populus fremontii	Cottonwood	1 gal	15'
Quercus agrifolia	Coast Live Oak	1 gal	20'
Quercus lobata	Valley Oak	1 gal	20'

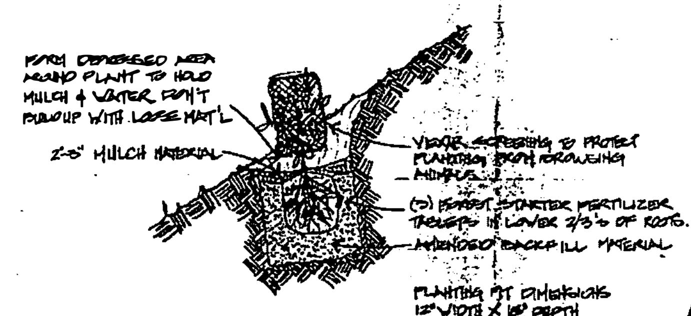
PLANT CONTAINER MATERIALS IN PITS AT LEAST 12" IN DIAMETER AND 18" IN DEPTH. BACKFILL WITH 50% SITE SOIL AND 50% FRIABLE LOAM TOPSOIL. CONTAINER PLANTS SHALL HAVE (2) 9 GRAM 22-8-2 AGRIFORM FOREST STARTER TABLETS ADDED IN THE LOWER 2/3'S OF ROOTBALL AT TIME OF PLANTING. FORM A DEPRESSION AROUND EACH PLANT AND FILL WITH 2"-3" OF BARK MULCH TO ASSIST IN MOISTURE RETENTION.



TYPICAL SECTION AT SLOPES NTS



TYPICAL CONTAINER SPACING NTS



TYPICAL CONTAINER PLANTING NTS

COUNTY OF SANTA CLARA
PLANNING COMMISSION
APPROVED
1253-16-62-83P-83A
STAFF ☐ COMMITTEE ☐ COMMISSION ☐
APPROVED 12-6-83
SEE CONDITIONS

1253

RUTH AND GOING, INC.
architecture • engineering • planning
919 The Alameda San Jose California 95126 (408) 297-8273

revisions

mark	date	by	description

REVEGETATION NOTES

STEVENS CREEK QUARRY, INC.

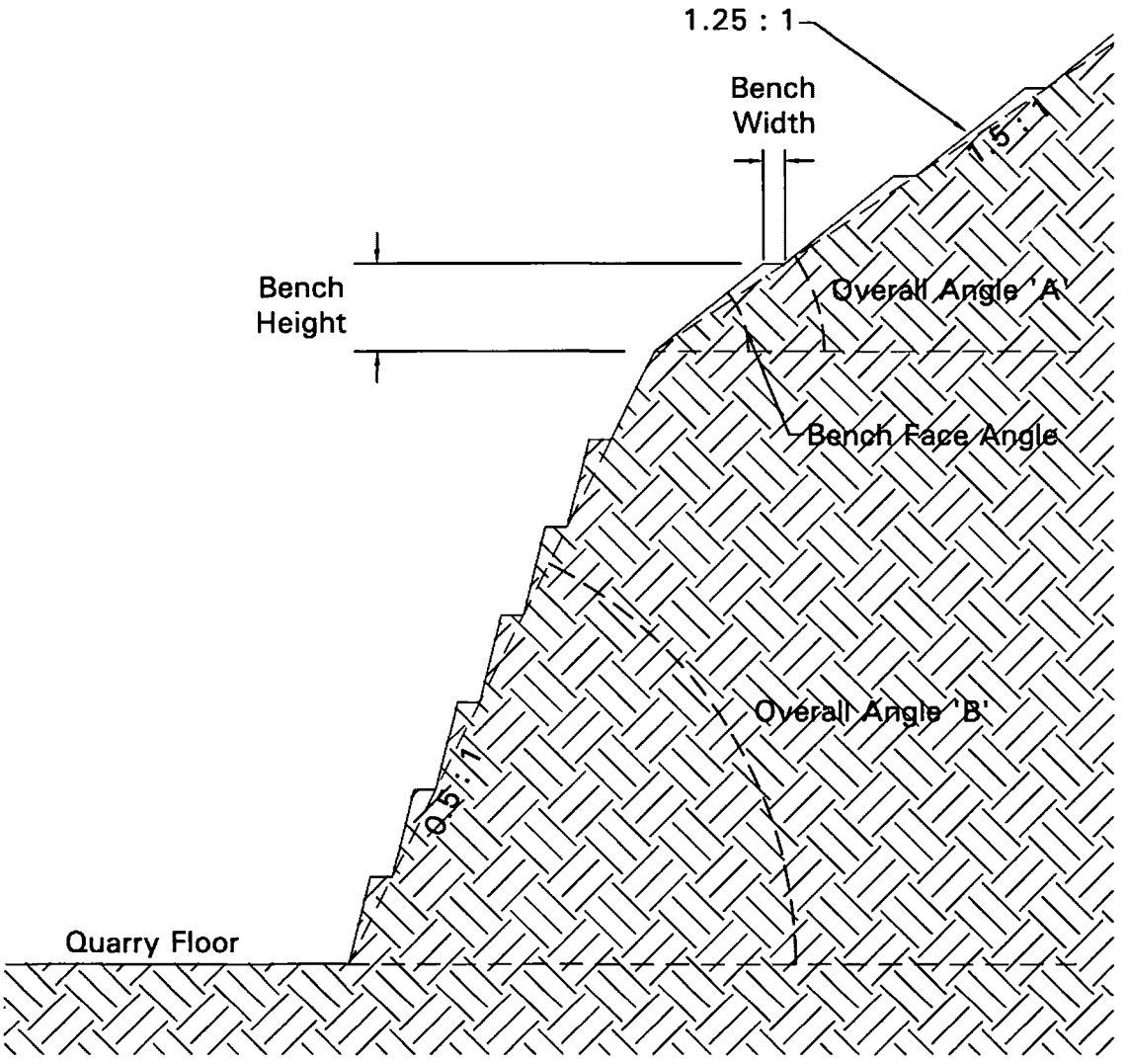
drawn | chk'd | dept. PLANNING | scale

date

SHEET 5 OF 5 SHEETS

job no. 16312-152

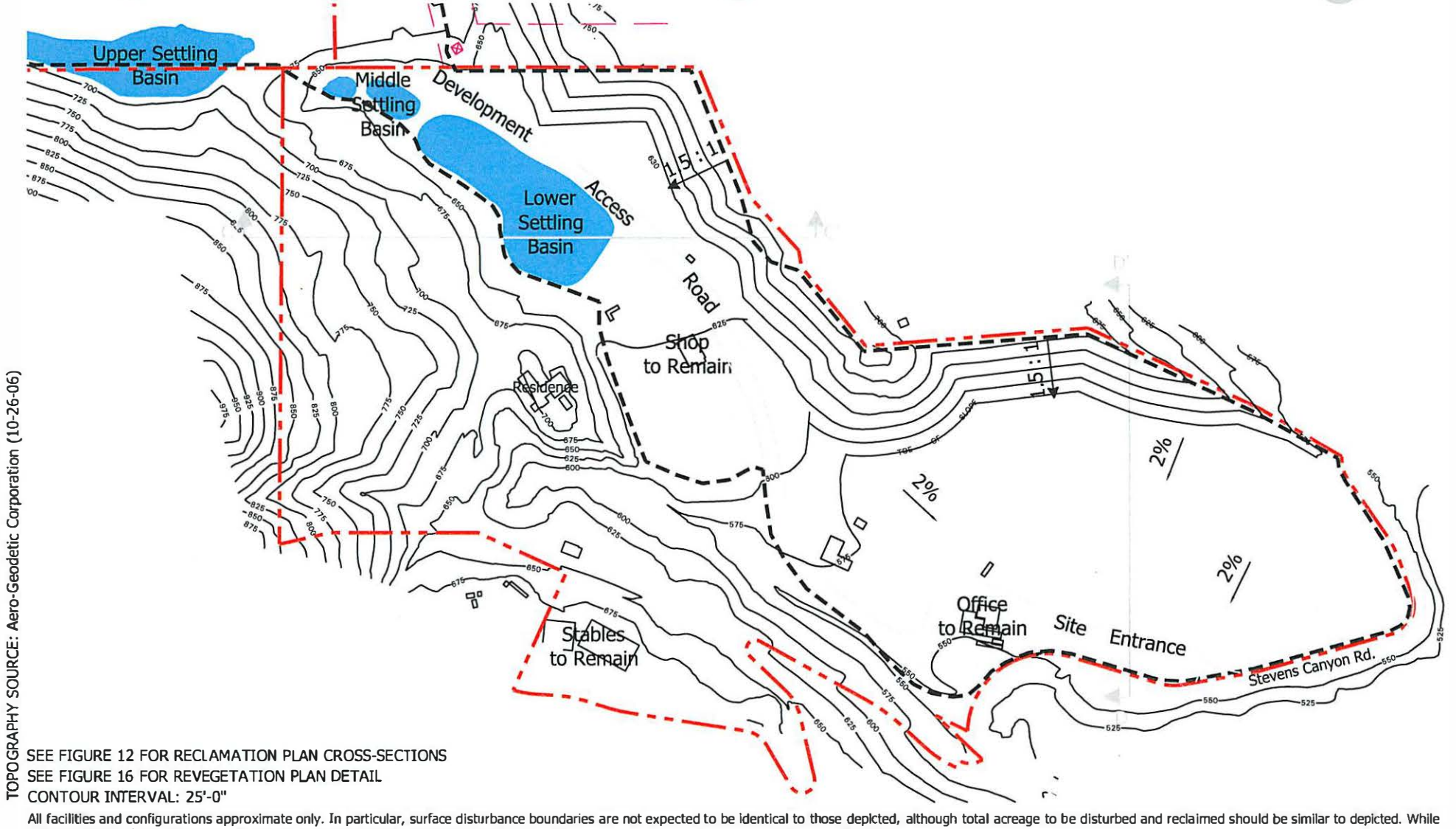
REV II



Bench Height	-	50'
Bench Width	-	10' to 15'
Overall Angle 'A'	-	34°
Bench Face Angle 'A'	-	38°
Overall Angle 'B'	-	64°

Figure 10
Typical Mine Slope
STEVENS CREEK QUARRY

RESOURCE DESIGN
TECHNOLOGY, INC.



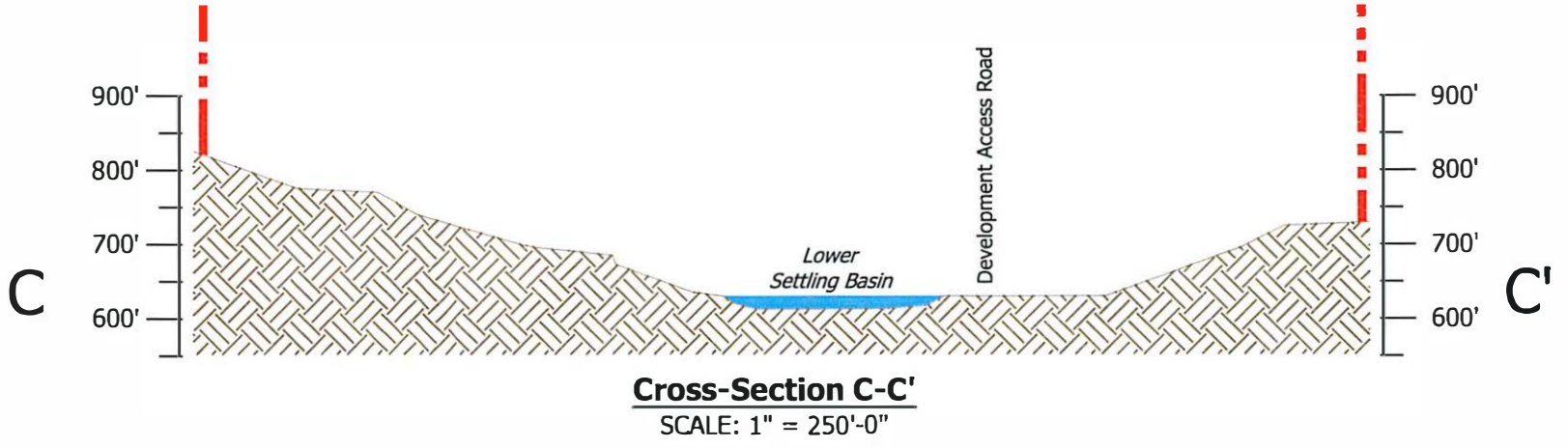
TOPOGRAPHY SOURCE: Aero-Geodetic Corporation (10-26-06)

SEE FIGURE 12 FOR RECLAMATION PLAN CROSS-SECTIONS
SEE FIGURE 16 FOR REVEGETATION PLAN DETAIL
CONTOUR INTERVAL: 25'-0"

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

Figure 11
Parcel A
Reclamation Plan
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



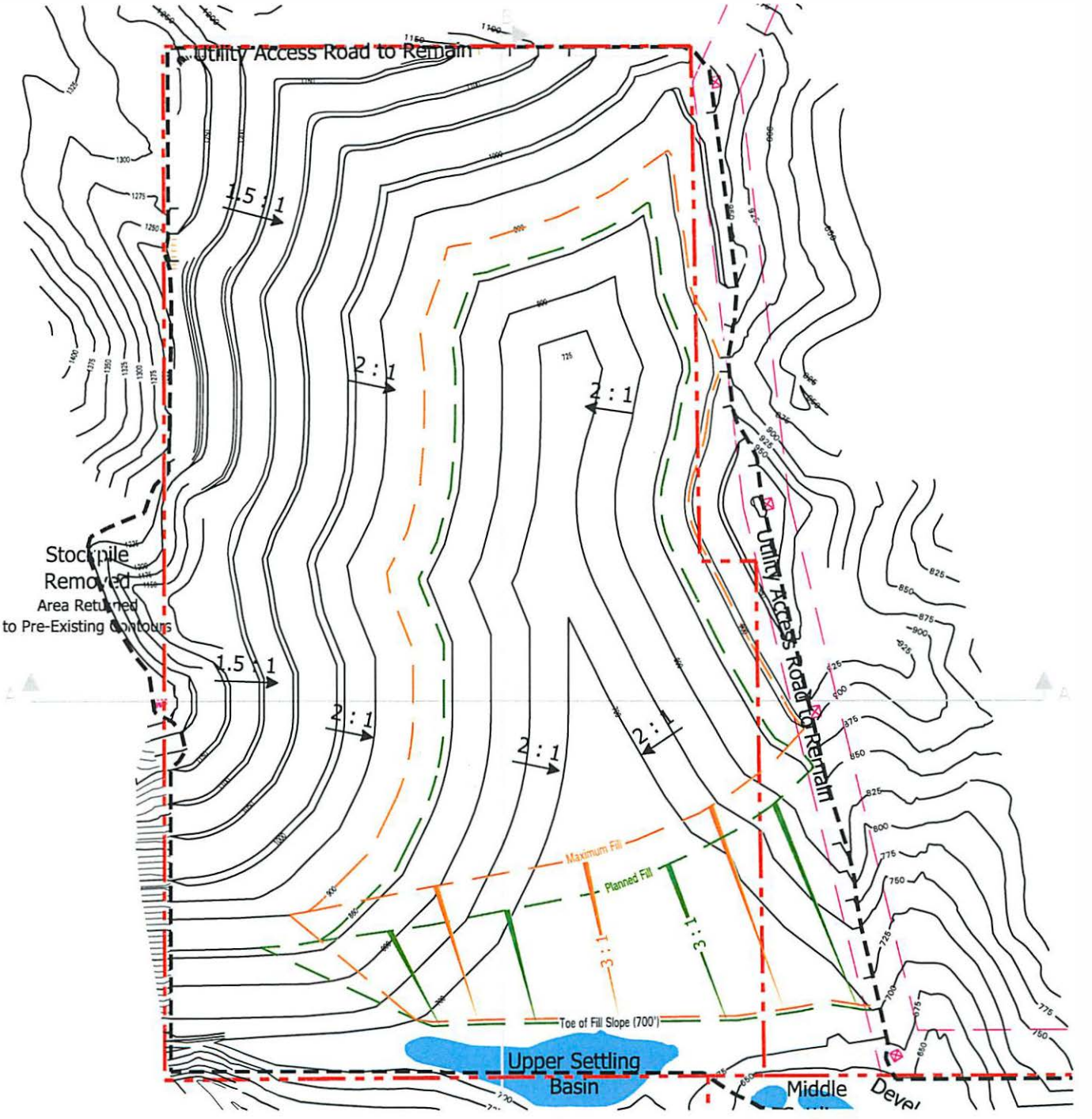
Cross-Section C-C'
SCALE: 1" = 250'-0"

Cross-Section D-D'
SCALE: 1" = 250'-0"

Figure 12
Parcel A
Reclamation Plan Cross-Sections
STEVENS CREEK QUARRY

SEE FIGURE 11 FOR RECLAMATION PLAN CROSS-SECTION LOCATIONS

RESOURCE DESIGN TECHNOLOGY, INC.



TOPOGRAPHY SOURCE: Aero-Geodetic Corporation (10-26-06)

SEE FIGURE 14 FOR RECLAMATION PLAN CROSS-SECTION LOCATIONS
SEE FIGURE 17 FOR REVEGETATION PLAN DETAIL

CONTOUR INTERVAL: 25'-0"

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

- Site Boundary
- Development Access Road
- 2:1 Fill Slope

This is the minimum fill slope that will be completed for purposes of final slope stability.

- Maximum Fill (900')
- Planned Fill (860')

Depending on availability, fill may continue to be imported and placed to the indicated elevations. See text of reclamation plan for full description.

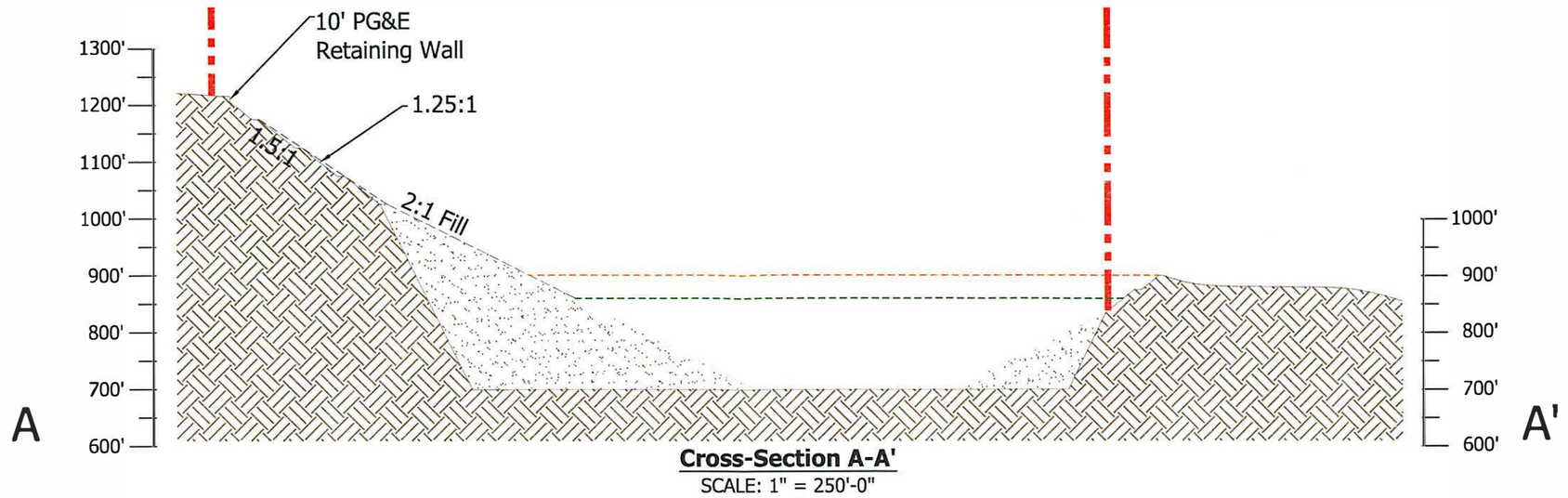
N

0 400'

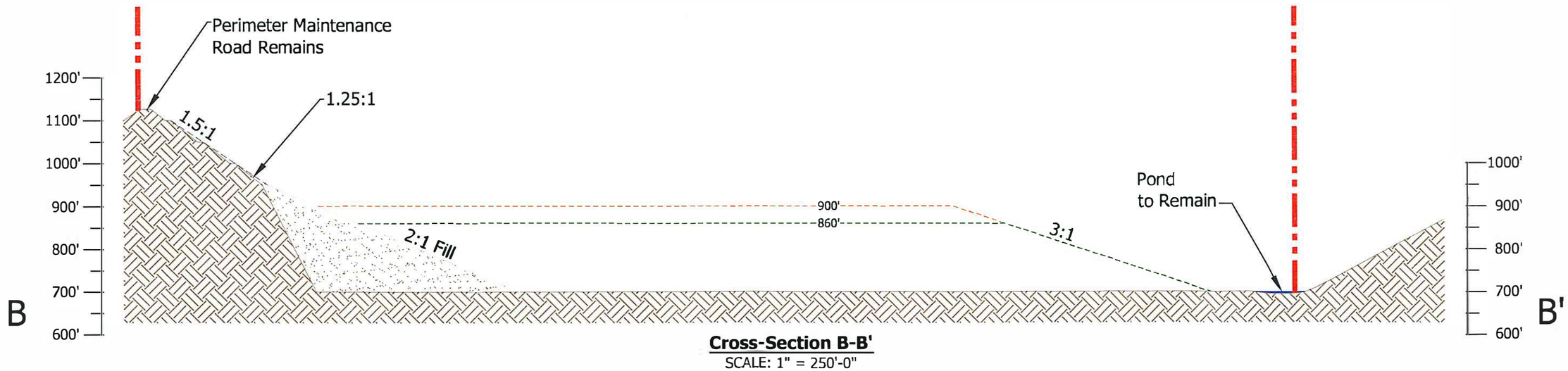
SCALE: 1" = 400'-0"

Figure 13
Parcel B
Reclamation Plan
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



Cross-Section A-A'
SCALE: 1" = 250'-0"



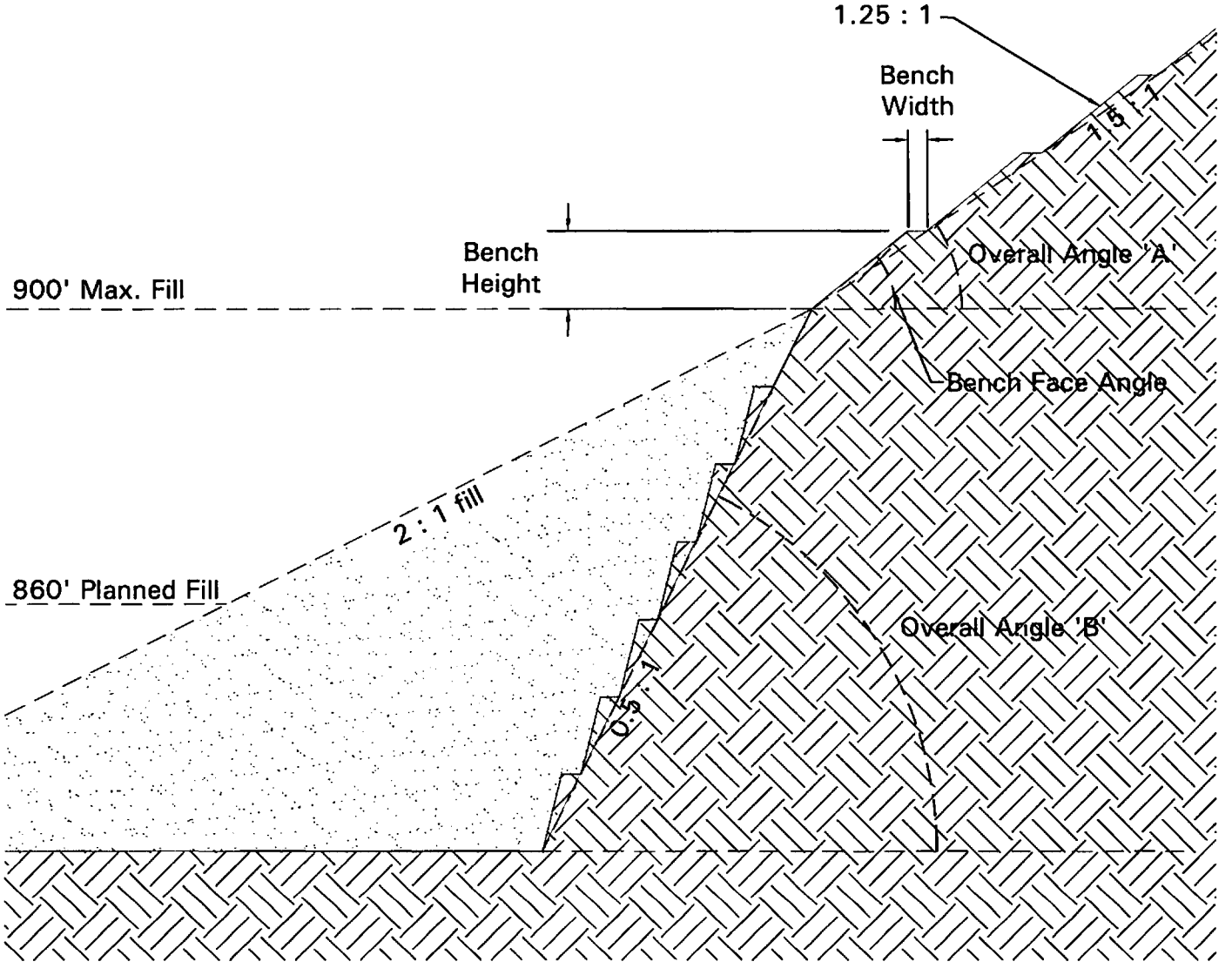
Cross-Section B-B'
SCALE: 1" = 250'-0"

- Minimum Fill Surface
- Planned Fill Surface
- Maximum Fill Surface

SEE FIGURE 13 FOR RECLAMATION PLAN CROSS-SECTION LOCATIONS

Figure 14
Parcel B
Reclamation Plan Cross-Sections
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



Bench Height	-	50'
Bench Width	-	10' to 15'
Overall Angle 'A'	-	34°
Bench Face Angle 'A'	-	38°
Overall Angle 'B'	-	64°

Figure 15
Typical Reclamation Slope
STEVENS CREEK QUARRY

RESOURCE DESIGN
TECHNOLOGY, INC.

Figure 16
Parcel A
Revegetation Plan
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.

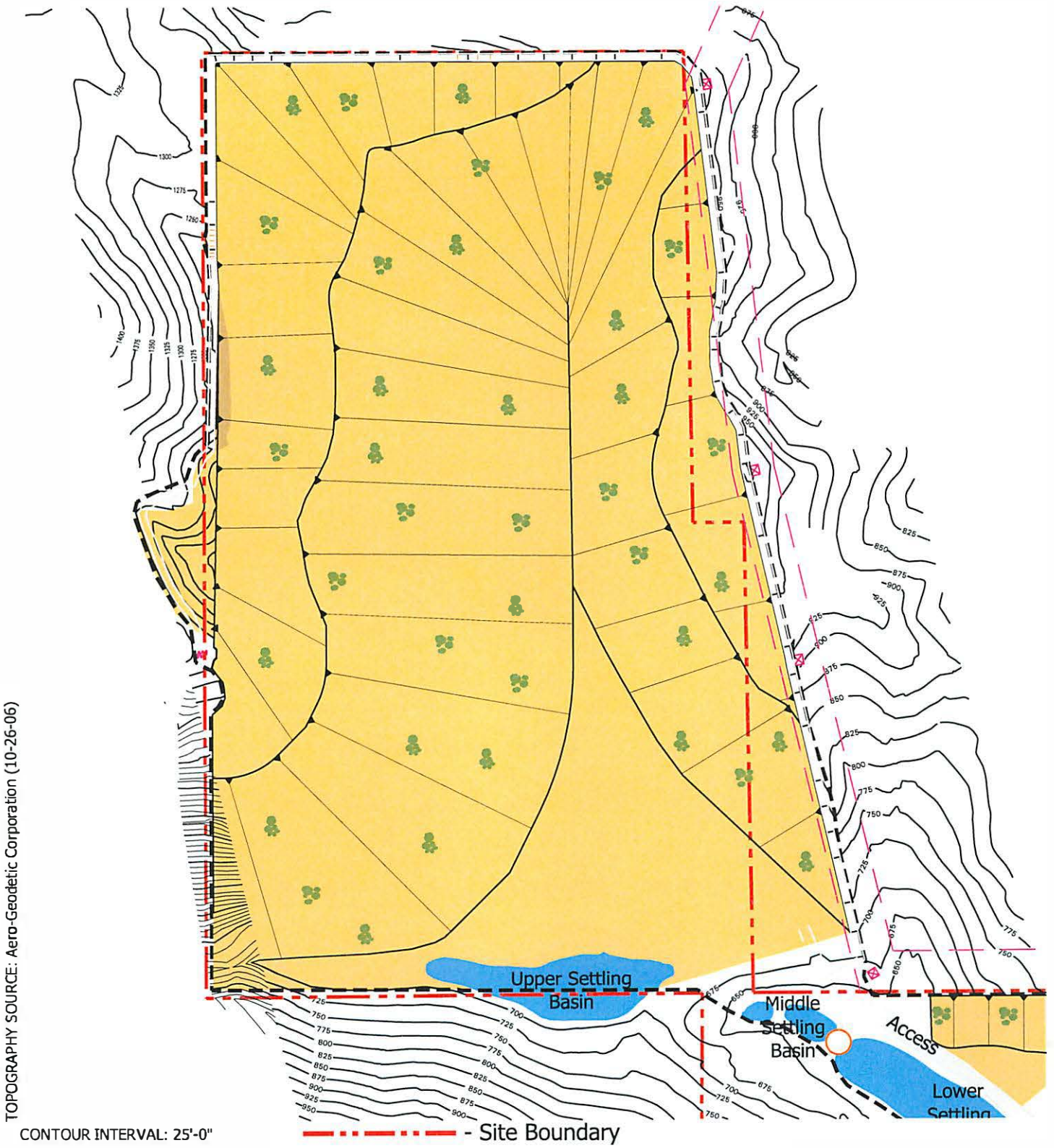
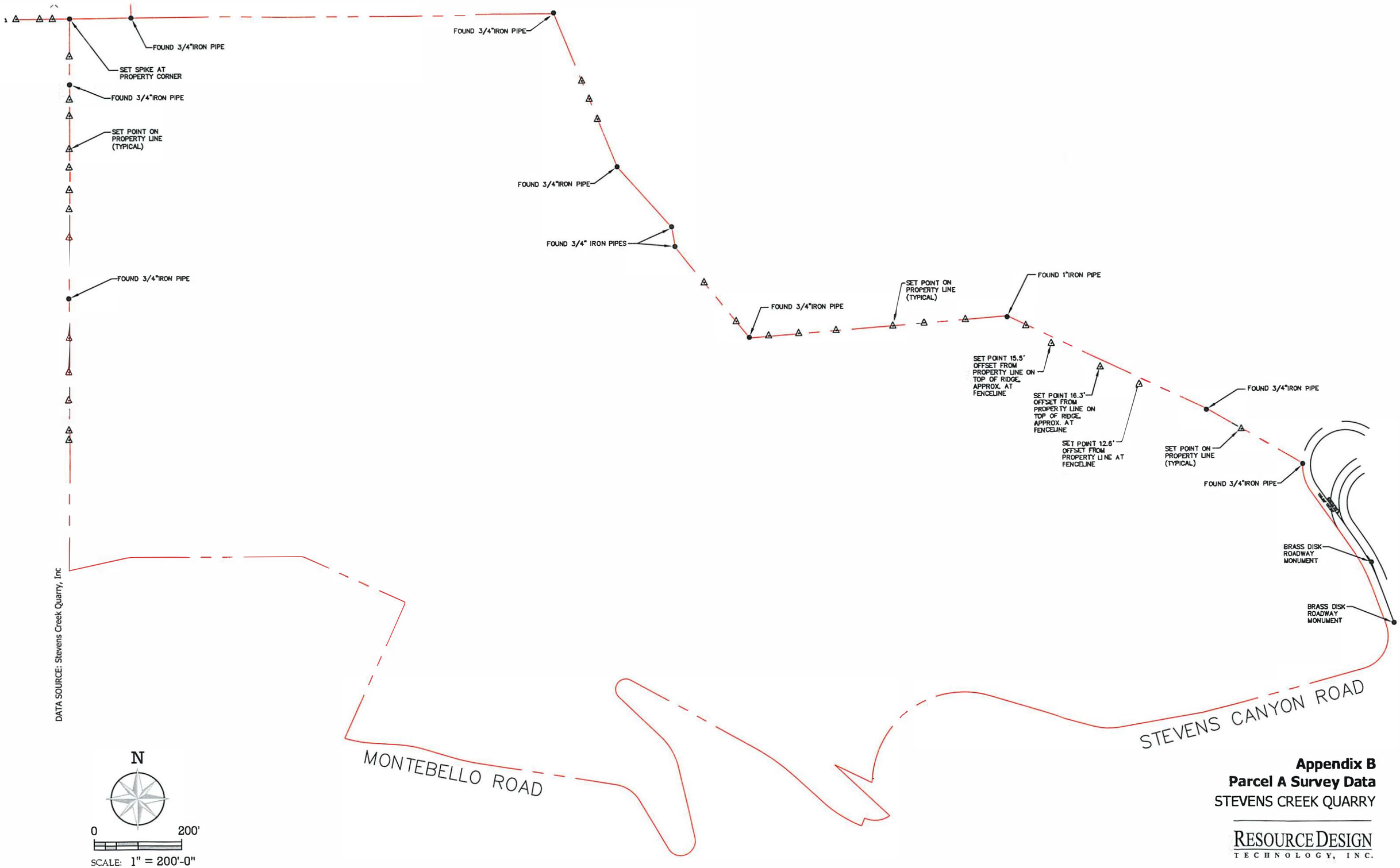


Figure 17
Parcel B
Revegetation Plan
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.

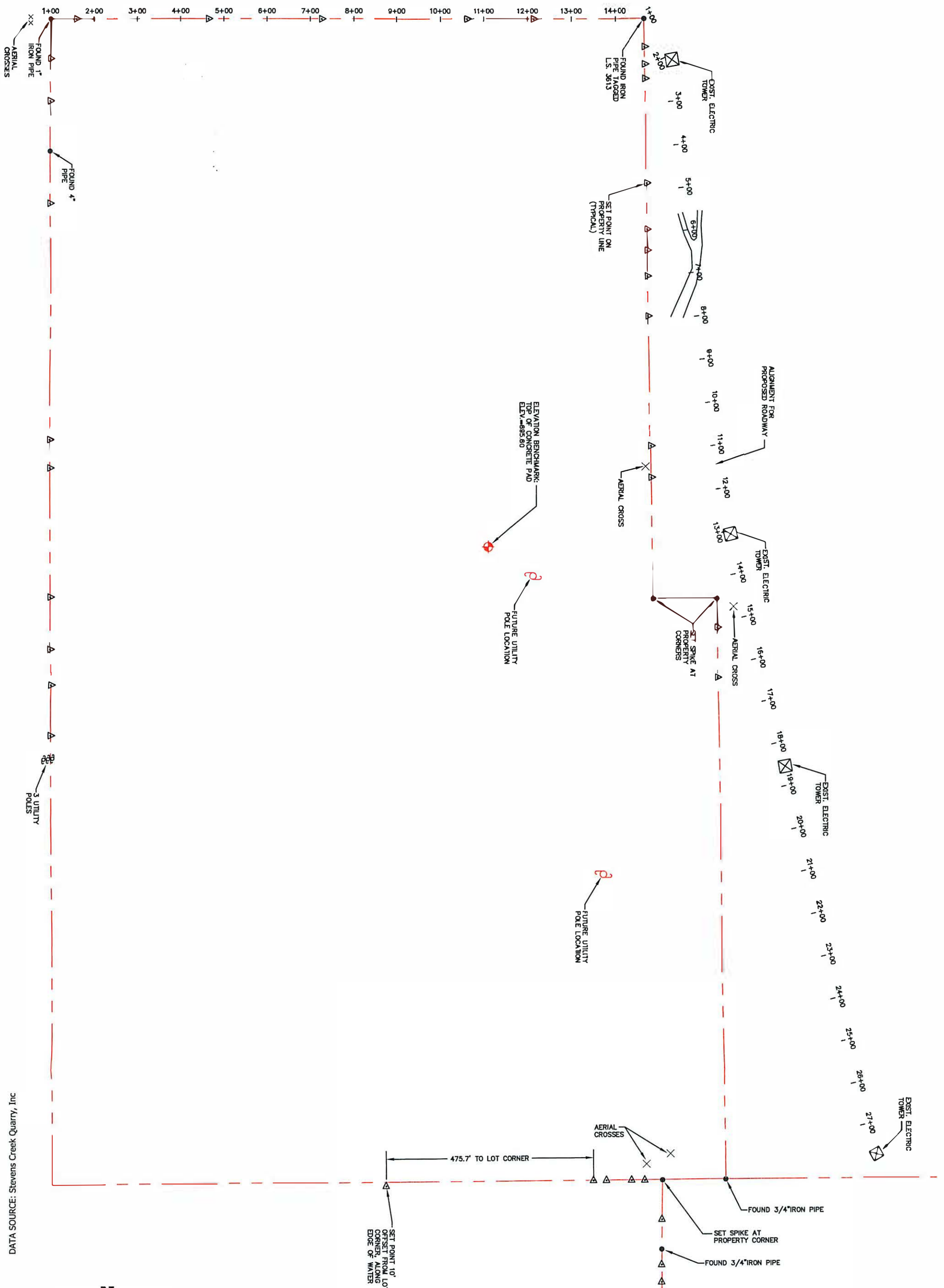
Appendix A
Approved Reclamation Plan

Appendix B
Parcel Survey Data



Appendix B
Parcel A Survey Data
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.



DATA SOURCE: Stevens Creek Quarry, Inc

N

0 200'

SCALE: 1" = 200'-0"

Appendix B
Parcel B Survey Data
STEVENS CREEK QUARRY

RESOURCE DESIGN TECHNOLOGY, INC.

Appendix C
Resolution and Mediated Agreement

Attachment B

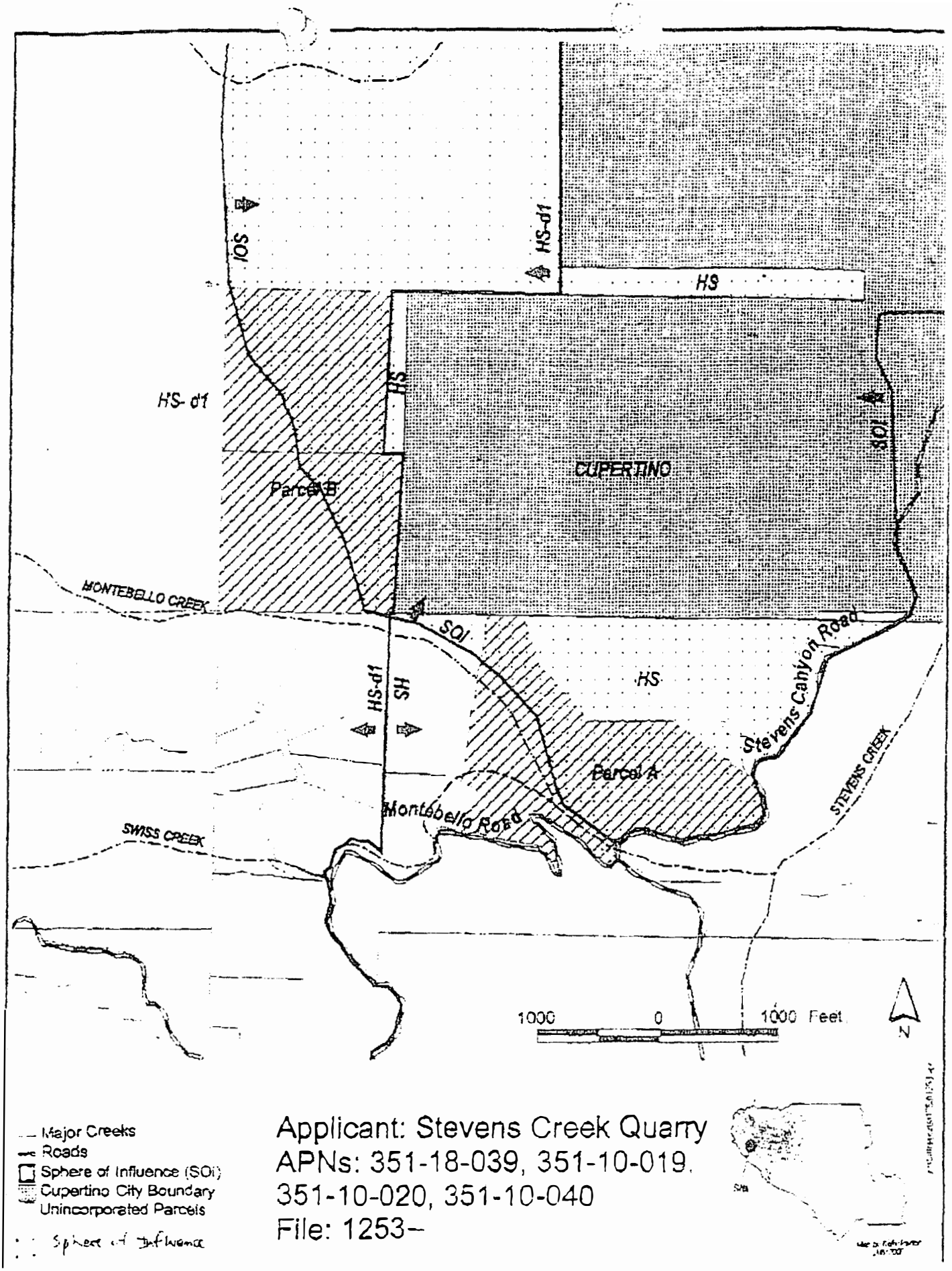
Board of Supervisors

Resolution & Mediated Agreement

Adopted October 8, 2002

EXHIBIT A

Map of Stevens Creek Quarry
Parcels A and B



Applicant: Stevens Creek Quarry
APNs: 351-18-039, 351-10-019,
351-10-020, 351-10-040
File: 1253–

EXHIBIT B

Mediated Conditions

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SANTA CLARA RECOGNIZING MEDIATED OPERATING CONDITIONS FOR STEVENS CREEK QUARRY PARCEL B

WHEREAS, a dispute exists about whether quarrying and related activities are a legal nonconforming use on certain property owned by Stevens Creek Quarry, Inc. ("Quarry") commonly referred to as "Parcel B" and depicted on Exhibit A attached hereto; and

WHEREAS, during the April, 2002 through August, 2002 time period, the Board of Supervisors held several public hearings and received much oral and documentary evidence on the legal nonconforming use issue; and

WHEREAS, the Quarry indicated to the Board of Supervisors that it would seek judicial relief if the Board determined that quarrying was not a legal nonconforming use on Parcel B; and

WHEREAS, the Monte Vista/Stevens Canyon Neighborhood Association ("Association"), an unincorporated association comprised of many residents who live near the Quarry and are most directly impacted by the operations on Parcel B, indicated to the Board of Supervisors that it would seek judicial relief if the Board determined that quarrying was a legal nonconforming use on Parcel B; and

WHEREAS, in an attempt to avoid litigation and at the County's suggestion, in August, 2002 the Quarry and the Association voluntarily agreed to participate in a County-sponsored mediation program; and

WHEREAS, after several sessions and over 20 hours in mediation, the Quarry and Association representatives developed a set of operating conditions for quarrying and related activities on Parcel B ("Mediated Conditions"), which are attached hereto as Exhibit B.

THE BOARD OF SUPERVISORS OF THE COUNTY OF SANTA CLARA HEREBY FINDS:

1. It is in the public interest to avoid protracted litigation over this matter and to have the Quarry conduct its operations on Parcel B in compliance with the Mediated Conditions in a timely manner.

2. The California Environmental Quality Act does not apply to this situation for all of the following reasons:

a. The County is not granting any permit, license or entitlement for use, or otherwise authorizing any activity.

b. There will be no potentially significant impacts from the Quarry operating on Parcel B in accordance with the Mediated Conditions. Conducting quarrying and related activities on Parcel B in compliance with the Mediated Conditions will have beneficial environmental effects when measured against the current environmental baseline of no regulation.

c. The existing use permit for activities on Quarry land commonly referred to as Parcel A and depicted in Exhibit A is not being modified. If any of the Mediated Conditions are interpreted as being less stringent than the Quarry's use permit, they shall have no effect with respect to Parcel A unless and until the Quarry's use permit is amended in accordance with all applicable legal requirements.

NOW, THEREFORE, BE IT RESOLVED by the Board of Supervisors of the County of Santa Clara:

1. The County will not assert or make a determination that quarrying is not a legal nonconforming use on Parcel B so long as the Quarry complies with all of the following:

a. The Quarry adheres to the Mediated Conditions; and

b. The Quarry pays the County in advance for all reasonable costs associated with monitoring compliance with the Mediated Conditions, including costs associated with hiring independent consultants and staff time for overseeing the consultants; and

c. The Quarry cooperates fully with the County regarding the Mediated Conditions.

2. The County Planning Office will annually prepare and issue to the Board of Supervisors a compliance report on the Mediated Conditions.

3. If there is ever a dispute about whether the Quarry is adhering to the Mediated Conditions or is otherwise not complying with 1.a, 1.b or 1.c, the County will give the Quarry and the public reasonable notice and an opportunity to be heard before taking any action. The process for dealing with any disputes involving the Mediated Conditions will be as follows:

a. The County or other aggrieved person will notify the Quarry in writing of the problem. If the problem is not resolved to the grievant's satisfaction within a reasonable time (not to exceed 30 days), he or she may then contact the County Planning Office.

b. The Planning Office will investigate the matter and work with the Quarry to try to resolve the problem. If the problem is not resolved at the staff level, the matter may be referred to the Board of Supervisors at the request of either the Planning Office or the grievant. The Planning Office will provide the Board of Supervisors with an analysis of the situation and a recommendation regarding whether the Mediated Conditions have been violated.

c. The Board of Supervisors will determine at a noticed public hearing whether there has been any substantial noncompliance with 1.a, 1.b or 1.c.

4. Nothing in the Mediated Conditions or this Resolution shall be construed as altering the use permit for Parcel A. Any modifications to the use permit for Parcel A shall be processed in accordance with the procedures set forth in the Ordinance Code of the County of Santa Clara.

5. Nothing in the Mediated Conditions or this Resolution shall be construed as affecting any procedural or substantive requirements of any laws, ordinances or regulations.

6. Nothing in the Mediated Conditions or this Resolution shall be construed as a delegation or waiver of the County's police power.

PASSED AND ADOPTED by the Board of Supervisors of the County of Santa Clara, State of California on OCT 08 2002 by the following vote:

AYES: ALVARADO, PEALL, GAGE, KNISS, [illegible]
NOES: NONE
ABSENT: McHUGH
ABSTAIN: NONE

Donald F. Gage, Chairperson
Board of Supervisors

ATTEST:
Ann Sloan
Chief Deputy Clerk
of the Board of
Supervisors

Phyllis Perez, Clerk of the Board

APPROVED AS TO FORM AND LEGALITY:

Lizanne Reynolds 10-2-02

Lizanne Reynolds, Deputy County Counsel

Exhibits to this Resolution:

A - Map Depicting Parcels A and B
B - Mediated Conditions

AGREEMENT REGARDING PARCEL "B"

The following conditions are the result of negotiations between Stevens Creek Quarry and its neighbors with regard to Parcel B and its directly associated operating conditions

RECLAMATION

1. The overburden shall be retained and used in the reclamation vegetation process.
2. No new permanent lakes, ponds, or other water bodies may be created within the excavation area.
3. Equipment, stockpiles and temporary structures shall be removed from the excavation and within six months after termination operations.
4. The final cut slopes are approved as shown on the approved plans:
    a. 1 ¼ : 1 slope with 12' wide benches every 30' of rise, as shown on Sheet #2 for Area #2 quarry.
    b. Top of slope shall be rounded as shown on "Typical Slope Rounding Detail".
5. Landscaping
    a. The revegetation process shall be commenced as soon as that particular phase of excavation is completed and shall be carried out in accordance with plans approved.
    b. Planting shall be completed within four (4) months finished quarrying, or as other arrangements as might be agreed to by the Secretary of the Architectural & Site Approval Committee due to seasonal climatic reasons.
    c. Supplemental watering of planted areas to be conducted for the first full year of plantings, or until plant material is established.
    d. Approval of materials as proposed on revegetation plan and note sheets.
    e. Supplemental planting and watering will be done in order to establish vegetation long term
6. Retain any significant trees in 25' setback area. (diameter width 37.5" or greater).
7. These reclamation plans shall be completed regardless of the time limitation or extent of excavation of the quarries. Should the quarries not be excavated to the planned exhaustion stage, reclamation shall still be carried out to the extent possible in accordance with the plan.

OPERATIONAL CONDITIONS

8. Ingress and egress locations to be limited to three (3) existing driveways onto Stevens Canyon Road.
9. One copy of the approved plans and conditions of the Use Agreement shall be maintained at the Office of quarry at all times.
10. The premises shall be neat and orderly, free from junk, trash or unnecessary debris. Buildings shall be maintained in good repair and appearance. Weeds shall be cut as frequently as necessary to eliminate fire hazards.
11. The quarry recognizes the neighborhood concern about mud and rocks deposited on the public roadway and will make commercially reasonable efforts to reduce the mud and rocks to minimal levels.
    a. The Quarry will lay down an additional 10,000 square feet of asphalt each year for the next two years along the truck haul route to reduce the amount of mud tracked onto the public roadway.
12. Dust
    a. On site roads shall be maintained in a reasonably dust free condition and must meet Bay Area Air Quality Management District standards. In order to minimize the occurrence of dust, the access roads shall be paved, oiled, watered, and/or chemically treated. Areas used for the movement of haulage vehicles and mobile equipment closer than 100 feet to the point from which haulage vehicles are being loaded shall be sprinkled with oil or water or chemically treated as frequently as necessary to reduce the stirring of dust to the minimum level possible.
    b. Dozing, digging, scraping, and loading of excavated materials shall be done in a manner which reduces to the minimum level possible the raising of dust. Sprinkling shall be done where necessary to comply with this standard.
    c. In dry weather periods, during high wind conditions, mining operations on an exposed slope shall be curtailed. Stockpiled products shall be watered or treated during periods of high wind conditions so as to minimize off-site dust nuisance to nearby properties.
    d. Dust abatement practices as approved by the Bay Area Air Quality Management District of stockpiles and screening operations or any other part of the facilities shall be conducted as necessary to eliminate dust.
    e. The quarry shall comply with all applicable laws and required permits issued by the Bay Area Air Quality Management District.
    f. The quarry operator will sweep Stevens Canyon Road and all paved areas within the quarry operation with a vacuum type sweeper as needed to remove dirt and dust from roadway. The compliance patrol will be charged with determining when additional sweeping is necessary. A community relations hot line number will also be provided to the public to call should an unnoticed problem requiring additional sweeping arise.
    g. Quarry will add inspection step at scales for aggregate spillage on loaded trucks and will require driver to remove the debris when found.

h. Quarry will add signage, in plain view, to instruct public of how to call hot line for aggregate spillage and other quarry related issues.
i. The operator shall submit a report by an engineer which: (1) identifies the sources of dust on the neighboring residential properties and public roads and (2) makes recommendations on dust reduction measures.
j. The Quarry recognizes the neighborhood concern about fugitive dust and will work cooperatively to determine the total level and their specific contribution to the total level. Furthermore, the Quarry will use commercially reasonable efforts to reduce their share of the total dust emissions. The total level and the quarry's contribution to that level will be established in the following manner:
    i. Initially, Samples will be taken by setting out glass plates in 3 locations for a period of 2 weeks and then repeated once.
        (a). The sample locations will be at the North property line of the Quarry near the radio house. Peacock Court, and on Montebello Road near the school.
    ii. Additional monitoring will be conducted with a single glass plate 8 times over the following two years and annually thereafter.
        (a). These samples will be taken on Peacock Court.
    iii. The accumulated dust will be measured and analyzed to determine its total quantity and the primary sources.
    iv. The percentage of dust contributed to the total by the quarry will be determined by comparing the quarry's total to the sample total.
    v. The dust analysis will be conducted by an independent testing lab.
    vi. At the reasonable request of the neighbors, the Quarry will undertake other testing procedures reasonably likely to better quantify and characterize the amount of dust and particulate size and the Quarry's contribution to the total dust content if the foregoing tests do not provide conclusive results.

13. Haul route being approved is Stevens Canyon Road-Foothill Boulevard to Highway 280 and Foothill Expressway. No other route to be used.
14. Truck loading practices to be such as to eliminate spillage on public roads. Any spillage shall immediately be cleaned up by the quarry operator.
15. All truck parking, queuing and loading, shall be carried out on the property. No queuing on public streets.
16. Noise
    a. Noise and vibration created by the operation of the excavation shall be reduced to the minimum possible level; all operations shall be conducted so as to conform to the County Noise and Vibration Ordinance, specifically Sections B11-192, B11-193, B11-194, B11-195. The sound levels will conform to the County ordinances for noise.
    b. The quarry shall engage the services of a professional acoustical consultant to recommend methods to reduce the amount of noise generated by the quarry. The quarry will submit a report of the success of the methods at the time of the six month review.

c. The neighbors will first contact the quarry representative regarding noise complaints for resolution and then the County Environmental Health noise specialist
d. Noise complaints will be logged by both the quarry operator and County Environmental Health noise specialist.
e. County will conduct a minimum of two random noise tests annually and report the results to the Secretary of the Planning Commission.
f. The Quarry will, by the end of 2003, enclose sorting screens to reduce their noise, will cover exposed metal clip belt fasteners with a rubber coating, will line steel rock chutes with rubber, will install sound walls around cone crushers, and will change vehicle backup safety alarms to be motion sensor alarms.

17. Explosives will not be used more than twice a week when necessary
18. Excavation shall be conducted in a manner so as to keep adjacent streams, percolation ponds, or water bearing strata free from undesirable obstruction, siltation, contamination, or pollution of any kind. The existing settling ponds shall be maintained to intercept sediment. Settling ponds and other retention devices shall be installed and maintained to control sediments so that no sediments are deposited in Stevens Creek Reservoir from this property as a result of the surface mining process.
19. No concrete or asphalt plant is being approved.
20. Days and Hours of Operations
    a. The quarry excavation, crushing, processing, and hauling shall be operated during the hours of 6:30 a.m. to 5:00 p.m. Monday through Friday. All gates except for the one on Montebello Road leading to the residence on the site and the stables, to the quarry shall remain closed from 5:00 p.m. until 6:00 a.m. Beginning at 6:00 a.m., trucks shall be able to stack, load and haul, etc. on the premises. Excavation, crushing, processing or hauling operations shall not be carried out on the following holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.
    b. The quarry shall be allowed to operate the plant no more than 15 Saturday's per year and no more than one Saturday per month from May 15th through October 15th inclusive. The hours of operation will not exceed the period between 7:00am and 3:00pm. Plant operation does not include material loading and hauling, because it is covered in the use permit for parcel "A", but does include crushing, excavation, and processing. The Planning Office shall be notified on the preceding Friday of any proposed Saturday activities.
    c. The quarry shall be allowed to operate up to a maximum of 30 work evenings per year, (between the hours of 5:00 p.m. and 8:00 p.m.); such evening work shall be allowed under special circumstances provided that:
        i. Planning Office to be notified no later than 4:00 P.M. on the day the evening work is to be performed, and
        ii. The provision will be reviewed and evaluated by the Planning Commission in 6 months.

iii. Special circumstances: This provision applies to and shall be instances such as:

(a). To allow the completion of a project by working an evening, and:

(b). An emergency situation, either for a private or government project. Emergency is intended to mean a potential danger of life or property including, but not limited to, levee failure, flooding, earthquake, landslide, road or bridge failure or other similar conditions.

d. Maintenance activities, as defined in this agreement, are not considered quarry operations.

22. The excavated cut slope shall be no closer than 25 feet from the property line, except for the slope rounding as shown on Sheet #2 of approved plans dated May, 1983.
23. Any water-body created during operations shall be maintained in such a manner as to provide mosquito control and to prevent the creation of health hazards or public nuisance.
24. The quarry shall maintain control over the vehicles to insure observance of speed limit laws; and hauling and loading hours by not loading those vehicles in a manner which violates these regulations.
25. The quarry shall give to the trucking companies and operators written notice to insure adherence to these speed laws and operational hours.
26. The quarry shall post signs at the exit of the quarry stating that the hours and speed of the trucks on the haul route will be monitored.
    a. The operator will install new signs at the exit of the quarry warning drivers that the speeds of the truck will be monitored and that they need to adhere to public road speed and in-quarry operational regulations.
    b. Signs as required in condition #26 to be reconditioned and maintained in good condition.
27. The compliance monitoring and enforcement for the provisions of this agreement will utilize the same mechanisms as used for parcel A.
28. Fugitive dust from quarrying operation to be mitigated by spraying of water or other suppressant on site and on stock piles.
29. The Quarry must obtain an applicable permit or clearance from the Bay Area Air Quality Management District prior to commencement of operations.
30. Quarrying operation, including storage of materials, shall be maintained in such a manner to keep adjacent streams, lakes, and percolation ponds free of siltation, contamination or pollution of any kind. Retention devices shall be installed and maintained to control sediments so that they are not deposited in Stevens Creek Reservoir.
31. Quarrying operations to be restricted to the area shown on site plan, sheet #2 dated May, 1983.
32. If there is any noise increase more than 0dB due to the lowering of the ridge line in the Northeast corner of Parcel B, the quarry will construct a sound wall 25 feet high and approximately 400 feet long provided the appropriate county approvals can be obtained. In addition, the Quarry will camouflage the wall with trees and

vines. The concerned neighbors and quarry will work together to determine the baseline sound level and the new sound level after the ridgeline has been changed in order to determine if there has been change to warrant the sound wall. The objective of this clause is to prevent noise from the Hansen Quarry from impacting the neighborhood.

a. The baseline will be established by taking measurements at the Montebello school, at the cul-de-sac on Peacock Court, and lower Swiss Creek road. 10 samples will be taken at each site and the average of the samples used to establish the baseline at each site. The samples will be taken at times when the SCQ quarry is not running and the Hansen Quarry is running.
b. This baseline will be taken and filed with the county before the ridgeline is lowered.
c. After the ridgeline has been taken down to its final elevation, sound level measurements will be taken and compared to the baseline. The same measurement methodology as in "a" will be used to establish this sound level.

33. Light
    a. On-site lighting shall be designed, controlled and maintained so that no light source is visible from off the property. Hooding shall be installed to prevent light bulbs from being visible from off the property. All lights will be turned off after 7:00 p.m., except during approved evening usage when the lights will be turned off after 9:00 p.m. except for the purpose of mechanical maintenance, in which case they can remain on until no later than 11:00 p.m.
    b. Quarry lighting shall be designed and installed at a height to cause the least amount of impact on neighboring residential properties.
    c. Any lights which might be located at the communication facility structures shall be limited to the communication operator's use.
34. Truck Traffic
    a. The Quarry will limit the total number of material loads to no greater than 1300 per day. A load is the total material hauled by single motorized vehicle, i.e. the amount a single driver can haul.
35. Maintenance is defined as follows for all quarry operations:
    a. Plant and equipment repair and service
        i. This item is mechanical maintenance as referenced in this agreement
    b. Haul road repair including blading, watering, paving, and surfacing
    c. Cleaning and repairing silt basins
    d. Cleaning and repairing storm drains
    e. Erosion repair caused by storms
    f. Landscape and reclamation maintenance
    g. Building maintenance and cleaning
    h. Sweeping of the site haul roads
36. This agreement will be co-terminus with the existing use permit on parcel "A"

STEVEN'S CREEK QUARRY
CONDITIONS OF APPROVAL
E NO. 1253-16-62-83P-83A-90P-90A-94P

CONDITION MODIFIED BY THE BOARD OF SUPERVISORS MEETING OF SEPTEMBE 1996

The follow tions are the result of the original use permit issued in January 1984, along odifications and additions by the Board of Supervisors, Planning Commissio chitectural & Site Approval Committee, at subsequent public hearings. Th applicable as of Board of Supervisors meeting of September 1996. Those tions of previous actions which have been completed or modified have been delete tified to reflect the Board's action.

1. The foll ns as prepared by Ruth & Going are hereby made a part of the condition e permit.

   Sheet 1. eclamation Plan, Revision III - Dated: October 6 1985

   Sheet 1A: ross sections - Dated: October 6, 1985

   Sheet 2 eclamation, Revision 1 Dated: June 29, 1985

   Sheet 3: evegetation Plan, Revision: III

   Sheet 4 egetation Plan, Revision 1, Dated: June 28 1985

   Sheet 5: egetation Notes, Revision II, Dated: August 12 1985

2. Com the requirements of County Transportation Agency (non Road ports) as follows.

   a. De the following right-of-way: 20 foot half street fronting Stevens Can oad. All rights-of-way to be curvilinear.

   b. Su reet and drainage improvement plans prepared by a registered civ en r the following street: Stevens Canyon Road.

   c. Co street and drainage improvements in accordance with the Tra ation Agency's 1982 Standard Details A/E for the following street: Ste anyon Road.
   N nstruction staking is required and shall be the responsibility of the de

   d. En and development improvement agreement and submit ac ing bonds, fees and related documents (administration of these m Land Development Engineering)

   e. Ob croachment and/or construction permits from the County of Santa Cl other jurisdictions as required by the Road Commissioner for the co n of street improvements including any required appurtenances. Dev must provide County with a Certificate of Worker's Compensation Ins

f. In lieu of conditions 2, 3, 4 and 5, the owner may elect to enter into a deferred improvement agreement per the Board of Supervisors 1975 Deferred Improvement Agreement Policy.

3. Comply with the following requirements of County Environmental Health:

a. Provide drinking water and toilet facility for employees.

RECLAMATION

4. The overburden shall be retained and used in the reclamation vegetation process.

5. No new permanent lakes ponds or other water bodies may be created within the excavation area.

6. Equipment, stockpiles and temporary structures shall be removed from the excavation and within six months after termination operations.

7. The final cut slopes are approved as shown on the approved plans

a. 1 1/2 :1 slope on Sheet #1 for quarry area adjacent and vicinity of Stevens Canyon Road.

b. 1 1/4 :1 slope, with 12' wide benches every 30' of rise, as shown on Sheet #2 for Area #2 quarry.

c. Top of slope shall be rounded as shown on "Typical Slope Rounding Detail"

8. The phases of excavation shall be conducted as indicated on the approved plans.

9. LANDSCAPING

a. The revegetation process shall be commenced as soon as that particular phase of excavation is completed and shall be carried out in accordance with plans approved.

b. Planting shall be completed within four (4) months finished quarrying, or as other arrangements as might be agreed to by the Secretary of the Architectural & Site Approval Committee due to seasonal climatic reasons.

c. Supplemental watering of planted areas to be conducted for the first full year of plantings, or until plant material is established.

d. Approval of materials as proposed on revegetation plan and note sheets.

10. The revegetation process of Phase I shall be reviewed by the Secretary of the Architectural & Site Approval Committee and conditions reported back to the Planning Commission six months following completion of landscaping phase I.

11. Retain any significant trees in 25' setback area, (diameter width 37.5" or greater).

f. The quarry operator will sweep Stevens Canyon Road and all paved areas within the quarry operation with a vacuum type sweeper as needed to remove dirt and dust from roadway. The compliance patrol will be charged with determining when additional sweeping is necessary. A community relations hot line number will also be provided to the public to call should an unnoticed problem requiring additional sweeping arise.

g. A washing/scrubbing device shall be installed at the exit gate area to remove mud, dirt, and gravel from the wheels of trucks exiting the property.

h. The operator shall submit a report by an engineer which: (1) identifies the sources of dust on the neighboring residential properties and public roads and,(2) makes recommendations on dust reduction measures."

17. Haul route being approved is Stevens Canyon Road-Foothill Boulevard to Highway 280 and Foothill Expressway. No other route to be used.

18. Truck loading practices to be such as to eliminate spillage on public roads. Any spillage shall immediately be cleaned up by the quarry operator.

19. All truck parking, queuing and loading, shall be carried out on the property. No queuing on public streets.

20. The sequence of quarrying final grading, seeding and landscaping shall occur in accordance with the approved plans .

21. a. Noise and vibration created by the operation of the excavation shall be reduced to the minimum possible level; all operations shall be conducted so as to conform to the County Noise and Vibration Ordinance, specifically Sections B11-192, B11-193, B11-194, B11-195. The sound ordinance measurement standards must be met at the Quarry's property line and will not exceed 55dB between the hours of 7:00 a.m. and 10.00 p.m., and 45dB between the hours of 10:00 p.m. and 7:00 a.m., as specified in the County ordinance.

b. The quarry shall engage the services of a professional acoustical consultant to recommend methods to reduce the amount of noise generated by the quarry. The quarry will submit a report of the success of the methods at the time of the six month review.

c. The neighbors will first contact the quarry representative regarding noise complaints for resolution and then the County Environmental Health noise specialist.

d. Noise complaints will be logged by both the quarry operator and County Environmental Health noise specialist.

e. County will conduct a minimum of two random noise tests annually and report the results to the Secretary of the Planning Commission.

22. Use of explosives not being approved at this time.

23. Excavation shall be conducted in a manner so as to keep adjacent streams, percolation ponds, or water bearing strata free from undesirable obstruction, siltation, contamination, or pollution of any kind. The existing settling ponds shall be maintained to intercept sediment. Settling ponds and other retention devices shall be installed and maintained to control sediments so that no sediments are deposited in Stevens Creek Reservoir from this property as a result of the surface mining process.

24. No washing process nor mixing plant of any type is being approved at this time.

25. Days and Hours of Operation:

a. The quarry excavation, crushing, processing, and hauling shall be operated during the hours of 6:30 a.m. to 5:00 p.m. Monday through Friday. All gates except for the one on Montebello Road leading to the residence on the site and the stables, to the quarry shall remain closed from 5:00 p.m. until 6:00 a.m. Beginning at 6:00 a.m. trucks shall be able to stack, load and haul, etc on the premises. Excavation, crushing, processing or hauling operations shall not be carried out on the following holidays: New Years Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

b. The quarry shall be allowed to operate (to include, excavation, crushing, processing, and hauling) a maximum of 15 Saturdays a year. The Planning Office shall be notified on the preceding Friday of any proposed Saturday activities.

c. The quarry shall be allowed to operate up to a maximum of 39 work evenings per year, (between the hours of 5:00 p.m. and 8:00 p.m.); such evening work shall be allowed under special circumstances provided that:

i) Planning Office to be notified no later than 4:00 P.M. on the day the evening work is to be performed, and

ii) The provision will be reviewed and evaluated by the Planning Commission in 6 months.

iii) Special circumstances: This provision applies to and shall be instances such as:

(a) To allow the completion of a project by working an evening, and.

(b) An emergency situation, either for a private or government project. Emergency is intended to mean a potential danger of life or property including, but not limited to, levee failure, flooding, earthquake, landslide, road or bridge failure or other similar conditions.

26. Signs shall be conspicuously posted along the periphery of the site. The signs shall be posted in such a manner to give reasonable notice to passerby of the matter contained in such notice by stating in letters not less than four inches in height: PROPERTY SUBJECT TO COMMERCIAL EXCAVATION OF NATURAL MATERIALS AT ANY TIME UNDER COUNTY OF SANTA CLARA USE PERMIT NUMBER: 1253-16-62-94P.

27. Disposal of sewage shall be in accordance with the provisions of Article 1, Chapter 2 Title 4 of the Santa Clara County Ordinance Code

28. Fencing of the property shall be installed and maintained in good condition as follows:

a. A 5' high chain link fence along the right-of-way of Stevens Canyon Road

b. A four-strand barbed wire fence along the property line with Sunnyvale Rod & Gun Club.

c. The fence opening between Sunnyvale Rod & Gun Club to be closed.

29. a. The existing berm and associated landscaping screening along Stevens Canyon Road and perimeter slopes between Sunnyvale Rod & Gun Club shall be re-landscaped with tall growing evergreen trees to provide a landscape screen. An irrigation system is to be installed.

b. Within 60 days the operator is to develop a revised landscape screening plan for the berm area along Stevens Canyon Road to help screen the operations and reduce dust leaving the quarry. The plan shall include the size and density of plant material, irrigation system, and fencing plan to keep on-site animals from killing the plant material.

c. Within 90 days the berm shall be landscaped with plant materials, irrigation system, and fencing shall be installed on the property.

30. The excavated cut slope shall be no closer than 25 feet from the property line, except for the slope rounding as shown on Sheet #1.

31. Any water-body created during operations shall be maintained in such a manner as to provide mosquito control and to prevent the creation of health hazards or public nuisance.

32. The applicant shall maintain control over the vehicles to insure observance of speed limit laws; and hauling and loading hours by not loading those vehicle in a manner which violate these regulations.

33. The applicant shall give to the trucking companies and operators written notice to insure adherence to these speed laws and operational hours.

34. The applicant shall post signs at the exit of the quarry stating that the hours and speed of the trucks on the haul route will be monitored.

a. The operator will install new signs at the exit of the quarry warning drivers that the speeds of the truck will be monitored and that they need to adhere to public road speed and in-quarry operational regulations.

b. Signs as required in condition #34 to be reconditioned and maintained in good condition."

35. The operator will provide funding, on an annual basis, to the County for the purpose of hiring a compliance patrol or shall employ a full-time independent party to act as a compliance officer. The compliance patrol/officer will be responsible for assuring adherence to conditions 25, 32, 33, 34 and 36. The quarry will not load trucks operated by truck operators who have violated the operating hours, as determined by the compliance patrol/officer. The quarry shall utilize the warning thresholds as follows:

1. First infraction results in a warning letter to the truck owner.

2. Second infraction results in a 10 day suspension from loading cement or rock products from the Stevens Creek Quarry.

3. Third infraction results in a 30 day suspension, and each subsequent infraction adds another 30 day suspension.

4. Twelve months without an infraction will clear the record for that tractor and its owner.

36. Within 60 days the quarry operator will post signs at the exit gate prohibiting the use of "Jake Brakes" on Stevens Canyon Road/ Foothill Avenue north to Stevens Creek Blvd.

37. Fugitive dust from recycling operation to be mitigated by spraying of water or other suppressant on site and on stock piles.

38. Obtain an applicable permit or clearance from the Bay Area Air Quality Management District prior to commencement of operations.

39. Recycling operation, including storage of materials, shall be maintained in such a manner to keep adjacent streams, lakes and percolation ponds free of siltation, contamination or pollution of any kind. Retention devices shall be installed and maintained to control sediments so that they are not deposited in Stevens Creek Reservoir.

40. Recycling operations to be restricted to the area shown on site plan and designated as "Recycle Area".

41. Recycling is to be limited to natural earth, asphalt, and concrete and those recycled materials which are a part of the City of Cupertino recycling and composting programs. The materials being recycled under that program are glass and plastic bottles, aluminum and bi-metal cans, newspaper, and cardboard; no other types of materials to be recycled.

42. The recycle crusher and stock piles are to be located so that neither are visible from Stevens Canyon Road. The existing stockpile shall be reduced in height to not be visible with 120 days.

43. Obtain an encroachment permit and install a driveway approach at the existing gate located approximately 650 feet from the site's easterly boundary. Construct the driveway approach in accordance with Detail B/5 modified to provide a pavement structural section for truck loading. Pavement structural section to be designed by the applicant's registered civil engineer.

44. The applicant shall supply monthly totals of vehicular (truck) traffic serviced by the quarry operations. These totals are to be submitted in a report form to the County and shall be submitted every six months in January & July. These totals are to be retained only by the County, in the County files as 'proprietary information'. (Any information given to other interested parties by the County is only to be given in percentages of increases or decreases, from period to period.) The recycling aspects of the City of Cupertino's program during week-days and/or Saturdays shall not be included in this report. The applicant may choose to provide the aforementioned information by:

a. Installing a monitoring device at the driveway which captures the number of vehicles, date and time of entry on;

b. By noting license plate numbers and the name of the Company displayed on the door, if any.

c. Another method mutually agreeable to the applicant and the County, such as using the quarry operations trip receipts as the base information for the county.

d. Within 30 days the applicant shall resubmit truck traffic totals from March 1995. The 1995-1996 submittals are totals for three and six month periods with no monthly breakdowns.

45. The days and hours of the site operations be modified to add the permission for City residents to pick up recycled compost materials during the hours of 9:00 to 12:00, Saturday mornings.

46. a. On-site lighting shall be designed, controlled and maintained so that no light source is visible from off the property. Hooding shall be installed to prevent light bulbs from being visible from off the property. All lights will be turned off after 7:00 p.m., except during approved evening usage when the lights will be turned off after 9:00 p.m.

b. Quarry lighting shall be designed and installed at a height to cause the least amount of impact on neighboring residential properties.

c. Any lights which might be located at the communication facility structures shall be limited to the communication operator's use."

*Note: **The following conditions are added as measures to regulate and monitor the ancillary truck and quarry equipment used off the property:**

*47. The operator shall submit within 60 days an inventory of rental quarry trucks and equipment which existed as of October 28, 1986.

*48. The ancillary use of equipment rental and storage is limited to trucks & equipment owned and operated by the operator which is normally used in the quarrying activities and is only rented for off-site use when not required on site.

*49. All other vehicles and or equipment not owned and operated in the quarry operations, except the horse boarding operator, shall be removed with 30 days

*50. The use and transportation of the ancillary use trucks and equipment shall be subject to the days and hours of operation as stipulated in Condition #25 of this permit.

*51 The operator shall submit an annual report of the current inventory of ancillary trucks and equipment. There may be an allowance for replacement but no intensification in numbers is permitted.

52. This use permit for a quarry is granted for a period of 20 years from February 18, 1995, renewable, subject to the conditions of approval as modified September 10, 1996 by the Board of Supervisors.

53. The use permit shall be reviewed at the end of six months (January 1997 Planning Commission meeting) for compliance with all conditions of approval and on an annual basis with a report to be submitted to the Planning Commission on compliance with conditions of the permit. This review shall be limited to compliance with conditions and, absent appropriate findings, shall not result in revision of conditions.

* Conditions #47, #48, #49, #50, #51 relating to ancillary truck and quarry equipment are suspended pending final consideration by the Board of Supervisors regarding legal status and applicable conditions.

Appendix D
Slope Stability Report

NORFLEET CONSULTANTS

Engineering
Geology
Geohydrology
Geophysics

6430 Preston Ave.
Suite A
Livermore, CA 94551
(925) 606-8595

-3546

Stevens Creek Quarry
Box 26430
San Jose CA 95159

January 22, 2008

Attention: Mr. R. Voss

Re: Geologic and Slope Stability Analysis,
Reclamation Plan Amendment
Stevens Creek Quarry
California Mine ID 91-43-007
San Jose, California

Dear Mr. Voss:

At your request, we have completed our geologic and slope stability evaluation relating to the Reclamation Plan Amendment for the Stevens Creek Quarry. The Reclamation Plan Amendment is an update of the approved 1983 Reclamation Plan for the site.

Our scope of work included:

- A site meeting and overall site reconnaissance with quarry personnel and several data collection site visits to the quarry.
- Compilation, review and summary of available pertinent geologic and geotechnical documents, including a review of recent aerial photographs of the site, to support slope design analysis and recommendations for the Reclamation Plan Amendment.
- Numerical evaluation of cross-sections for slope stability in static and pseudo-static loading conditions of the proposed reclamation slope geometry.
- Discussions with quarry personnel about the implications of the findings of this study.
- Preparation of this report.

The intent and purpose of this of this report is to provide a summary of the geologic and geotechnical issues as they pertain to long-term, global slope stability of the final slope geometries as defined in the Reclamation Plan Amendment. Working and interim slope stability were not evaluated. This study evaluated the pit west of the Berrocal fault, referred to by the operator as Parcel B.

GEOLOGIC SETTING AND SITE GEOLOGY

The quarry is located on unincorporated land just west of the city of Cupertino in the western foothills of Santa Clara County, east of the San Andreas Fault (Figure 1 and Photo 1). Currently, Franciscan-aged greenstone rocks are mined in the western pit.

The area was regionally mapped in 1909 by Branner et al., and again by the California Geological Survey in 1961. The area was mapped in greater detail by Dibblee (1966), who mapped the general rock types and faults in the study area (Figure 2). The first detailed mapping of the site was performed by Rogers and Armstrong (1973, their Plate 1) at a scale of 1 inch to 1000 feet. That study identified rock types, landslides, faults, and a shear zone in the quarry area (Figure 3). The faults in the area were mapped in detail by Sorg and McLaughlin (1975; Figure 5) at a scale of 1 inch to 2000 feet (their field map had a scale of 1 inch to 100 feet).

Franciscan-aged greenstone (metabasalt) is the primary rock type mined in the pit (Figure 6). A small volume of Franciscan-aged limestone and graywacke (Calera Limestone – Sliter and McGann, 1992; Walker, 1950) have been mined in the northeast corner of the pit. Field observations indicate that the majority of the rocks in the pit are sheared metamorphosed mafic volcanics, with occasional metamorphosed pillow basalts found along the upper part of the west side of the pit. Bailey and Everhart (1964) and McLaughlin and Clark (1997) contain excellent descriptions of the rock types in the quarry area. The north and west sides of the pit are separated by a NW-SE trending shear zone that is 50 to 100 feet wide (Rogers and Armstrong, 1973, and Sorg and McLaughlin, 1975).

All rocks in the pit are fractured/jointed/sheared to varying levels. The rocks underwent multiple stages of deformation/shearing during subduction and later tectonic events. Localized shearing also occurred during development of the Berrocal fault. Field observations indicate that rocks within the pit can be separated into three zones (Figure 6). These zones consist of two linear greenstone cores and a limestone (sedimentary Franciscan) unit. They are separated from each other by high dip shear zones. Both the shear zones and the rock cores appear to trend southeast-northwest at an oblique angle to the northerly trending Berrocal fault. These units are part of the Franciscan melange (Raymond, 1984). Even though they appear to be separate units at quarry scale, the rock cores and shear zones are not regional in scale.

Fracturing within the greenstone cores is relatively widely spaced, and the unfractured greenstone is quite hard (Photo 4). When the cores are mined, the larger greenstone blocks are broken up with a concrete breaker (these rocks were blasted in the past). Fracture spacing, block size, and global rock competence all decrease away from the core to the degree that the rock can be ripped. The shear between the two greenstone zones appears to be combination of serpentine, clay, and highly sheared greenstone (Photos 5 and 6). It can be easily broken apart with a geologist's hammer. Surface topography mimics rock competence. The high ridges overlie the competent cores, while a valley is

located over the more fractured rocks in and around the shear zone. In this report, we will refer to shears/joints/fractures as joints unless otherwise indicated.

Superimposed on these relationships is the effect of weathering. The upper 2 to 20 feet consists of a reddish brown residual soil (Photos 7 and 8). This overlies moderately to highly weathered bedrock (a 50 to 90 percent rock/soil mixture) that can extend another 5 to 20 feet. Below this is slightly weathered bedrock. This has weathered brown but contains no observable soil. It is more fractured than the underlying unweathered bedrock. Overall weathering and fracturing (with respect to gross rock competence) decreases with depth. Based on color changes and failure mechanisms, the weathered zone extends 80 to 100 feet below the ground surface. We will refer to the rocks below the visibly weathered units (about 100 feet below the ground surface) as unweathered rocks even though weathering on the microscopic level likely extends hundreds of feet below the ground surface. It appears that as weathering increases, joint persistence is reduced. This change increases the surface unraveling of rocks in the weathered zone, but, at the same time, reduces the potential for large-scale wedge failure.

A small area of Franciscan limestones and sedimentary units is located at the northeast corner of the pit (Photo 9). This unit appears to be the southern continuation of a limestone trend on the Kaiser-Permanente quarry. A shear zone separates greenstone from limestone units. The shear zone is 50 to 80 feet wide. Shear indicators were not visible. The Berrocal fault marks the eastern boundary of this area. Like the greenstones, the limestones and sedimentary units are strongly fractured, and it appears that fracturing increases adjacent to the Berrocal fault. Sandstone units at the northeast corner of the quarry (adjacent to the Berrocal fault) showed indications of mineralization while adjacent clays (not the shear zone clays) were moist. No free groundwater was encountered. The moist zone was about 100 feet in diameter and confined to the clays along the eastern border of the pit.

We walked approximately ½ mile of valley (rattlesnake Canyon) just southwest of the quarry. The valley floor appeared to have been cut in hard greenstone. We did not observe obvious indications of shear zones.

Berrocal Fault

The Berrocal fault trends northerly-southerly a few hundred feet east of the pit (Figures 5 and 6). It appears to be high-angle reverse fault, dipping 50 to 70 degrees west. The units west of the fault (Franciscan units) were thrust east over the Santa Clara formation. It is unlikely that there is a specific fault plane. Instead, the fault appears to be a shear zone 50 to 100 feet wide. Mapping by Sorg and McLaughlin (1975) at the southeast corner of the pit suggests that deposition of the Santa Clara formation pre-dates (or occurred early in) development of the Berrocal fault. The original Berrocal fault was mapped by Bailey and Everhart (1964, p. 84 and 92) as a strike-slip fault southwest of the New Alamden mining district (about 20 miles southeast of Los Gatos). The name was subsequently applied by Sorg and McLaughlin (1975), and McLaughlin and Clark (1997) to the fault in the Stevens Creek area. These two faults likely have a similar

genesis, but we believe that they are separate, unrelated faults. For the sake of continuity we will use the term Berrocal fault in this report, but our discussion only refers to the fault in the Stevens Creek area.

We identified the approximate trace of the Berrocal fault adjacent to the east side of the quarry. There was no obvious surface expression of the fault trace on the ground or on aerial photographs except for the juxtaposition of Franciscan with Santa Clara units. We identified three areas where the location of the Berrocal fault could be narrowed down to between 50 and 100 feet (Locations 1, 2, and 3 on Figures 5 and 12; Photos 2, 3, 25, and 26). These locations had been previously identified by Sorg and McLaughlin (1975) and Rogers and Armstrong (1973). These locations constrain the strike and dip of the fault zone.

At the southern two locations (Locations 2 and 3 -Figures 5 and 12 and Photos 3 and 26), readily identifiable Santa Clara units crop out, but the Franciscan is covered with float. The fault zone is west of these locations. These locations are at approximately the same elevation (650 to 675 feet) and provide an approximate fault trace of N 5^{o} to 7^{o} W.

The other location is adjacent to the northeast corner of the quarry (Location 1 - Figures 5 and 12 and Photo 2). Here, the fault cuts obliquely across a north-south trending dirt road. Franciscan limestones crop out in the road south of the fault zone and apparently undistrupted Santa Clara units crop out in sidecuts a hundred feet or so to the north. This outcrop is at an elevation of about 915 feet.

The Sorg and McLaughlin map (Figure 5) shows the fault with a shallower dip (<40 degrees west) cuting through Franciscan units at Location 2. This localized change in fault dip is inconsistent with thrust behavior. It is more likely that Santa Clara units extend further west at location 2 (than shown on the Sorg and McLaughlin map) and the Berrocal fault has a steeper dip. A three-point evaluation suggests that the fault zone currently dips 50 to 70 degrees to the west. The Santa Clara east of the Berrocal fault has a gentle synclinal form with an axis that trends about N45W and dips to the southeast, oblique to the trend of the Berrocal fault in this area.

It is likely that the Berrocal fault formed as part of a flower structure related to slip on the San Andreas. It is unlikely that it is currently an independent seismogenic feature. Slip may occur when the near-by section of the San Andreas fault shifts. The lack of surface displacement features along the trace of the Berrocal fault in the Stevens Creek area suggests that there is little historic (10,000 years or more) displacement on the fault. It is also possible that this section of the fault has been rotated to a steeper dip (20 to 30 degrees) by subsequent movement on deeper faults and is now no longer active. It appears that the global movement of the Franciscan units in this area are north-northeast (not east) and that this section of the Stevens Creek fault was never a true thrust, but is instead a high-angle, lateral reverse fault with oblique movement.

Air Photo Analysis

Table 1 contains a list of aerial photographs of the Stevens Creek Quarry area reviewed as part of this study. Landslides had been mapped by Sorg and McLaughlin (1975; Figure 5), Rogers and Armstrong (1973; Figure 4), and Pike (1997). Our air photo analysis does not support the identification of landslides in the vicinity of the quarry interpreted by previous workers. The large landslide at the northwest corner of the quarry mapped by Sorg and McLaughlin (1975) is located along a ridge crest, not on the side of a ridge. It appears to be a tectonic block bound by shear zones. The trace of the Berrocal fault could not be readily identified on the aerial photographs.

Table 1
Aerial photographs evaluated as part of this study.

Source	Date	Line and Photo Nos.	Scale
Pacific Aerial	7-14-04	AV8769-2-7, 8, 9	1:7,200
Pacific Aerial	7-14-04	AV8769-1-7, 8, 9	1:7,200
Pacific Aerial	7-28-97	AV5472-3-9, 10, 11	1:24,000
Pacific Aerial	7-28-97	AV5472-4-8, 9, 10	1:24,000
Pacific Aerial	10-8-96	AV5200-17-72, 73, 74	1:12,000

Seismicity

The San Andreas fault is approximately 5 miles west of the quarry. This section of the San Andreas fault is classified as a Type A fault and has an estimated Mmax of 7.9 (ICBO, 1998). The site has a 10 percent chance in 50 years of experiencing 0.57g peak ground acceleration (PGA) (USGS, 2007; Earthquake Ground Motion web site).

The quarry was active during the Loma Prieta Earthquake of October 17, 1989. The estimated ground acceleration from that earthquake at the quarry was about 0.2g. Quarry personnel indicated that the quake did not cause rock falls or slope failures. Reportedly, only a single water glass fell off a counter in a nearby house during the Loma Prieta earthquake. Historic aerial photograph review indicates that the quarry was smaller in 1989. The highest slopes were 100 to 200 feet high at the time of the 1989 Loma Prieta Earthquake.

A study of aftershocks from the Loma Prieta Earthquake in the Santa Cruz Mountains (Lindley and Archuleta, 1994) found that Franciscan ridgetops had little ridgetop amplification, and the average amplification at Franciscan sites was 3 times less than amplification at Miocene and Pliocene sites.

The slopes surrounding the quarry floor were identified by the California Geological Survey (2002, Cupertino Quad) as having a potential for permanent ground displacements (earthquake-induced landslides). No liquefaction potential was identified in this area.

"blue"

Groundwater

There is a series of houses on the hill south of the quarry (Monte Bello Ridge). The water supply to some of those houses is provided by wells. The bottom of some of the eastern wells extends below the elevation of the quarry floor while the bottom of wells higher in the hills is above the elevation of the quarry floor. The quarry is separated from these houses (and wells) by an unnamed stream in Rattlesnake Canyon (local name). The elevation of the stream (and the base of the valley) adjacent to the quarry is between 650 and 690 feet. The lowest elevation of the quarry floor is projected to be between 700 and 725 feet. When quarrying is finished, the quarry will be filled with ~150 feet of fill. Subdrain lines are and will be incorporated into the fill. The quarry is relatively dry, and there is no record of long-term, large water inflows into the quarry or historic need for drainage wells to control water inflows. There is no record of water wells within 1000 feet west, north, or east of the quarry.

We observed two seepage areas in the quarry walls (Figure 8). One is located in the west face near the south end of the quarry, and the second is located in the middle of the north face. The western seepage area (Photo 10) consists of a series of sub-horizontal seeps that extend 100 to 150 feet at about the 800 foot elevation. At the time of our site visit (in the fall, the driest time of year), only the southernmost seep was active, producing in the range of 5 to 10 gallons of water per hour. The remainder of the seeps were marked by rinds of efflorescent salts. There was no obvious alteration/weathering of the bedrock in the vicinity of the seeps. This area is at the base of weathered greenstone, and it appears that this zone is related to slope interflow through the weathered zone. It is likely that the flow increases during the winter.

The second seep area is located in hard bedrock in the middle of the north face (Photos 11 and 12) at about elevation 925 feet (the top of the face is above 1200 feet elevation). This zone consists of two seeps, spaced 20 to 30 feet apart at about the same elevation. The flow is in the range of 10 to 20 gallons per hour. There is a 2 to 3 inch wide, vertical clay zone below the eastern seep. The flow from these seeps is currently directed into the existing gravity drainage system. There is no indication that drainage wells have been used in or around the quarry. The majority of the quarry walls are covered with fill, and no obvious indications of seepage were seen in those areas. It is likely that there is some seepage in the northeast corner of the quarry. A seasonally dry valley and dry stream above this part of the quarry trend towards the northwest corner of the quarry.

Quarry personnel indicated that a few years ago, a gush of water occurred when a new cut was made at the east end of the north face in the limestone area. The flow of water was initially large. The flow slowly decreased over a few days and was negligible a week or two later. This flow appears to have occurred at the junction between the greenstone and the limestone at the northeast corner of the pit. The nature of the flow suggests that this was an isolated pocket.

This pit has been active for more than 40 years, and portions have been excavated to approximately 725 foot elevation. The quarry acts as a very large diameter drainage pit.

Currently, total flow from the quarry is in the range of 5 to 10 gallons per minute. The majority of effects on the surrounding groundwater have already occurred. It is likely that bedrock groundwater levels adjacent to the quarry will rise when the quarry is backfilled.

Rattlesnake Canyon acts as a hydrologic barrier between the quarry and the hill south of the quarry. We are unaware of any complaints or comments about groundwater elevation changes in the surrounding area that might be related to quarry operations.

Slope Stability Considerations

More than 60 percent of the northern and western faces was covered with side cast fill at the time of our site visits. We observed numerous landslides within the fill (at all scales) but did not observe obvious indications of failure of the underlying rock in the side cast areas.

The current western and northern quarry faces are 250 to 300 feet high and slope steeply. The western face is about 12 years old (slopes 40 to 50 degrees east; Photos 8 and 17). The upper bench was cut 6 to 7 years ago. The northern face is 2 to 3 years old (slopes 45 to 70 degrees south; (Photo 13). Variously sized wedge failures occur in the lower, unweathered material in the western face (Photo 14). These failures range in size from a few cubic yards to hundreds of cubic yards. We did not observe similar wedge failures in the northern face. It is likely that the observed failure differences between the two faces is a function of joint patterns and the trend of each face.

A northwest-southeast trending shear zone is located at the northwest corner of the quarry. Much of this area is covered with fill. The only exposure of the shear zone is a 40 foot high by ~100 foot long cut at the base of the slope (about 200 feet below the original ground surface; Photo 5). The western part of the zone was covered, but the zone is in the range of 50 to 100 feet wide. The shear zone is serpentine. Shearing is pervasive. At small scale, shears occur in almost all directions, but the shears are short (a few inches), curvilinear, and are truncated by other shears (Photo 6). Polished shear surfaces are common.

In outcrop scale, the overall shear trend in the exposed face is N25-30W with a high dip (~80 degrees east/west). The eastern end of the face contains fracture-bound angular greenstone blocks (6 inches to a few feet in size), while the western end of the face is highly sheared serpentine that contains numerous greenish pods in a black matrix. The pods are football shaped that are few inches to a few feet long. The long axes are sub-parallel to the overall shear strike direction. The pods do not appear to be significantly stronger than the surrounding matrix. We picked up a pod that was about 2 feet long by the ends. After a few minutes, the pod fell apart under its own weight along internal fractures. The pods and matrix can easily be broken apart with a rock hammer. The cut face is perpendicular to the overall shear trend and is a few months old. The face is failing by localized wedge failures and face spalling (Photos 15). There is no evidence of large-scale arcuate failures.

An inactive eastern face extends the length of the quarry (Photo 16). The northern end of the face was cut in Franciscan sedimentary units (limestones, sandstones, and clays). The rest of the face was cut in weathered greenstone. The greenstone face is 50 to 75 feet high and slopes 45 to 55 degrees west. This face is sub-parallel to the Berrocal fault which is 300 to 400 feet to the east. The southern end of the face is more than 45 years old, the middle part of the face is about 30 years old and the northern end of the face is 8 to 12 years old. The middle part of the face contains a series of landslides (both circular and planar failure surfaces). The area adjacent to the toe of this slope is used for temporary rock storage. The toe of this slope is occasionaly destabilized as the stored material is removed.

Joints

We mapped fracture/joint trends in the northern and western quarry faces as well as in two exposures in the middle of the quarry. There is a wide variation in joint density, orientation, and length. We did not observe quarry-wide joint patterns. The majority are short (a foot to less than 40 feet long) and truncate against other joints. Joint spacing varied from less than an inch to 5 to 10 feet. Some joints were planar, but most were curvilinear (the strike and dip could vary ±20 to 30 degrees). The joints are rarely filled, and the joints in the unweathered greenstone are tight. Scattered slickensides were observed. Occasional shear zones were observed in the western face. These appeared to be late stage for they were not cut by other joints or shears. The zones are 1 to 5 feet wide and 20 to 60 feet long. These shears have a high dip (70 to 90 degrees) and trend easterly-westerly. The rock within the shear zone is broken into smaller pieces but no gouge was visible. The shears were occasionally filled with vein material (1/4 to ½ inch wide).

Stereonet plots of all measured joints are shown in Figure 9, and stereonet plots of joints in the western face are shown in Figure 10 (combined weathered and unweathered units). There is a wide scatter, but there is a general northeast-southwest strike trend with dips steeper than 40 degrees to the east. This is based on a limited data set (73 data points). Several hundred data points would be needed to confirm these trends. Few fractures were measured in the northern face because the face was steep and the lower 10 to 20 feet of the face was dangerous to climb on. The western face data is consistent with the wedge failures on the west face. The apparent lack of persistent joints with a moderate dip to the south is consistent with the lack of large-scale wedge failures in the north face.

Failure Types

We did not observe large-scale failures in the quarry walls, and there has been no reported history of large-scale failures. The majority of observed rock failures were relatively small block and wedge failures related to joint orientation.

A zone of wedge failures in the unweathered greenstone occurs along the central section of the western face between elevations 750 to 1050[1] feet (Photos 14 and 18). These failures progress upwards to but do not appear to extend into the overlying weathered greenstone. This face trends ~N20E and slopes ~45 degrees east. We measured the failure planes of several of the wedge failures. The basal surface of those failures trends N10W to N20E and dips 45 to 60 degrees south. The dips of joints with a N-S trend and easterly dip in this area were mainly 45 to 60 degrees, but some dipped 25 to 35 degrees. The wedge failures appeared to be restricted to the more competent, less fractured greenstones. They did not extend south into more fractured greenstone (either weathered or unweathered).

In the west slope, engineered wedge fill placed as part of the reclamation plan will extend to between 1000 and 1050 feet elevation, and much of the current zone of wedge failures will be covered and buttressed with fill. The western face final rock slope above the fill will dip approximately 32 degrees east (1.5:1). It appears at this time that the dip of basal planes of the current wedge failures will not daylight in the final rock slope.

There are partial failures of the weathered greenstone face in the high bench in the western slope (Photo 19). The face is about 40 feet high, slopes about 75 degrees east, and trends north-south. There is a series of shears that trend east-west across that face. The shears are semi-vertical and are spaced 10 to 20 feet apart. There were several failures in the cut slope. It appears that the these failures began with spalling of fractured rocks within the shear zone itself and progressively widened laterally (Photo 20). There was no obvious classical wedge failure or global failure of the cut face. The cut face in this bench more than 17 years old. The cut face below the bench is 7 to 8 years old.

There are failures in weathered bedrock along the eastern cut slope of the quarry (Photo 16). That cut slope varies from 30 to 60 feet high and is 20 to 45 years old. The face trends ~N15W and slopes 45 to 55 degrees west. This face is quasi-parallel to and several hundred feet west of the trace of the Berrocal fault. The middle part of the face contains a series of landslides (both circular and planar failure surfaces; Photo 21). The area adjacent to the toe of this slope is used for temporary rock storage. The toe of this slope is routinely destabilized (a minor amount) by equipment as the stored material is removed.

The northern face trends ~N60E. The west end of the slope is covered with spill fill and slopes ~45 degrees south (Photo 13). The fill is marginally stable, and soil-related landslide features are common. We did not observe obvious large-scale failure of the underlying bedrock. The center part of the slope contains exposed hard greenstone that dips ~60 degrees south. The face was irregular, and smaller block failures were common. We did not observe obvious wedge failures (as observed in the western face) in this area.

[1] Note: All elevations are approximate.

SLOPE STABILITY ANALYSIS

Final slope configuration

The proposed Reclamation Plan Amendment (Resource Design Technology, 2007; Figure 11) indicates that reclamation includes construction of an engineered wedge fill around the perimeter of the quarry. The base of the wedge fill will rest on the quarry floor at approximately 700 foot elevation and the upper edge of the wedge fill will extend to about 1000 foot elevation and rest against the quarry walls. The surface of the wedge fill will slope 2:1 towards the interior of the quarry. The center of the quarry will be filled with ~150 feet of fill (to ~850 foot elevation). The western and northern quarry faces will extend from tens of feet to approximately 250 feet above the top of the wedge fill. The exposed rock face (weathered and unweathered units) will have a 1.5:1 slope.

Limit Equilibrium Method

We used GSTABL7, a computer program, to evaluate the Factor of Safety (FS) for various slope orientations and material properties. We performed both static and pseudo-static (seismic) slope evaluations. Bishop's method of slices was used to evaluate circular failure modes. Joint mapping did not identify persistent fracture sets that would justify evaluation of the slopes with Janbu's method. Based on our seismicity analysis, we used a pseudo-static coefficient of 0.2g to evaluate the stability of each slope for pseudo-static (seismic) loading conditions.

Under the Uniform Building Code (UBC), the minimum static FS for slopes where human occupancy is planned is 1.5, and 1.1 for pseudo-static conditions. Based on the use of the site after reclamation as open space, with no engineered structures or concentrated public access, we propose that a static FS between 1.3 and 1.5 is acceptable. Table 2 lists the significance of various Factors of Safety according to Sowers (1979, p. 587).

Table 2
Significance of the Factor of Safety (Sowers, 1979, p. 587)

Factor of Safety	Significance
Less than 1.0	Unsafe
1.0 to 1.2	Questionable safety
1.3 – 1.4	Satisfactory for cuts and fills
1.5- 1.75	Safe for dams

The limit equilibrium method was developed for soil slope stability analysis and assumes particle friction, a relatively homogenous material, and a smooth (arcuate) failure surface. When used for rock slopes, the phi and cohesion values are average, non-directional rock mass parameters. They can only account for fractures and other material irregularities in an indirect manner. Most of the time, rock slope stability is controlled by other factors

such as particle/block interlock or failure on existing, non-circular surfaces. Equivalent phi angle and cohesion strength [phi $_{cqv}$ (P_{cqv}) and cohesion $_{cqv}$ (C_{cqv})] are used to signify estimated rock properties in the limit equilibrium analysis.

Rock mass rating systems began to be developed in the 1960's to evaluate the stability of underground openings. Several have been expanded to evaluate rock slopes. These include: RMR, MRMR, RMS, SMR, SRMR, SSPC, CSMR, GSI, USC, Q, M-RMR, BQ, RMi, and others. All of these rating systems attempt to identify and incorporate the main features of a rock mass that define rock shear strength, and, subsequently, rock stability. The basic parameters used in these rating systems include block size and spacing (typically defined by RQD, derived from drill cores, but some allow scan mapping of a rock face), the nature of rock defects (persistence, roughness, infilling, width, weathering, spacing, orientation), and ground water. These parameters are evaluated and combined into a single value. That value is typically used with design curves to estimate overall rock stability. Some of the classification systems are based on specific rock types, conditions, and slope height and have limited applications. Ongoing debates about the nature and incorporation of the various rock parameters cause modifications of existing rating systems and creation of new ones. Palmstrom (2001) contains a good review of rock characterization for rock rating systems. Hack (2002) and Douglas (2002) reviewed many of the rock mass rating systems.

Numeric modeling methods (FEM, FDM, Distinct Element, Discontinuous Deformation Analysis) are also used to evaluate rock slopes. FEM, FDM codes require an extensive set of rock and joint properties which can be difficult to reasonably define. It is also difficult to model rock that is extensively fractured.

A Block-in-Matrix (BIM) rock analysis is useful to evaluate soil/rock mixtures (Lindquist, 1994; Medley, 1994; and Kim, Snell, and Medley, 2004). Except for the residual soils, the majority of the quarry rocks (weathered and unweathered) contain greater than 75 percent rock. This rock percentage indicates that the exposed greenstone slopes are fractured rocks instead of BIM rocks. The serpentine shear zone in the northwest corner of the quarry could be considered a BIM rock. The effect of blocks within a fine-grained matrix is to increase create a complex shaped failure surface. This is represented in a limit equilibrium model by increasing the phi angle by 10 to 20 degrees (Kim, Snell, and Medley, 2004; Medley, 1994).

A limit equilibrium method with a circular failure surface analysis is used in this evaluation for the following reasons.

> The deeper quarried slopes will be backfilled and supported by engineered fill. Rock mass rating systems are not designed to evaluate soil slopes. They could provide an estimate of the stability of the rock portion of the slopes, but that estimate would have to be transferred into a limit equilibrium analysis. Only up to about 100-150 feet of unweathered rock will be exposed. At this depth, internal rock dilation/deformation is expected to be minimal.

Parametric studies of rock properties can more easily be performed with a limit equilibrium analysis. Phi and cohesion values can be quickly varied to accommodate layer thickness variations, estimate effects of joints on global rock properties, and estimate variations in both soil and rock types on slope stability.

For the most part, weathered rock will be present on the upper cut slopes above the engineered fill. Rock weathering reduces the effect of rock structure and increases the likelihood of arcuate, soil-like failures.

It is unlikely that a rock mass rating evaluation would provide a better evaluation of the final rock slopes. The rock mass ratings are lumped parameter characterization systems, not classification systems or design methodologies (Stille and Palmstrom, 2003). They can only provide an estimate of the global stability of a slope. The proposed quarry final slope height and dip are at the lower end of most of the rock mass rating system design curves. It is also difficult to vary the parameters that make up a rock mass rating evaluation in order to perform parametric evaluations.

Material properties

For stability evaluation purposes, four rock types (unweathered greenstone, weathered greenstone, sheared rock, and fill) are used in the stability analyses (Table 3). Spatial changes in weathering, joint density and persistence will cause variations in rock properties, but the range of that variation can only be estimated at this time.

We performed a back-analysis on both cut and natural slopes to estimate in-place weathered and unweathered rock properties (phi $_{cqv}$ and cohesion $_{cqv}$). We then lowered those strength values to include lower strength rock/joint conditions (called lower bound values). It is likely that the actual rock strength values are closer to or higher than the back-analysis properties. We chose to vary cohesion and keep phi values fixed.

Table 3
Assumed Engineering Material Properties

Material Type	Lower bound Cohesion (C psf)	Back-calculated Cohesion (C psf)	Friction Angle (Phi - ϕ) (degrees)	Unit Weight (pcf)	Analysis Layer Number
Unweathered Greenstone	2000 (C_{cqv})	5000 (C_{cqv})	32 (P_{cqv})	155	1
Weathered Greenstone	1000 (C_{cqv})	3000 (C_{cqv})	28 (P_{cqv})	155	2
Compacted Fill	150	-	31	130	3
Sheared rock	500 (C_{cqv})	1000 (C_{cqv})	38 (P_{cqv})	130	4

COMPACTED FILL - The CGS (2002) seismic hazard zone report listed a regional value of fill (af) as 20 degrees/ 560 to 651 pcf. The CGS values are the mean/median of 27 tests.

A value of 31 degrees/ 150 pcf were used in this report. This value come from triaxial testing of two samples from on-site imported fill (Appendix A). It is likely that this material is similar to the material that will be used to fill the quarry. Additional strength testing of the onsite fill could refine this value. The fill comes from the greater San Jose area. It is typically sandy and has been tested for contaminants. Little to no bay muds are imported. These are low end values. The material was sieved prior to testing to remove larger (> 1/2 inch) material. Having larger sized material in the fill will tend to increase the phi angle (create a BIM like material).

WEATHERED GREENSTONE - The CGS (2002) seismic hazard zone report listed greenstone (fg) strength properties as 28 degrees/ 680 to 565 pcf. The CGS values are the mean/median of 43 tests. It is likely that the majority of these values represent deeply weathered greenstone (10 to 40 feet from the ground surface) instead of mild or moderately unweathered greenstone.

The northern side of the Rattlesnake Canyon is adjacent to the southwest corner of the quarry (Figure 7; Photo 22). The natural slope adjacent to the quarry is about 500 feet high. The top of the slope (1100 to 1225 feet elevation) dips south at 2:1 (~26 degrees). The lower part of the slope (725 to 1100 feet elevation) dips south at 1.5:1 (32 degrees). The bottom of the slope is at about 700 feet elevation. The overall dip is 1.65:1 (31 degrees) south. We walked this slope to confirm the nature of the slope and the topography. The slope cover is soil with occasional rock outcrops, and the dip is relatively planar. We observed a small, shallow landslide at the base of the slope (below 825 feet elevation). This landslide appears to have occurred in soil, not bedrock. It is not visible on the aerial photographs because of tree cover. Aerial photograph evaluation indicates that this area is consistent with the overall slope in this canyon. This slope is thousands of years old and has experienced numerous large earthquakes from the nearby San Andreas fault. We did not observe obvious large landslides on the historic aerial photographs.

We back-calculated the stability of this slope using varying phi and cohesion values to estimate lower bound strength properties of weathered greenstone using static and pseudo-static slope stability analyses. The initiation points and termination limits in the limit equilibrium analysis were set to force the failure surfaces to extend over more than one-half the slope. The resulting factors of safety (FS) are shown in Table 4. These analyses suggest that the cohesion $_{eqv}$ of weathered bedrock would be in the range of 2500 psf to obtain an FS value of 1.5.

Table 4
Static FS for various equivalent phi and cohesion values for cross-section W-W'

	Cohesion $_{cqv}$					
Phi $_{cqv}$	500 psf	1000 psf	1500 psf	2000 psf	2500 psf	3000 psf
28	1.03	1.16	1.24	1.32	-	1.47
30	1.10	1.24	1.33	1.41	1.48	-
32	1.18	1.32	1.42	1.49	1.57	-

To evaluate a lower bound FS for this slope, we completed a pseudo-static back analysis using the static failure surfaces that developed from apparent phi and cohesion values of 28 degrees / 3000 psf and 32 degrees / 2000 psf. Using a horizontal acceleration of 0.2 g, the cohesion $_{cqv}$ was increased until an FS of 1.15 was obtained. For a 28 degree phi $_{cqv}$, the back-calculated cohesion $_{cqv}$ was 4000 psf. For a 32 degree phi $_{cqv}$, the back-calculated cohesion $_{cqv}$ was 3000 psf.

The weathered greenstone layer in cross-sections A-A' and B-B' was evaluated with a phi $_{cqv}$ of 28 degrees and a cohesion $_{cqv}$ of 3000 psf (high strength value) as well as with a phi $_{cqv}$ of 28 degrees and cohesion $_{cqv}$ of 1000 psf (low strength value).

UNWEATHERED GREENSTONE - The CGS (2002) seismic hazard zone report listed greenstone (fg) strength properties as 28 degrees/ 680 to 565 pcf. It is likely that these values represent weathered greenstone, not unweathered values (100 feet or more below the ground surface).

Cross-section Z-Z' is a current cut slope located at the north end of the quarry where the more competent greenstone is located. This area is less fractured than other parts of the quarry. Table 5 shows the results of the static back analyses for this cross-section.

Table 5
Static FS for various equivalent phi and cohesion values for cross-section Z-Z'

	Cohesion $_{cqv}$				
Phi $_{cqv}$	2000 psf	3000 psf	4000 psf	5000 psf	6000 psf
32	0.98	1.21	1.27	1.41	1.53
35	1.05	1.21	1.35	1.49	1.62

The static analysis assumes minimal jointing and a high cohesion value can be assumed. An overlying weathered rock layer was included in the cross-section. The strength of the weathered rock had little effect on the overall FS of the slope. If the weathered zone was set to unweathered rock properties (at phi $_{cqv}$ of 32 degrees and a cohesion $_{cqv}$ of 5000), the FS increased from 1.41 to 1.46.

The unweathered greenstone layer in cross-sections A-A' and B-B' was evaluated with a phi $_{cqv}$ of 32 degrees and a cohesion $_{cqv}$ of 5000 psf (high strength value) and with a phi $_{cqv}$ of 32 degrees and a cohesion $_{cqv}$ of 2000 psf (low strength value).

RESULTS

The results of our slope stability analyses are listed below. The GSTABL7 computer outputs are included in Appendix B. The slope configurations, material properties, and critical failure surfaces determined for these cross-section locations are shown on the computer output figures. We assumed total stress conditions and that groundwater levels were below the base of potential failure surfaces. Quarry fill consists of two layers. A wedge buttress fill placed against the cut slopes and a flat fill (up to 150 feet thick) placed in the middle of the quarry. The two fills will be referred to as the wedge fill and the flat fill, respectively.

Cross-section A-A', west

Cross-section A-A' west trends east-west across the southern end of the west face of the quarry (Figure 7; Photo 22). A series of slope stability analyses was done with varying rock and weathered rock cohesion values to evaluate overall slope stability (Table 3). The results are summarized in Table 6. On this section, the wedge fill extends to 1050 feet elevation, and the fill layer is 150 feet thick.

Table 6
FS values for cross-section A-A' west. Cohesion $_{cqv}$ in psf.

Analysis Type	Section Evaluated	Unweathered rock		Weathered Rock		FS	Newmark Displacment
		P_{cqv}	C_{cqv}	P_{cqv}	C_{cqv}		
Static	Full Slope	32	5000	28	3000	1.76	-
Static	Full Slope	32	2000	28	1000	1.42	-
Static	Rock only	32	5000	28	3000	2.55	-
Static	Rock only	32	2000	28	1000	1.73	-
Static	Fill only	31 (fill)	150/250	-	-	1.39 / 1.47	-
Pseudo-Static	Full Slope	32	5000	28	3000	1.22	0.17 ft
Pseudo-Static	Full Slope	32	3000	28	2000	1.11	-
Pseudo-Static	Full Slope	32	2000	28	1000	0.97	0.54 ft

Full Slope Analysis – The initiation points and termination limits in the limit equilibrium analysis were set to force the failure surfaces to start at the upper part of the slope and daylight in the vicinity of the toe of the fill slope. Both high and low rock properties were evaluated.

Rock Only Analysis - The initiation points and termination limits in the limit equilibrium analysis were set to force the failure surfaces to start at the upper part of the slope and daylight in the vicinity of the top of the fill slope. The failure surface would be in rock only. Both high and low rock properties were evaluated.

Fill Only Analysis - The initiation points and termination limits in the limit equilibrium analysis were set to force the failure surfaces to start at the top of the fill and daylight in the vicinity of the toe of the fill slope.

The variation in cohesion $_{cqv}$ values suggests that the slope will be stable (above 1.3 FS) for a wide range of rock cohesion $_{cqv}$. Rock cohesion $_{cqv}$ has to be at least 3000 psf for the pseudo-static FS to exceed 1.1

A zero fill cohesion value create a shallow, surface failure within the wedge fill.

Cross Section B-B'

Cross-section B-B' trends north-south across the middle of the quarry (Figure 7; Photo 23). The slope in Section B is not as high as the slope in Section A-west. It has a similar layer geometry as section A-A', west, but the ground surface north of the quarry property line drops in elevation. On this section, the wedge fill extends to 950 feet elevation, and the fill layer is 150 feet thick.

Fill stability was not evaluated because fill has the same geometry and material properties as in Section A-A', west and the FS for fill in Section B-B' will be similar to that in Section A-A', west. The results are summarized in Table 7.

Table 7
FS values for cross-section B-B'. Cohesion $_{cqv}$ in psf
Phi $_{cqv}$ held constant. Fill properties held constant.

Analysis Type		Unweathered rock		Weathered Rock		FS	Newmark displacement
		P_{cqv}	C_{cqv}	P_{cqv}	C_{cqv}		
Static	Full Slope	32	5000	28	3000	2.00	-
Static	Full Slope	32	2000	28	1000	1.52	-
Static	Rock only	32	5000	28	3000	2.62	-
Static	Rock only	32	2000	28	1000	1.72	-
Pseudo-Static	Full Slope	32	5000	28	3000	1.40	0.09 ft
Pseudo-Static	Full Slope	32	2000	28	1000	1.05	0.35 ft

The factors of safety for section B-B' are higher than in section A-A' because of the change in the surface geometry along the top of the slope.

Cross Section A-A', east

Cross-section A-A', east trends east-west across the east side of the quarry at the south end of the eastern face (Figure 7; Photo 24). The flat fill will extend above unweathered rock and only weathered rock will be exposed. The nature of the weathered rock in this area indicated that lower cohesion values should be used in the evaluation. The results are summarized in Table 7.

Table 7
FS values for cross-section A-A', east. Cohesion $_{cqv}$ in psf
Phi $_{cqv}$ held constant. Fill properties held constant.

Conditions	FS
Static; moderate failure, Rock C_{cqv} =1500, Weath. Rock C_{cqv} =450	1..6 to 1.9
Static; shallow failure, Rock C_{cqv} =1500, Weath. Rock C_{cqv} = 450	1.51

Very low unweathered rock values were assumed in this analysis, but the failure surfaces did not pass through unweathered rock. The current east face is over steepened (50 to 60 degrees dip) and is marginally stable (FS<1.2). That slope will be reconfigured to a 2:1 slope.

Cross Section E-E'

Cross-section E-E' trends southeast-northwest across the west side of the quarry just south of section A-A', west (Figure 7; Photo 22). The wedge will extends to 1050 feet and no flat fill is planned to be placed against the wedge fill in this area. The fill properties and rock/weathered rock phi values were fixed. The results are summarized in Table 8.

Table 8
FS values for cross-section E-E' west. Cohesion $_{cqv}$ in psf.

Analysis Type		Unweathered rock		Weathered Rock		FS	Newmark Disp.
		P_{cqv}	C_{cqv}	P_{cqv}	C_{cqv}		
Static	Full Slope	32	5000	28	3000	1.61	-
Static	Full Slope	32	2000	28	1000	1.37	-
Static	Rock only	32	5000	28	3000	2.33	-
Static	Rock only	32	2000	28	1000	1.65	-
Static	Wedge Fill only	31	0 150 300	-	-	1.29 1.33 1.40	-
Pseudo-Static	Full Slope	32	5000	28	3000	1.07	0.33 ft
Pseudo-Static	Full Slope	32	1500	28	1000	0.93	0.81 ft
Pseudo-Static	Wedge Fill only	31	150 300	-	-	0.87 0.92	1.1 ft 0.74 ft

CONCLUSIONS

Based on the results of our limited field investigation and mapping, review of the reclamation plan, and static and pseudo-static slope stability analyses, it is our opinion that the planned reclamation configuration will result in permanent slopes which will have acceptable stability for their intended use. The slopes stability analyses indicate that using reasonable lower bound strength values for the various rock and soil types, the static factors of safety exceed 1.3 and some are greater than 1.5. Since the strength values used in the analyses are considered to be representative of lower bound strengths, we believe that the demonstrated level of long-term stability is acceptable. If the long-term intended use of the reclaimed site changes from open space use, it may be warranted to perform additional studies relating to in-situ rock and soil strengths to better define as-constructed factors-of-safety.

Until vegetation is established, it is likely that there will be localized surface unraveling of bare rock slopes. The final rock slopes will be shaped several years prior to placement of the wedge fills. This will provide time for vegetation to become established on the rock slopes.

Operational constraints may be needed to reduce wedge failures along the western slope until fill can be placed.

When fill has been placed, bedrock water levels will rise. We have assumed that groundwater levels will remain below potential failure surfaces. This is based upon the current elevation of seeps in the west and northern walls and the fill being drained.

We do not know the width and extent of the shear zone in the northwest corner of the quarry. The western end is covered and we assumed that it is relatively narrow (less than 150 to 200 feet wide). This should be confirmed during mining. If the shear zone is significantly wider, an additional wedge fill cover (~25 feet thick) may have to be placed on top of this zone. A sample of this material was tested (Appendix A).

The perimeter road along the west and north sides of the quarry will be located on in-place residual soils. We recommend that these soils be removed to a depth of 10 to 20 feet and replaced/recompacted to form an engineered fill/embankment. The actual depth of excavation should be determined in the field. The perimeter road should be located on top of this engineered fill.

LIMITATIONS

These conclusion assume that the material properties of the imported fill that was tested are representative of the fill material that will be placed and that the nature of weathered and unweathered bedrock and the observed orientations of joints and shears on the existing quarry slopes are representative of the actual field conditions on the proposed final cut slopes.

The Public Resources Code (PRC), Title14, Article 9, Section 3704, states that lead regulatory agencies shall require formal slope stability investigations whenever design-slopes approach or exceed *critical gradient.* Critical gradient is defined as the maximum unsupported slope which can be maintained under the most adverse conditions. The term "most adverse conditions" is not a engineering term and it is not defined in the regulations. Our calculations were performed using conservative, reasonable assumptions about adverse natural conditions. The final design slopes are considered not to approach or exceed the critical gradient.

The express purpose of this slope stability investigation is to provide for public safety. The regulations do not require that the final design slopes be brought into compliance with Uniform Building Code (UBC) requirements for engineered slopes.

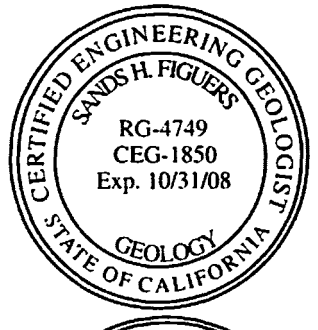
The analysis, conclusions, and Factors of Safety are not valid for evaluation of working slopes or the final slopes prior to placement of backfill.

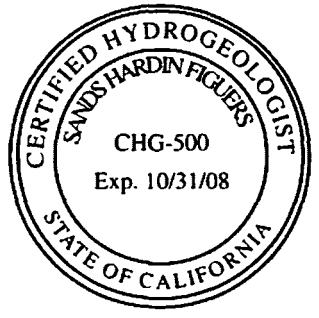
The analysis, conclusions, and Factors of Safety determined in this report are based on the final slope geometries with the backfill in place as shown in Sheet 3 of the Resource Design Technology report (2007). If changes are made to the final slope geometry or backfill depths as described in that report, then the conclusions and recommendations presented in this report should be considered invalid by all parties. We should be allowed to review and prepare written responses to comments to this report or to changes in the final slope geometry. If possible, we will prepare modified recommendations after a review of the proposed changes. Additional field and laboratory testing work may be required for us to develop any modifications to our recommendations.

The opinions and/or recommendations presented in this report could be subject to revision should additional information become available. The timing and location of events reported to us by the owners or their representatives were not independently confirmed.

We have employed generally accepted civil engineering and engineering geology procedures. Our observations, professional opinions and conclusions were made using that degree of care and skill ordinarily exercised, under similar conditions, by civil engineers and engineering geologists practicing in this area at this time. Norfleet consultants expressly denies any third party liability arising from the unauthorized use of this report.

Yours Truly,





S. Figuers, PhD
NORFLEET CONSULTANTS
Principal Engineering Geologist
Registered Geologist RG-4749
Registered Civil Engineer C51485
Professional Geophysicist GP954
Certified Engineering Geologist EG1850
Certified Hydrogeologist HG500

P. Gregory
Cal Engineering & Geology, Inc.
Principal Geotechnical Engineer
Geotechnical Engineer GE2193
Registered Civil Engineer C40728

REFERENCES

Applied Soil Mechanics; 1983; Geologic investigation an element of reclamation plan Stevens Creek Quarry Santa Clara County, California; dated May 16, 1983; file no. A3-1475-J1; 12pp.

Bailey, E.H. and Everhart, D.L.; 1964; Geology and quicksilver deposits of the New Almaden District Santa Clara County; USGS professional paper 360; 206 pp.

Branner, J.C., Newsom, J.F., Arnold, R.; 1909; Description of the Santa Cruz quadrangle, California; USGS Survey Geologic Atlas, Folio 163; 11pp.

California Geological Survey; 2002; State of California Seismic Hazard Zones, Cupertino Quadrangle; dated September 2002.

Dibblee Jr., T.W.; 1966; Geology of the Palo Alto quadrangle, Santa Clara and San Mateo Counties, California; California Division of Mines and Geology; Map Sheet 8, 2 plates; scale 1:62,500

Douglas, K.J.; 2002; The shear strength of rock masses; PhD thesis, University of New South Wales, Australia; December, 2002; 507pp.

Hack, R.; 2002; An evaluation of slope stability classification; in: ISRM EUROCK '2002, Portugal; November, 2002, p. 3-32.

ICBO; 1998; Maps of known active faults near-source zones in California and adjacent portions of Nevada; International Conference of Buildings Officials; 226pp.

Kim, C., Snell, C., and Medley, E.; 2004; Shear strength of Franciscan Complex Melange as calculated from back-analysis of a landslide; in: Proceedings; fifth International Conference on Case Histories in Geotechnical Engineering; April 13-17, 2004; paper no 2.33; 7 pp.

Lindley, G. and Archuleta, R.; 1994; Variation of seismic site effects in the Santa Cruz mountains, California; in: The Loma Prieta, California, earthquake of October 17, 1989-Strong ground motion and ground failure; USGS professional paper 1551-A, pp. A243-A253.

Lindquist, E.; 1994; The strength and deformation properties of Melange: PhD dissertation, Dept. of Civil Engineering, Univ. of California at Berkeley; 262 pp.

Medley, E.; 1994; The engineering characterization of Mélanges and similar Block-in-Matrix rocks (Bimrocks); PhD dissertation, Dept. of Civil Engineering, Univ. of California at Berkeley; 315pp.

McLaughlin, R. and Clark. J.; 1997; Stratigraphy and structure across the San Andreas Fault zone in the Loma Prieta region and deformation during the earthquake; in: The Loma Prieta, California, Earthquake of October 17, 1989- geologic setting and crustal structure; USGS professional paper 1550-E, pp. E5 - E47.

Palmstrom, A.; 2001; Measurement and characterization of rock mass jointing; in: Characterization of Rocks (Sharma, V. and Szena, K. eds.), p. 49-97

Pike, R.J.; 1997; Index to detailed maps of landslides in the San Francisco Bay Region, California; USGS open file report 97-745D, 20pp.

Raymond, L.A.; 1984; Classification of melanges; Geological Society of American Special Paper 198

Resource Design Technology, 2007; Stevens Creek Quarry Reclamation Plan Admendent, California Mine ID 91-43-007; dated May 2007, revised January 2008

Rogers, T.H. and Armstrong, C.F.; 1973; Environmental geologic analysis of the Monte Bello Ridge Mountain study area Santa Clara County, California; California Division of Mines and Geology; Preliminary Report 17 (in two parts); 45 pp.; map scale 1:12000

Sliter, W.V. and McGann, M.; 1992; Age and correlation of the Calera Limestone in the Permanente Terrane of northern California; USGS open file report 1992-0306; 27 pp.

Sorg, D.H. and McLaughlin, R.J.;1975; Geologic map of the Sergeant-Berrocal fault zone between Los Gatos and Los Altos Hills, Santa Clara County, California; USGS Miscellaneous Field Studies Map, MF-643; scale 1:24,000

Sowers, G.; 1979; Introductory soil mechanics and foundations; Macmillan, New York; 621 pp.

Stille, H. and Palmstrom, A., 2003; Classification as a tool in rock engineering; Tunneling and Underground Space Technology; vol 18, p. 331-345

Walker, G.W.; 1959; The Calera Limestone in San Mateo and Santa Clara Counties, California; CDMG (now California Geological Survey); Special Report 1-B; 8 pp

Photo 1: Stevens Creek Quarry, looking southeast. Note: all photographs taken by S. Figures in the fall of 2007.

Photo 2: A dirt road northeast of the quarry, looking north. The red line indicates the approximate location of the Berrocal fault northeast of the Quarry. See Figure 6 for the location. Santa Clara units crop out on the far side of the red line. Franciscan limestones crop out in the road on the near side of the red line. Also see photograph 16.

Photo 3: Looking north along a dirt road at the southeast corner of the quarry. See Figure 6 for the location. Santa Clara units (labeled sc, dipping more than 40 degrees to the east) are on the right side of the road. The Berrocal fault trends semi-parallel to and left (west) of the road. Franciscan float (Fg) is on the left side of the road. See Photograph 25 for location.

Photo 4: Hard (less jointed) greenstone in the core of the north face.

Photo 5: The serpentine shear zone at the northwest corner of the quarry, looking north. Note the wedge-like failure. Picture 4 is at the far right side of this photograph. The cliff at the wedge-like failure is about 40 feet high.

Photo 6: Shearing within the serpentine wedge zone seen in the previous photograph.

Photo 7: In-place residual soils at the top of the north face. In this area, the residual soils are more that 40 feet thick.

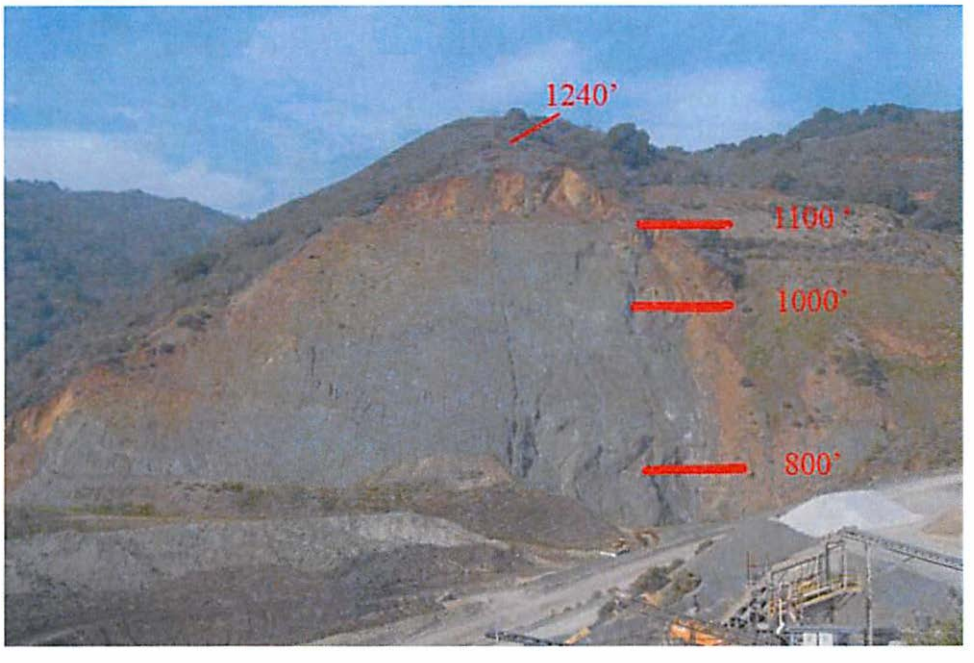


Photo 8: The west face. Note the change in color marking the irregular boundary between weathered and unweathered greenstone. The slope on the right is side cast fill. The elevations are approximate.

Photo 9: Franciscan limestones at the northeast corner of the quarry. This outcrop has been mined.

Photo 10: The lower circled area marks a sub-horizontal zone of seeps at the south end of the west face during the summer. The upper circled area marks seeps active during the winter. There were no seep to the right of these zones.

Photo 11: Seeps in the core of the north face (arrows).

Photo 12: A close-up of the right seep shown in the previous photograph. Note the gray clay seam below the water entry point

Photo 13: The north face. The reddish-brown slopes on either side of the center of the face are side-cast fills.

Photo 14: Wedge failures in the lower part of the western face.

Photo 15: An apparent wedge failure in the shear zone in the northwest corner of the quarry. This is, instead, a spalling failure. A narrow zone along a vertical shear plane began to fail. There was then progressive spalling laterally away from the shear. The cliff at the wedge failure is about 40 feet high.

Photo 16: The east face (weathered greenstone). The arrows indicate landslides where machinery has removed the toe of the slope and caused landslides (see photograph 21). The Berrocal fault is semi-parallel to and just on the other (east) side of the power lines.

Photo 17: The west slope looking south. The arrow indicates the approximate location of the western property line.

Photo 18: Wedge failure in the lower part of the western face.

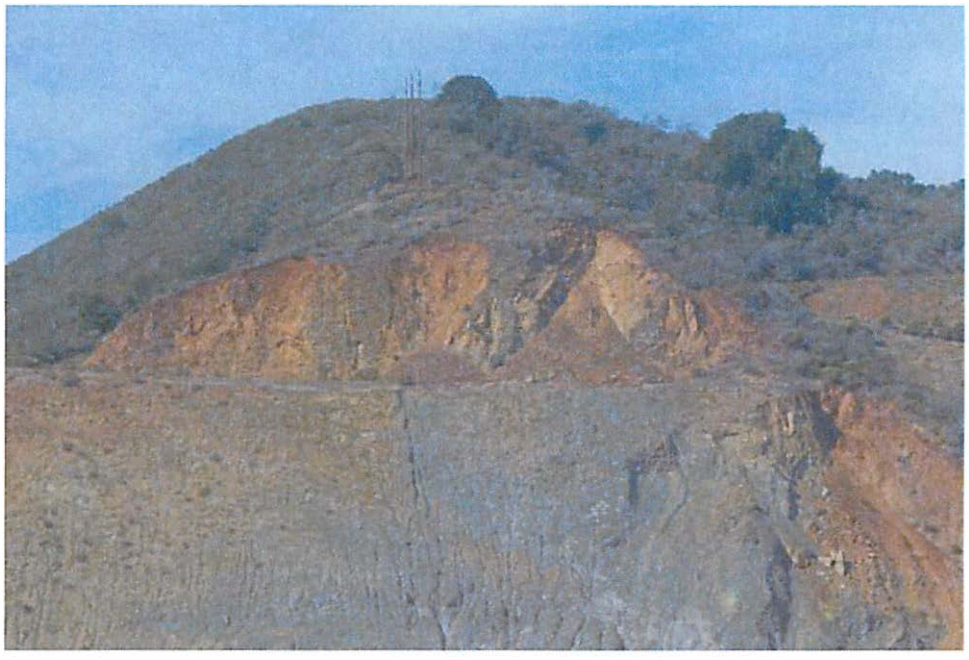


Photo 19: The upper bench in the west face. Note the localized failures. This face is more than 17 years old.

Photo 20: The failure in the middle of the upper bench. This is a progressive spalling failure rather than a wedge failure. Note the small size of the debris. This face is about 40 feet high.

Photo 21: A landslide in the middle of the eastern face. The left arrow in photograph 16 shows its location. The lower arrows in this photograph mark the slide plane of the landslide that has been exposed by machinery as spoil piles were removed.

Photo 22: The approximate locations of cross-sections W-W' and A-A'-west (red lines).

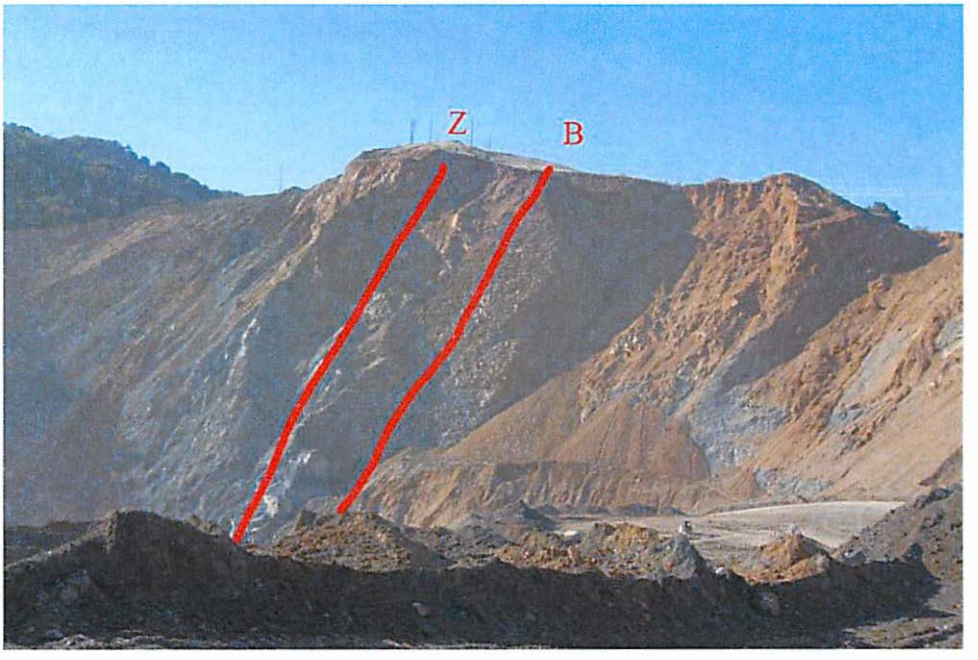
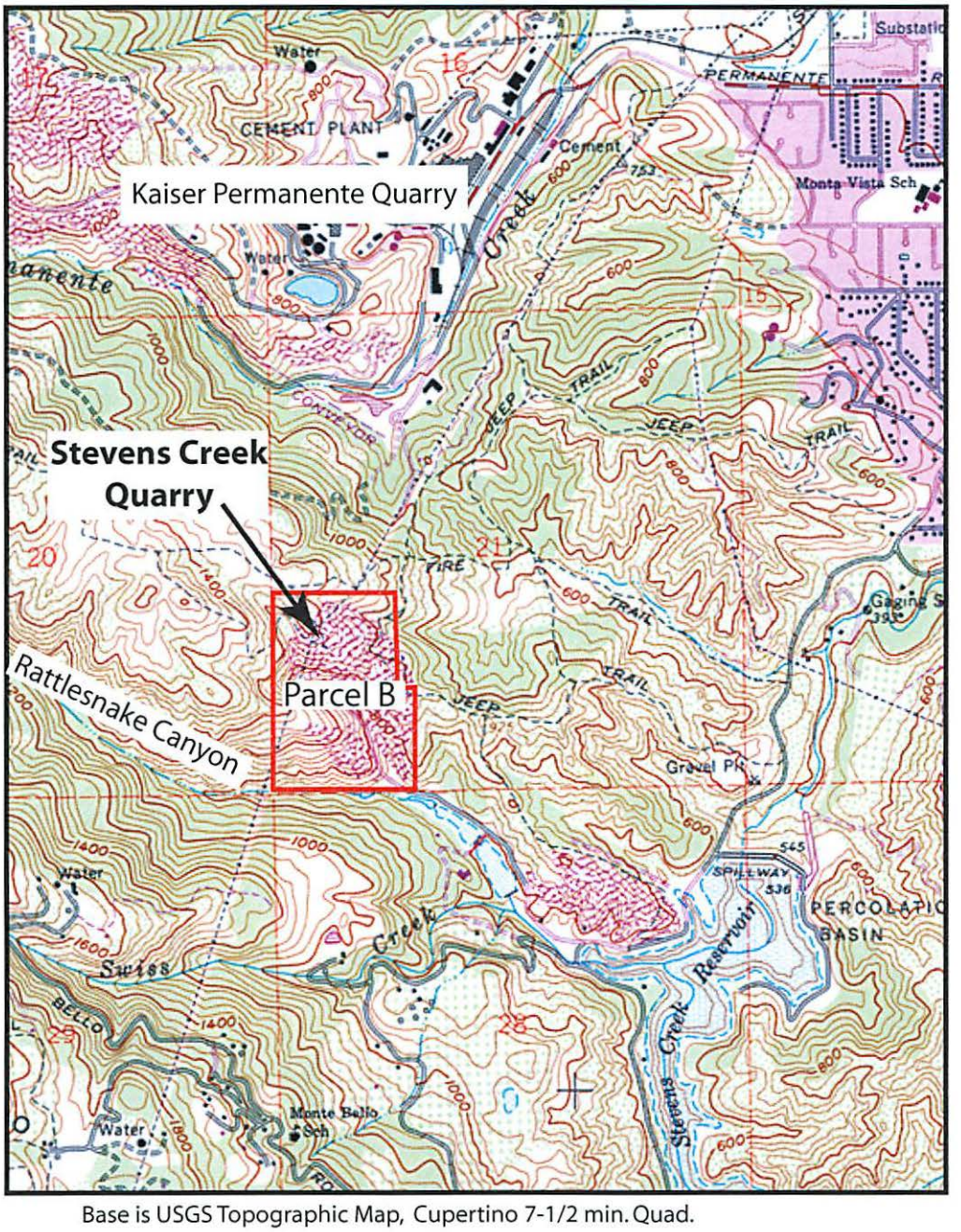


Photo 23: The approximate location of cross-sections Z-Z' and B-B' (red lines).

Photo 24: The approximate location of cross-section A-A'- east (red line).

Photo 25: The approximate location of the Berrocal fault (red line). Looking north across the access road to Parcel B. The arrow indicates the location of Photograph 3 The southeast corner of the quarry is at the upper left side of the photograph.

Photo 26: The red line indicates the approximate location of the Berrocal fault. View is to west on the south side of Rattlesnake canyon. The arrow marks the location of the basal Santa Clara fossil bed mapped by Sorg and McLaughlin (1974).



~N

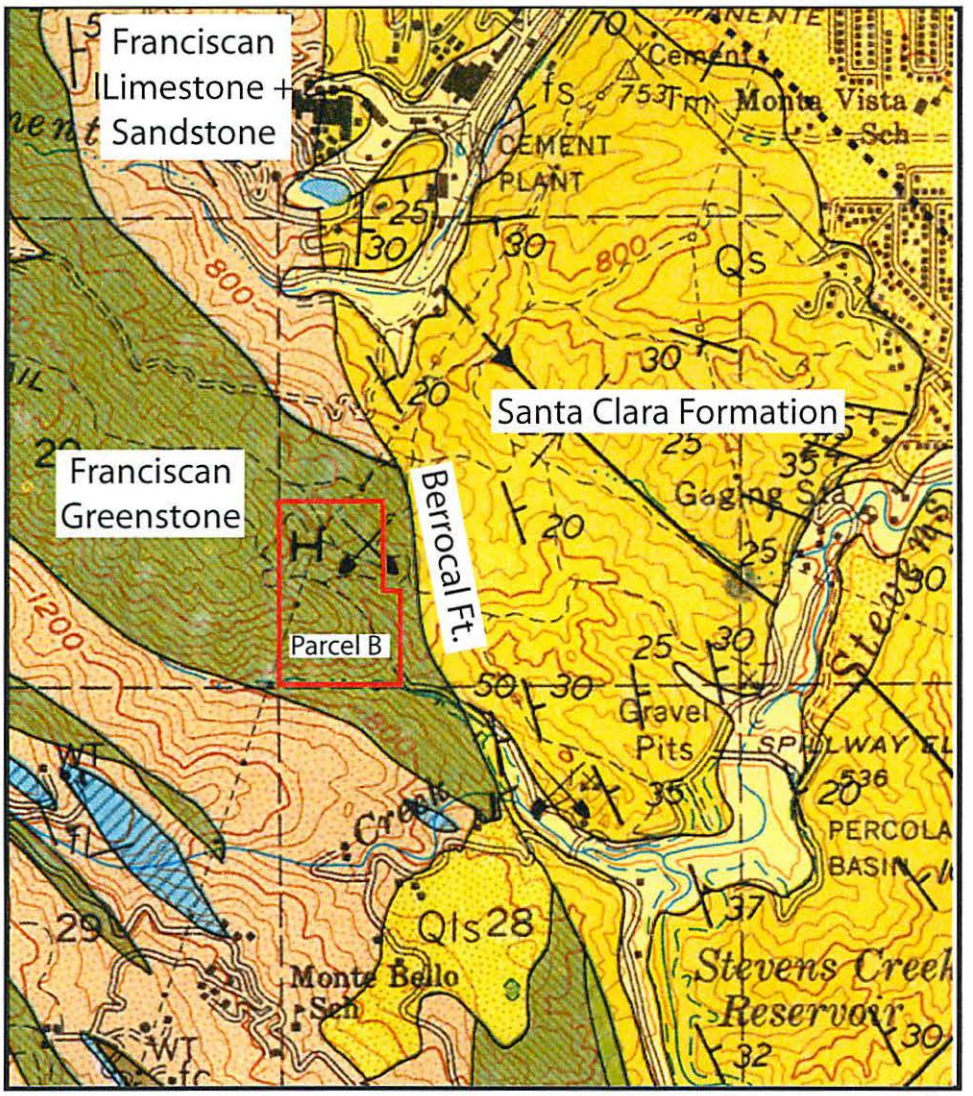
Base is USGS Topographic Map, Cupertino 7-1/2 min. Quad.

The quarry boundary is approximate

The approximate quarry coordinates are 37.2931° and 122.0125°

Red grid on map is 1 mile long.

Norfleet Consultants	Stevens Creek Quarry, Parcel B		
	Location Map		
	PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 1



A portion of Dibblee Jr., T.W.; 1966; Geology of the Palo Alto Quadrangle, Santa Clara and San Mateo Counties, California; California Division of Mines and Geology, Map Sheet 8

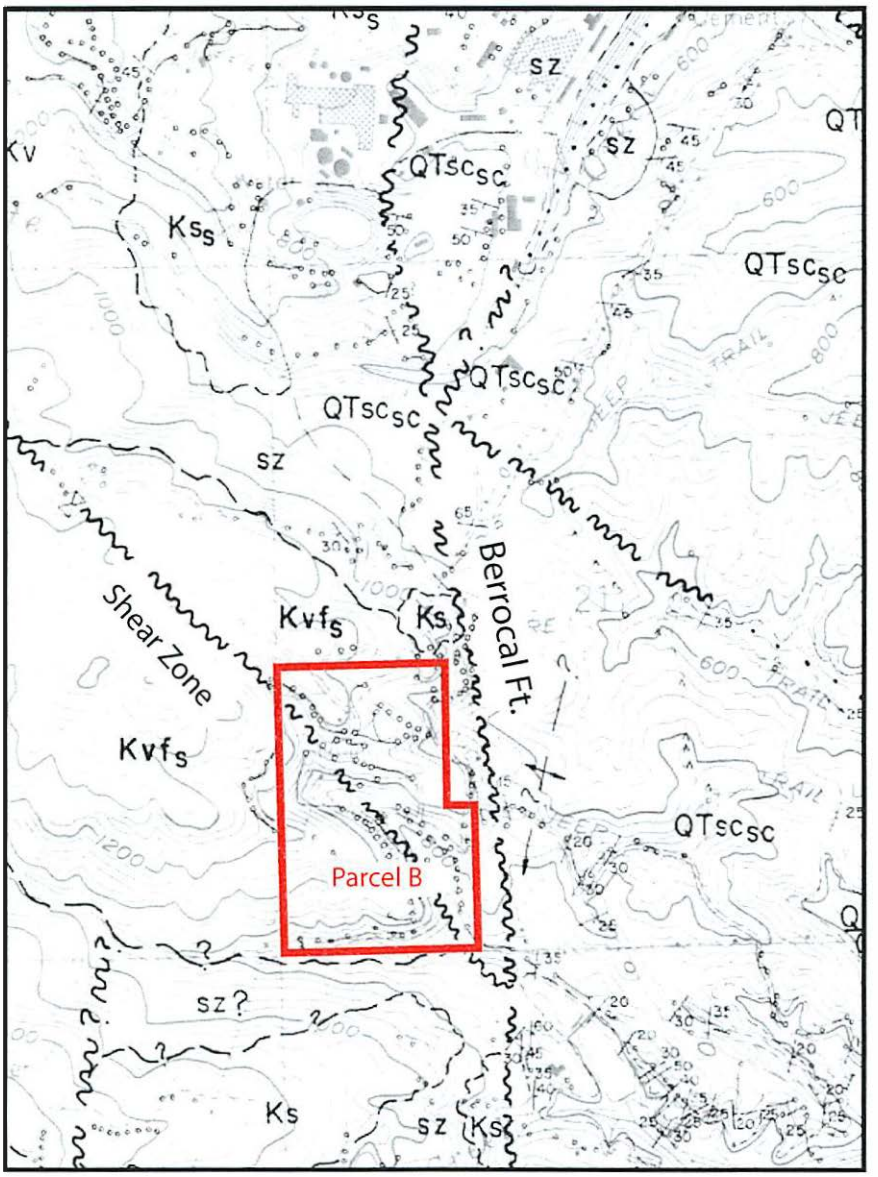
The quarry boundary is approximate

Black dashed grid on map is 1 mile long.

Norfleet Consultants

Stevens Creek Quarry, Parcel B		
Dibblee Map		
PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 2

$QTsc_{sc}$	Santa Clara Formation, Stevens Creek Member
Ks_s	Franciscan Formation, sheared sandstone
Ks	Franciscan Formation, sandstone
Kvf_s	Franciscan Formation, sheared fragmental volcanic rocks
sz	Shear zone (melange)



~N

A portion of Plate 1 from Rogers, T. and Armstrong, C.; 1973; Environmental Geologic Analysis of the Monte Bello Ridge Mountain Study Area Santa Clara County, California; California Division of Mines and Geology, Preliminary Report 17

The quarry boundary is approximate
Black dashed grid on map is 1 mile long.

Norfleet Consultants

Stevens Creek Quarry, Parcel B

Rogers and Armstrong Geologic Map

PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 3

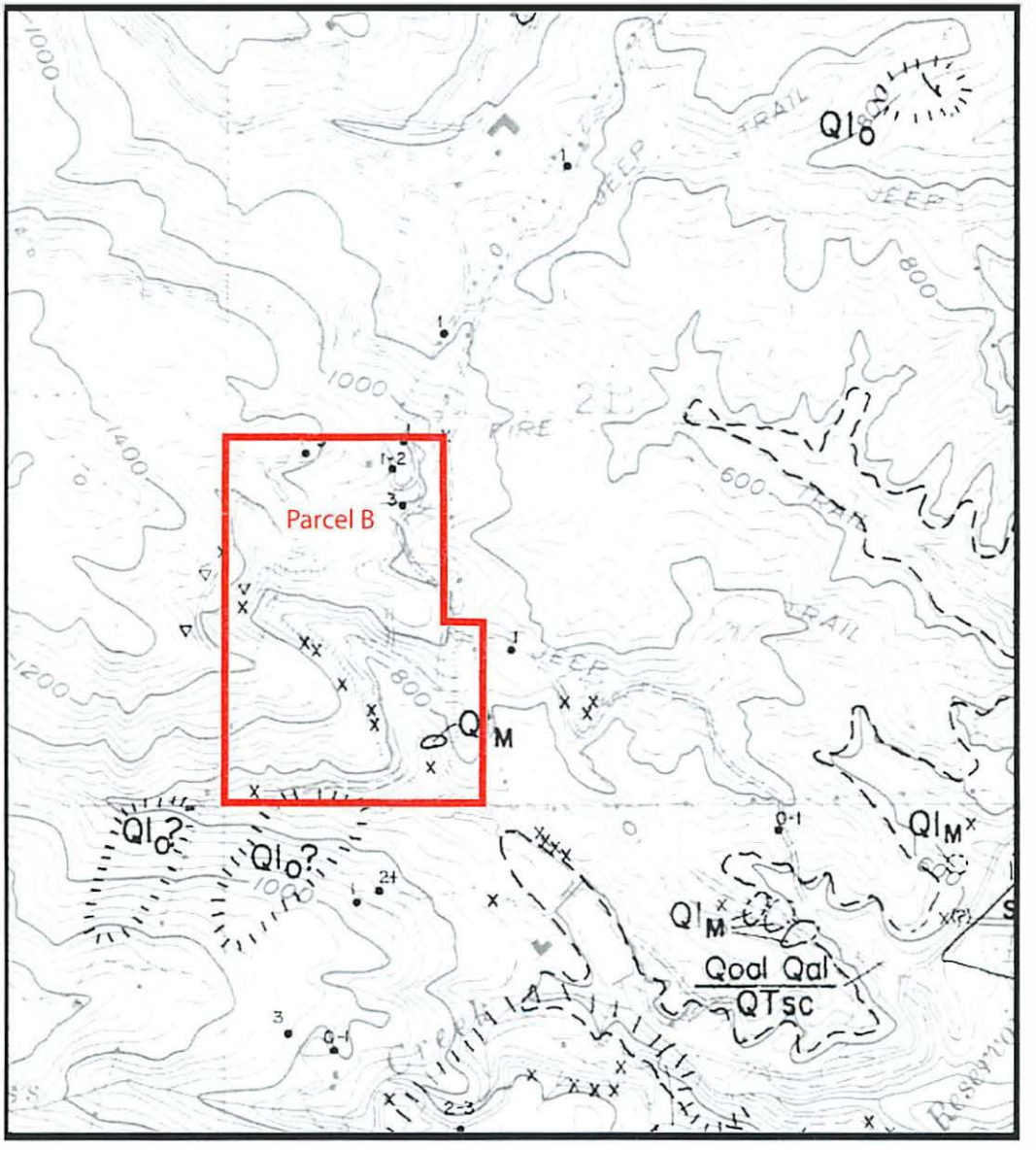
Ql_o Old Landslide

Ql_m Modern Landslide

x Modern Landslide, max. dimension < 100 ft

▽ Colluvium-filled ancient stream channel

$\bullet_{10}$ Thickness of colluvium



A portion of Plate 2 from Rogers, T. and Armstrong, C.; 1973; Environmental Geologic Analysis of the Monte Bello Ridge Mountain Study Area Santa Clara County, California; California Division of Mines and Geology, Preliminary Report 17

The quarry boundary is approximate.

The western quarry property line is about 2700 feet long.

Norfleet Consultants

Stevens Creek Quarry, Parcel B

Rogers and Armstrong Landslide Map

PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 4

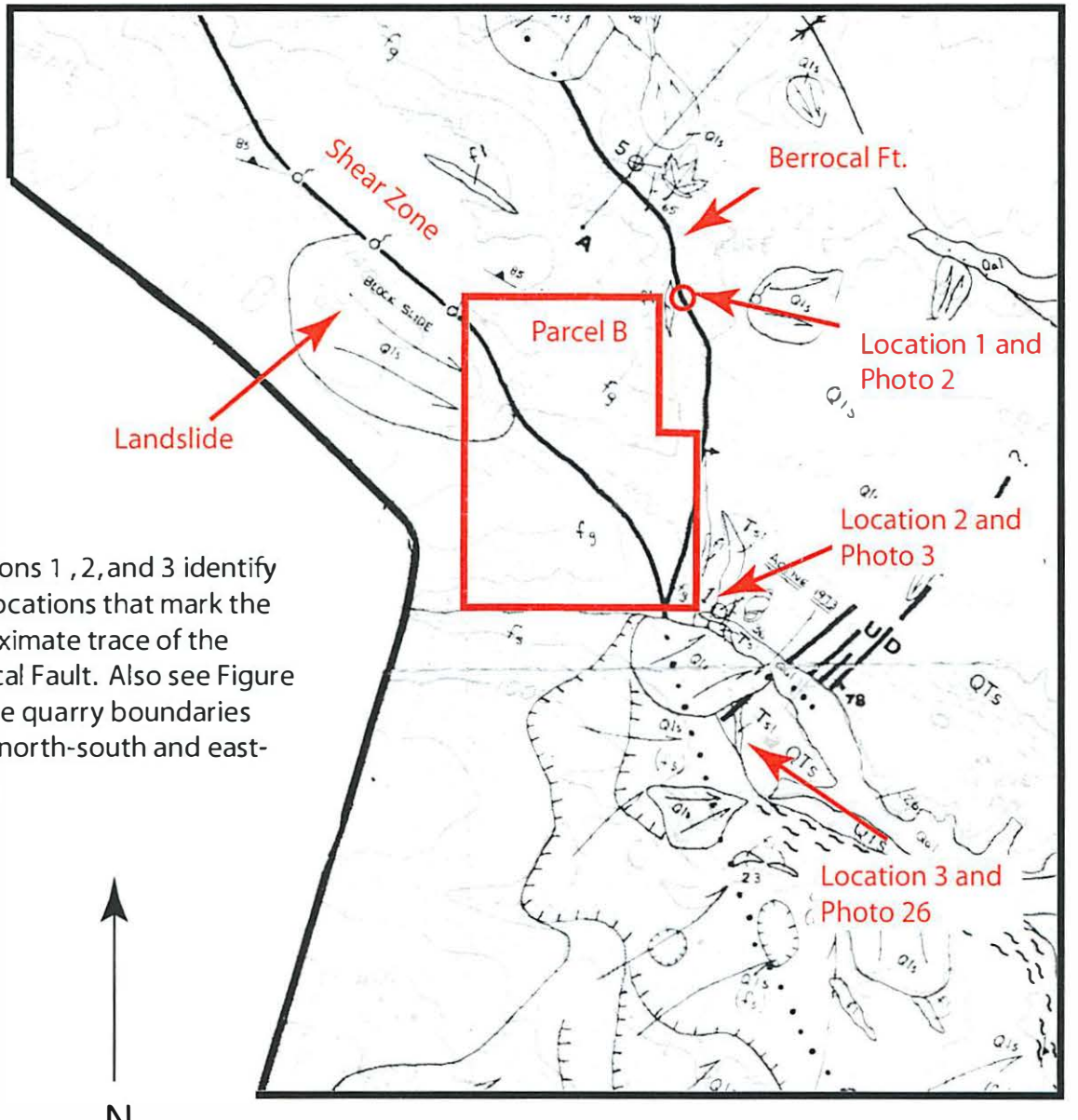
Ql_s Landslide

QT_s Santa Clara Formation

T_{sl} Santa Clara Formation - Lake beds

f_g Franciscan Assemblage - greenstone member

f_l Franciscan Assemblage - Calera limestone member



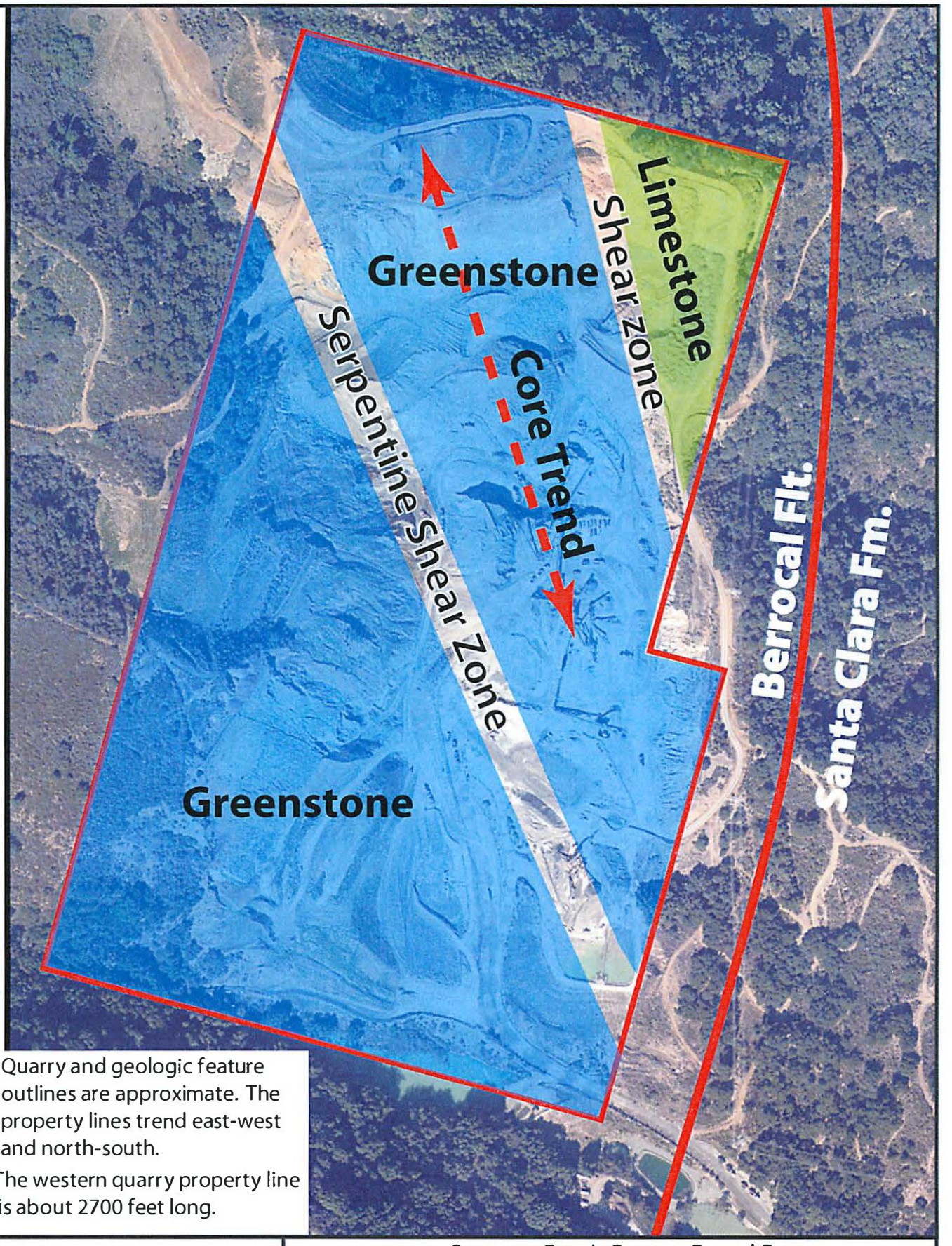
Locations 1 , 2, and 3 identify field locations that mark the approximate trace of the Berrocal Fault. Also see Figure 12. The quarry boundaries trend north-south and east-west.

A portion of Sorg, D. and McLaughlin, R.; 1975; Geologic map of the Sargent-Berrocal Fault Zone between Los Gatos and Los Altos Hills, Santa Clara County, California; USGS MF-643

The western quarry property line is about 2700 feet long. The quarry boundary is approximate.

Norfleet Consultants

Stevens Creek Quarry, Parcel B		
Sorg and McLaughlin Geologic Map		
PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 5



Quarry and geologic feature outlines are approximate. The property lines trend east-west and north-south.

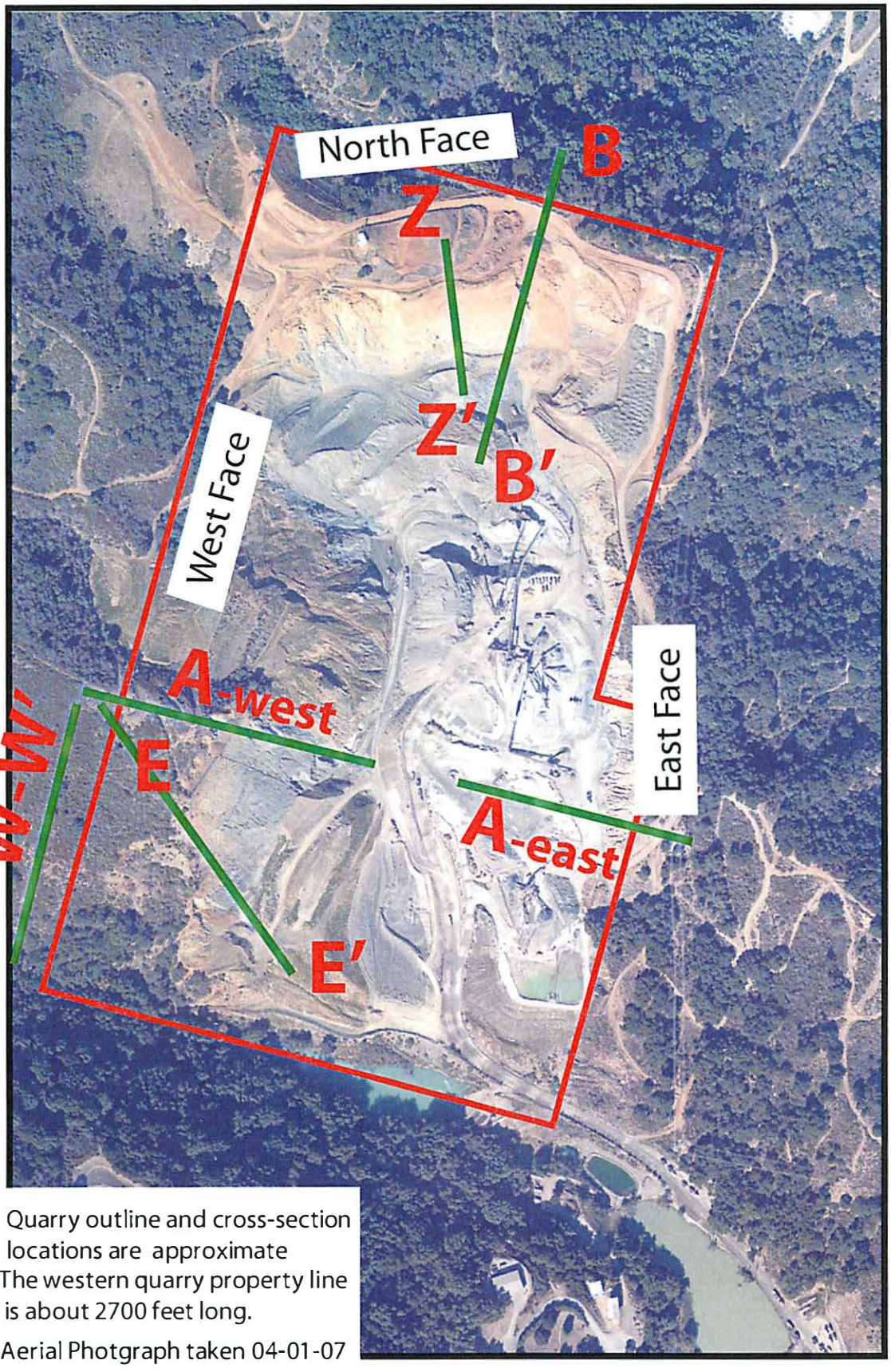
The western quarry property line is about 2700 feet long.

Norfleet Consultants

Stevens Creek Quarry, Parcel B

General Geology

PROJ NO:071781	DATE: Dec. 15, 2007	FIGURE: 6

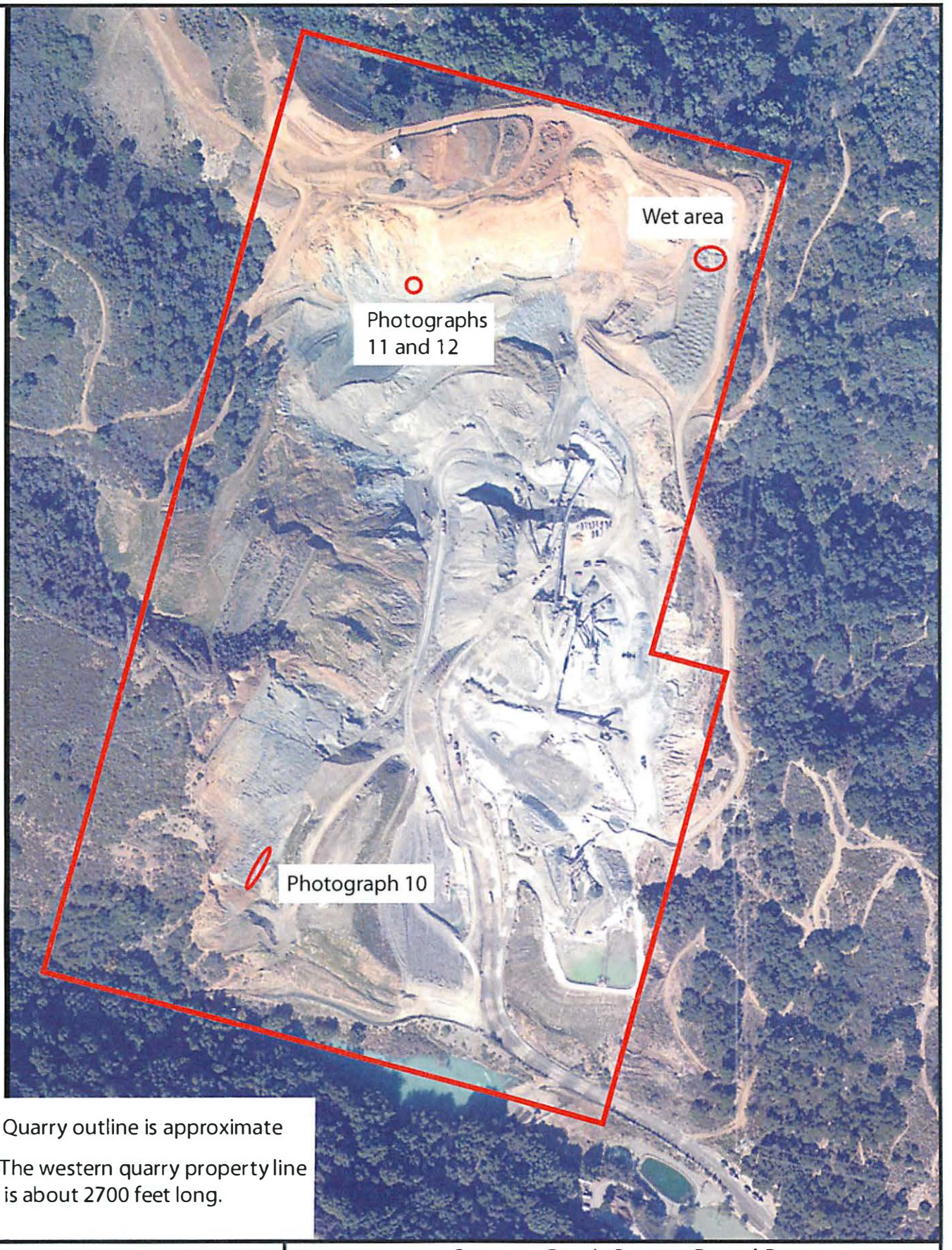


Quarry outline and cross-section locations are approximate
The western quarry property line is about 2700 feet long.

Aerial Photgraph taken 04-01-07

Norfleet Consultants

Stevens Creek Quarry, Parcel B		
Quarry Details		
PROJ NO:071781	DATE: Dec. 15, 2007	FIGURE: 7

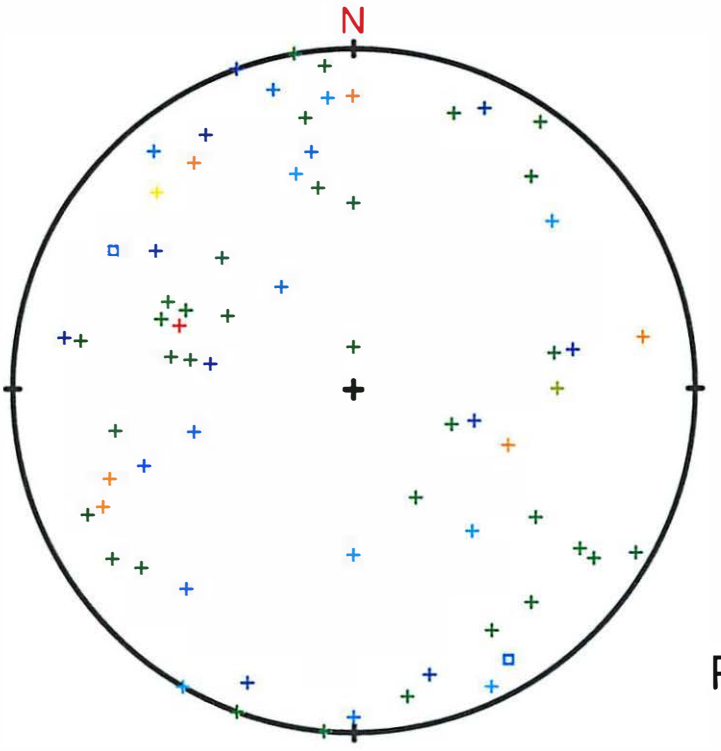


Quarry outline is approximate

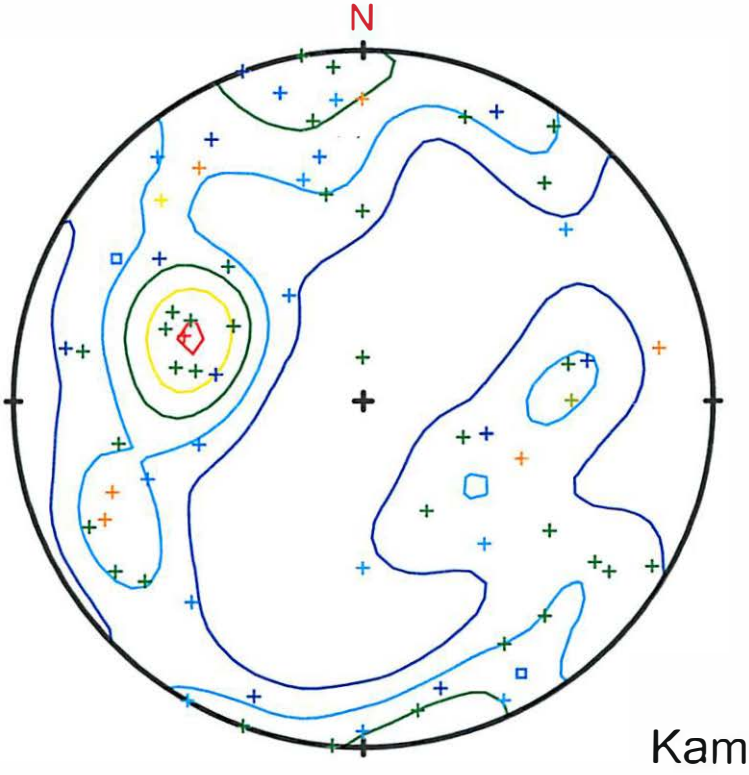
The western quarry property line is about 2700 feet long.

Norfleet Consultants

Stevens Creek Quarry, Parcel B		
Seepage Areas		
PROJ NO:071781	DATE: Dec. 15, 2007	FIGURE: 8



Pole Plot

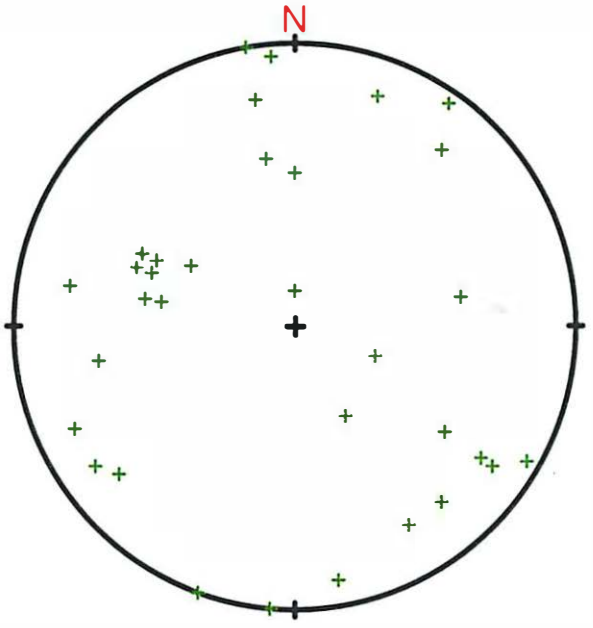


Kamb Contour Plot

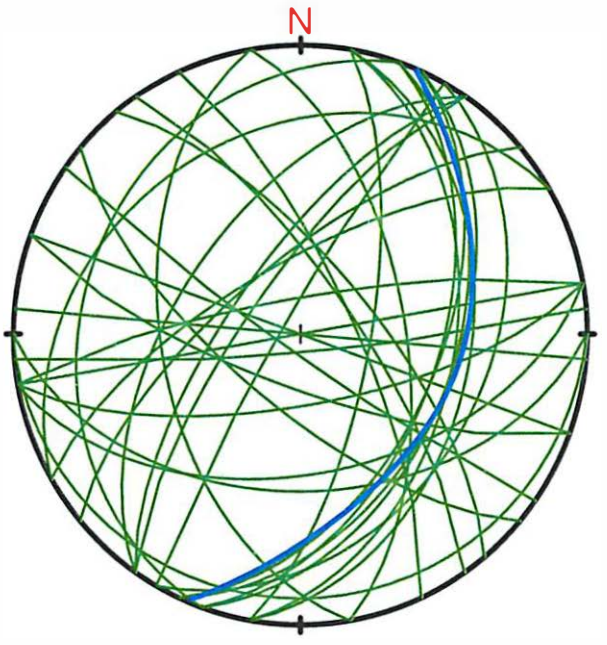
73 Data Points
Equal Area, Lower Hemisphere Plot

Norfleet Consultants	Stevens Creek Quarry		
	Stereonet Plot of all Joint/Shear Data		
	PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 9

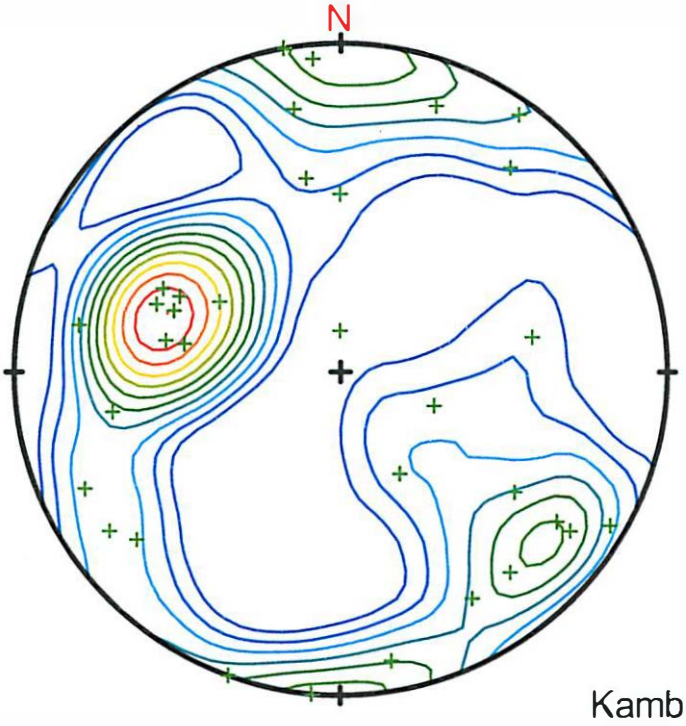
The blue line is the trend of the west face



Pole Plot



Plane Plot



Kamb Contour Plot

35 Data Points
Equal Area, Lower Hemisphere Plot

Norfleet Consultants	Stevens Creek Quarry		
	Stereonet Plot of Joint/Shear Data in West Face		
	PROJ NO: 071781	DATE: Dec. 15, 2007	FIGURE: 10

Utility Access Road to Remain

1.5 : 1

2 : 1

Stockpile Removed

Area Returned to Pre-Existing Contours

Maximum Fill

Planned Fill

Toe of Fill Slope (700')

Upper Settling Basin

Middle Settling Basin

Development Access Road

Slopes to be Revegetated

Lower Settling Basin

Shop to Remain

Residence

Stables to Remain

Office to Remain

Site Entrance

Stevens Canyon Rd.

A

A'

B

B'

C

C'

D

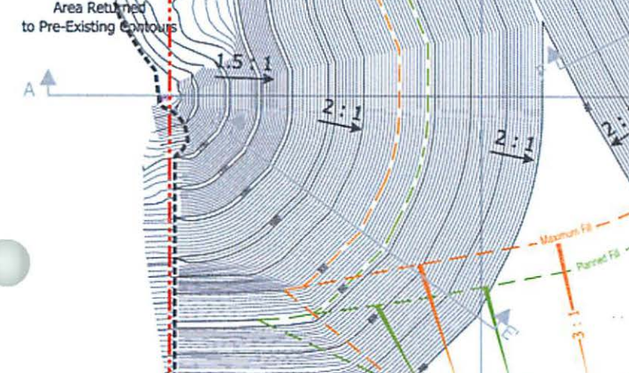
D'

E

E'

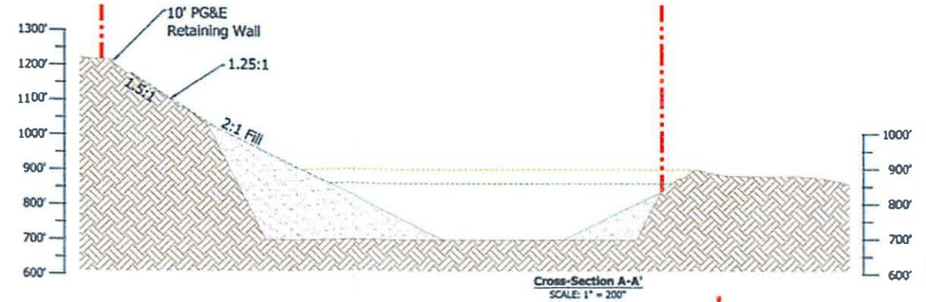
F

F'



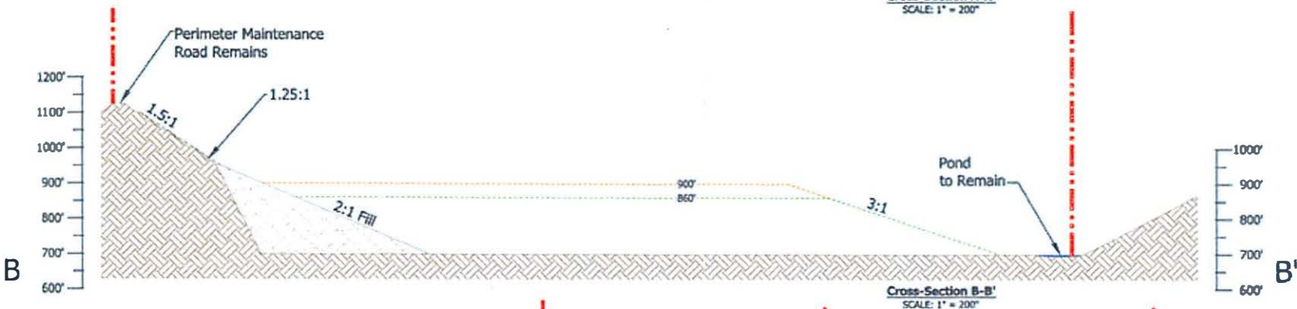
Cut and Fill Quantities

NOT TO SCALE



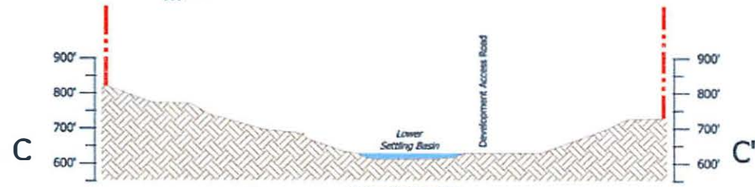
Cross-Section A-A'

SCALE: 1" = 200'



Cross-Section B-B'

SCALE: 1" = 200'

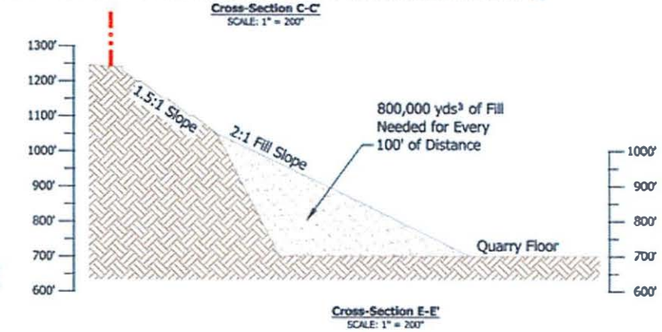


Cross-Section C-C'

SCALE: 1" = 200'

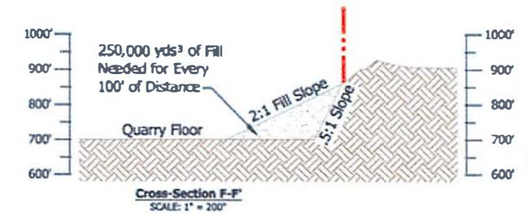
Cross-Section D-D'

SCALE: 1" = 200'



Cross-Section E-E'

SCALE: 1" = 200'



Cross-Section F-F'

SCALE: 1" = 200'

100' Power Line Easement

Developed Surfaces to Remain

Site Boundary

Surface Disturbance Boundary

2:1 Fill Slope

This is the minimum fill slope that will be completed for purposes of final slope stability.

Maximum Fill (Pad Elevation 900')

Planned Fill (Pad Elevation 860')

Depending on availability, fill may continue to be imported and placed to the indicated elevations. See text of reclamation plan for full discription.

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

DATA SOURCE: Stevens Creek Quarry Inc.

CONTOUR INTERVAL: 5'-0"

N

200' 0 200' 400'

SCALE: 1" = 200'-0"

Figure 11 - Reclamation Plan. Drawing has been reduced. Original Scale has been altered.

PLANS PREPARED BY:

RESOURCE DESIGN TECHNOLOGY, INC.

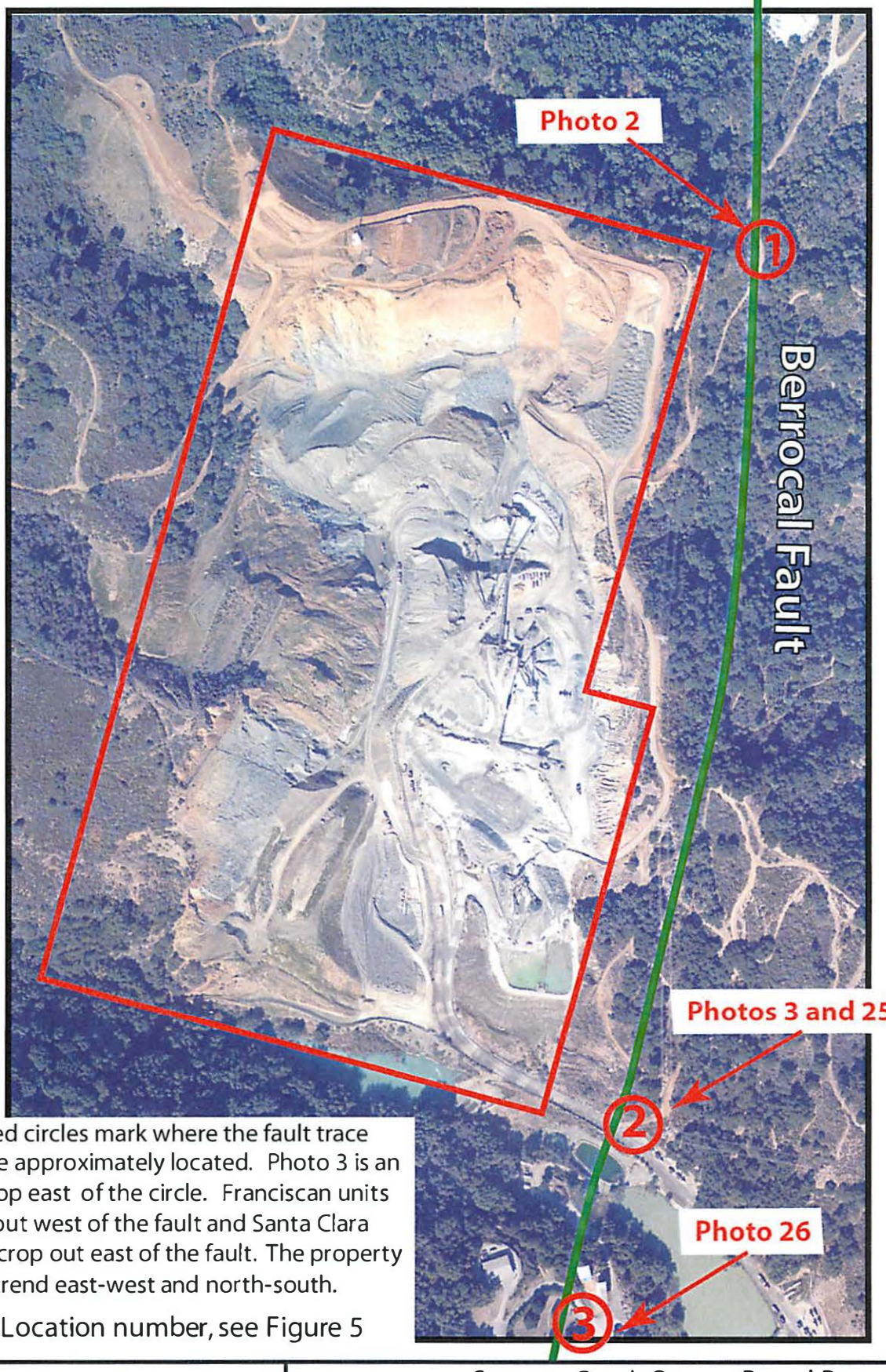
SCALE: 1" = 200'-0"

DATE: January, 2008

FILE: 223 - RP.dwg

CLIENT: Stevens Creek Quarry

SHEET 3 OF 6



The red circles mark where the fault trace can be approximately located. Photo 3 is an outcrop east of the circle. Franciscan units crop out west of the fault and Santa Clara units crop out east of the fault. The property lines trend east-west and north-south.

2 - Location number, see Figure 5

Norfleet Consultants

Stevens Creek Quarry, Parcel B

Berrocal Fault

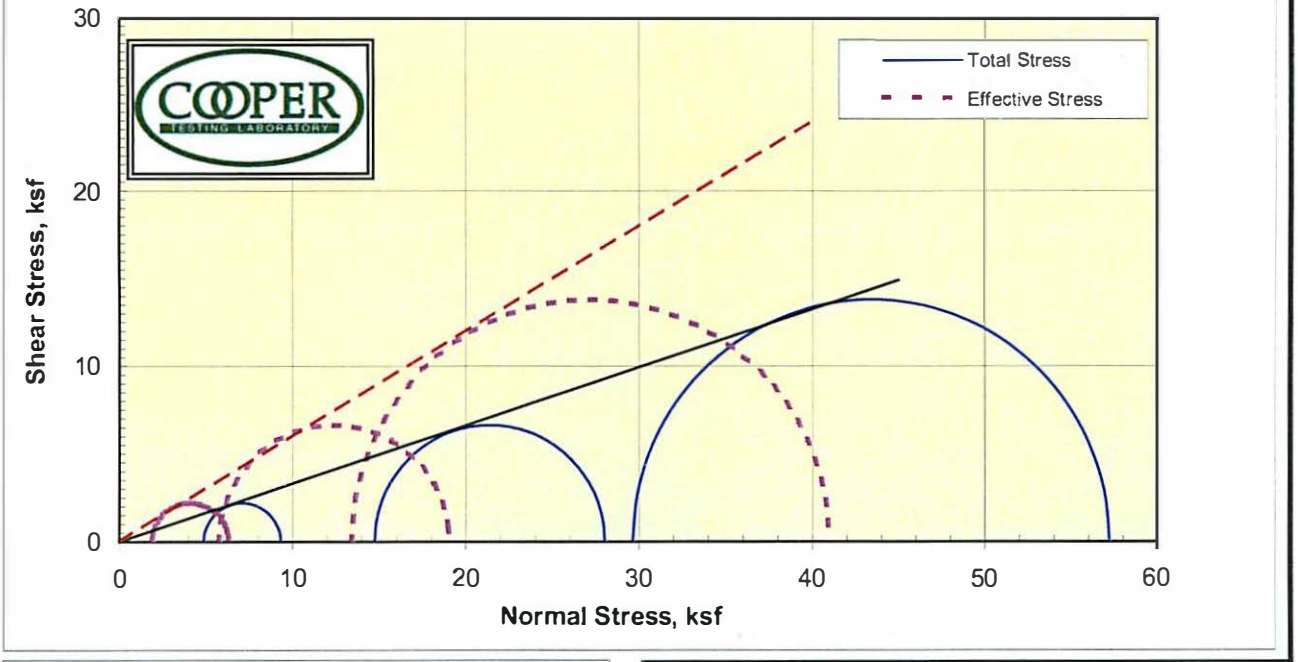
PROJ NO:071781 | DATE: Dec. 15, 2007 | FIGURE: 12

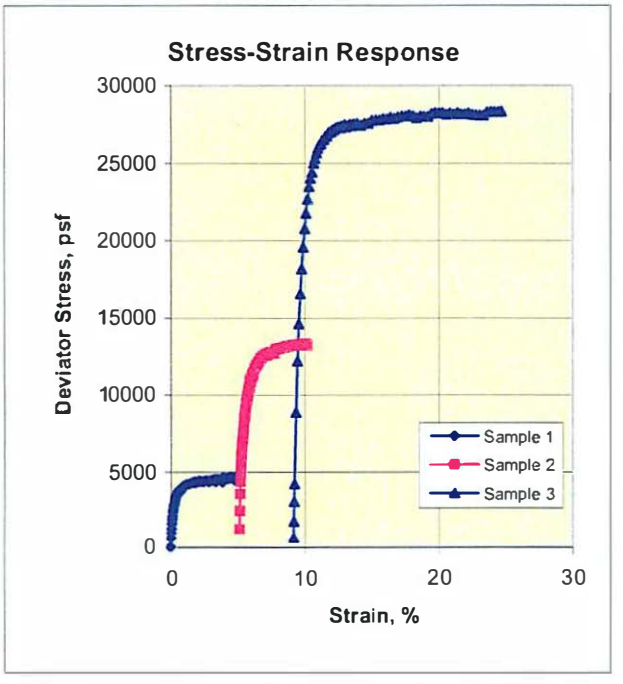
APPENDIX A

Soil tests.

Two samples of imported material (Import #1 [Figure 13] and Import #2 [Figure 14]), and one sample of the shear zone material (Shear [Figure 15]) from the northwest corner of the quarry were triaxially tested. All the tests were triaxial consolidated undrained with pore pressure (ASTM D-4767). The tests were modified in that they were staged tests. Import 2 was tested with a 3 inch ring (the sample contained ½ inch sized material). The Import 1 and Shear samples were tested with a 2.5 inch diameter ring (minus ½ inch sized material). The removal of plus ½ inch material means that the material properties are likely lower than the actual values.

The Imported samples were taken from a stock pile just north of the quarry offices. The Shear sample was taken from a fresh rock face at the northwest corner of the quarry (Photo 15). That location was at about elevation 850 feet, about 200 feet below the original ground surface.





Stage	1	2	3
MC, %	12.5		
Dry Dens., pcf.	115.0		
Sat. %	72.5		
Void Ratio	0.466		
Diameter in	2.38		
Height, in	5.00		
	Final		
MC, %	15.7	13.8	12.4
Dry Dens., pcf.	118.0	122.5	125.8
Sat. %	100.0	100.0	100.0
Void Ratio	0.425	0.372	0.336
Diameter, in	2.36	2.36	2.37
Height, in	4.94	4.76	4.58
Cell, psi	94.7	164.2	268.3
BP, psi	60.6	61.6	62.2
	Effective Stresses At:		
Strain, %	5.0	5.0	5.0
Deviator ksf	4.434	13.292	27.575
Excess PP	2.993	8.978	16.238
Sigma 1	6.355	19.086	41.013
Sigma 3	1.921	5.794	13.438
P, ksf	4.138	12.440	27.225
Q, ksf	2.217	6.646	13.787
Stress Ratio	3.308	3.294	3.052
Rate in/min	0.001	0.001	0.001

Total C	0	Effective C	0.0
Total Phi	18.3	Effective Phi	31.0

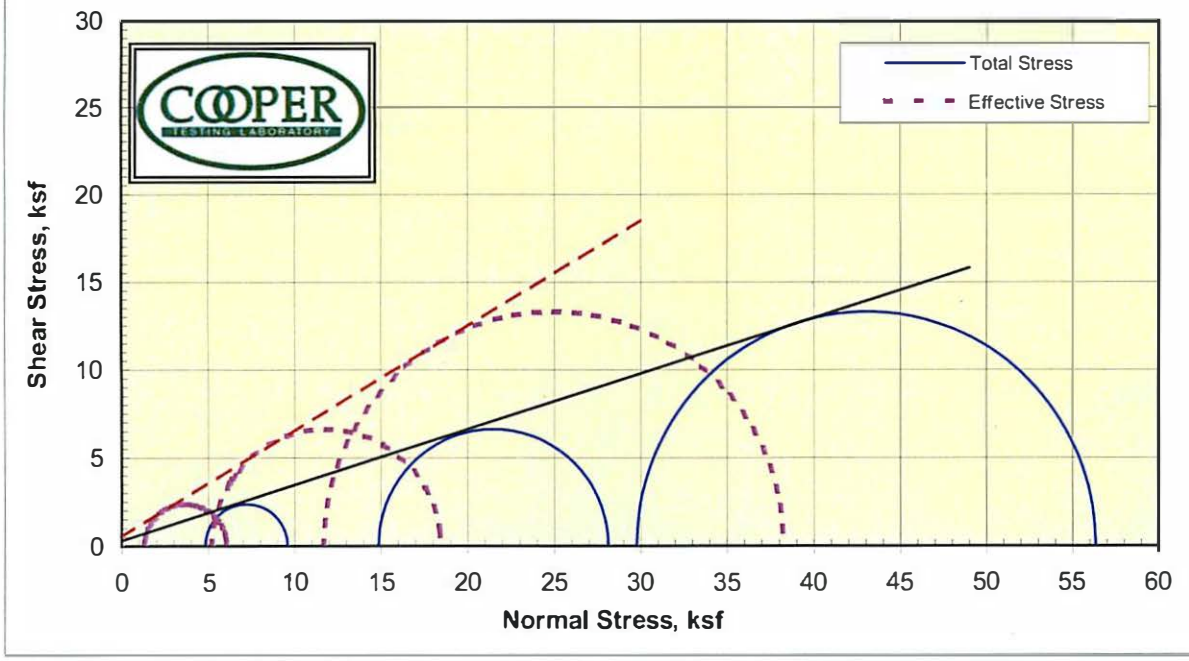
Job No.: 471-021 **Date:** 1/10/2008

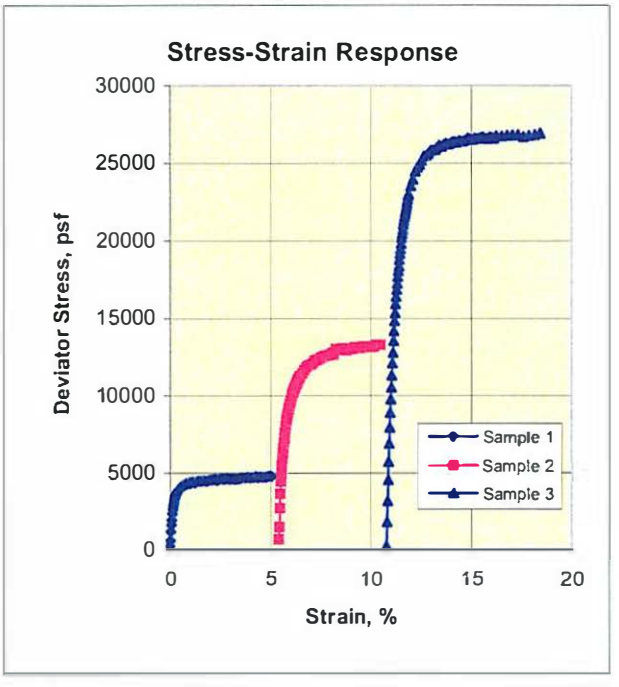
Client: Cal Engineering & Geology BY:DC

Project: Stevens Creek Quarry - 071210

Sample: Import #1 Brown Sandy CLAY w/ Gravel

Remarks: ** Staged Test ** Strengths at 5% strain. Remolding Target: 90% of 128.1 @ 12.5 (OP +2). This sample was taken from the processed imported material stock pile just north of the Qarry office (Parcel A).





Stage	1	2	3
MC, %	12.3		
Dry Dens., pcf.	119.0		
Sat. %	79.9		
Void Ratio	0.416		
Diameter in	2.88		
Height, in	6.00		
	Final		
MC, %	14.8	13.1	11.8
Dry Dens., pcf.	123.1	127.2	130.8
Sat. %	100.0	100.0	100.0
Void Ratio	0.399	0.354	0.318
Diameter, in	2.85	2.86	2.89
Height, in	5.91	5.69	5.41
Cell, psi	94.7	164.2	268.3
BP, psi	60.9	60.7	61.3
	Effective Stresses At:		
Strain, %	5.0	5.0	5.0
Deviator ksf	4.755	13.255	26.585
Excess PP	3.519	9.664	18.081
Sigma 1	6.109	18.496	38.310
Sigma 3	1.354	5.241	11.725
P, ksf	3.731	11.868	25.017
Q, ksf	2.378	6.627	13.292
Stress Ratio	4.513	3.529	3.267
Rate in/min	0.001	0.001	0.001

Total C	0.3	Effective C	0.5
Total Phi	17.6	Effective Phi	31.0

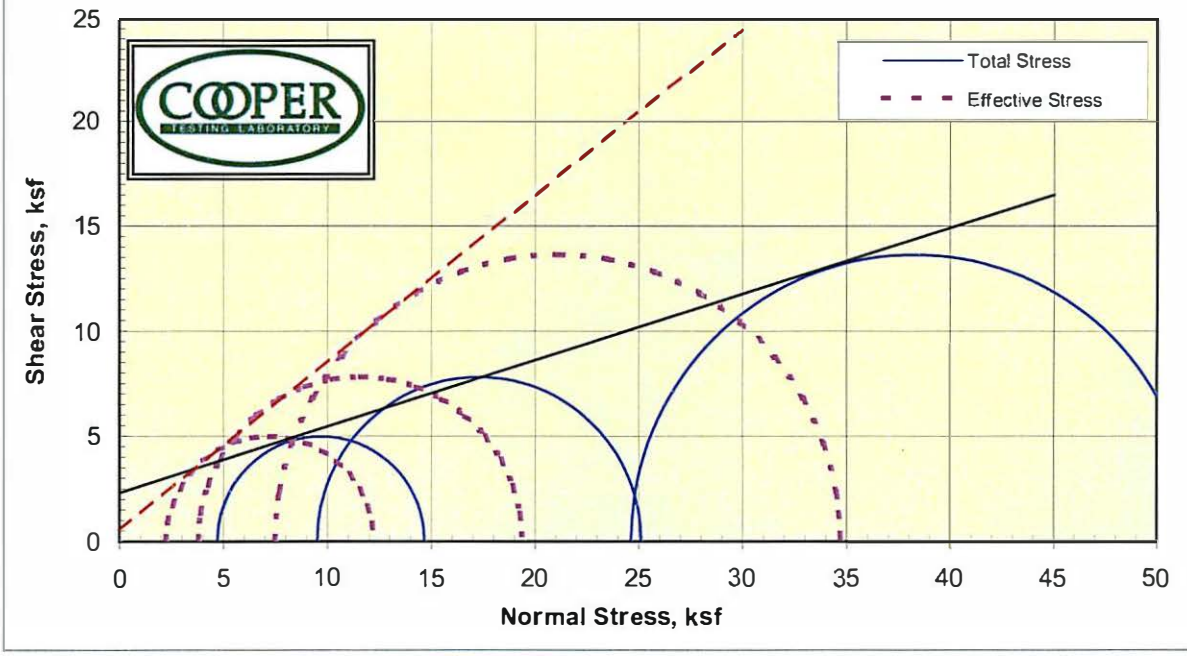
Job No.: 471-021 **Date:** 1/10/2008

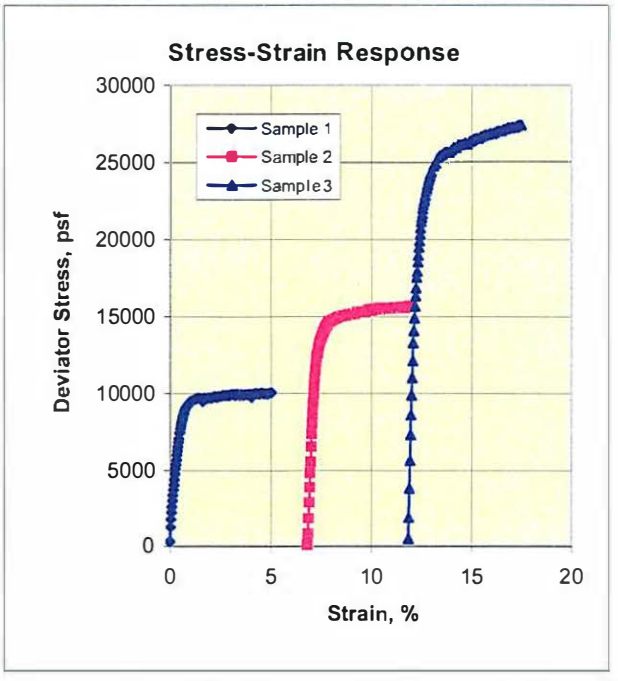
Client: Cal Engineering & Geology BY:DC

Project: Stevens Creek Quarry - 071210

Sample: Import #2 Brown Clayey SAND w/ Gravel

Remarks: ** Staged Test ** Strengths at 5% strain.
Remolding Target: 90% of 132 @ 12.3 (OPT +2). This sample was taken from the processed imported material stock pile just north of the Qarry office (Parcel A).





Stage	1	2	3
MC, %	10.3		
Dry Dens., pcf.	125.1		
Sat. %	80.1		
Void Ratio	0.347		
Diameter in	2.38		
Height, in	5.00		
	Final		
MC, %	13.6	13.3	12.0
Dry Dens., pcf.	126.1	127.1	130.3
Sat. %	100.0	100.0	100.0
Void Ratio	0.368	0.358	0.325
Diameter, in	2.38	2.44	2.46
Height, in	4.96	4.68	4.47
Cell, psi	114.7	149.4	253.6
BP, psi	81.8	83.2	82.4
	Effective Stresses At:		
Strain, %	5.0	5.0	5.0
Deviator ksf	9.977	15.619	27.258
Excess PP	2.463	5.719	17.152
Sigma 1	12.246	19.436	34.754
Sigma 3	2.270	3.817	7.496
P, ksf	7.258	11.627	21.125
Q, ksf	4.988	7.810	13.629
Stress Ratio	5.396	5.092	4.636
Rate in/min	0.001	0.001	0.001

Total C	2.3	Effective C	0.5
Total Phi	17.5	Effective Phi	38.7

Job No.: 471-021 **Date:** 1/10/2008

Client: Cal Engineering & Geology BY:DC

Project: Stevens Creek Quarry - 071210

Sample: Shear Gray GRAVEL w/ Clay & Sand

Remarks: ** Staged Test ** Strengths at 5% strain.
Remolding Target: 90% of 139.3 pcf @ 10.3 (OPT+2). This sample was taken from the shear zone at the NW corner of the Quarry (at elev ~850 ft).

APPENDIX B

Representative copies of slope stability diagrams are included in this appendix.

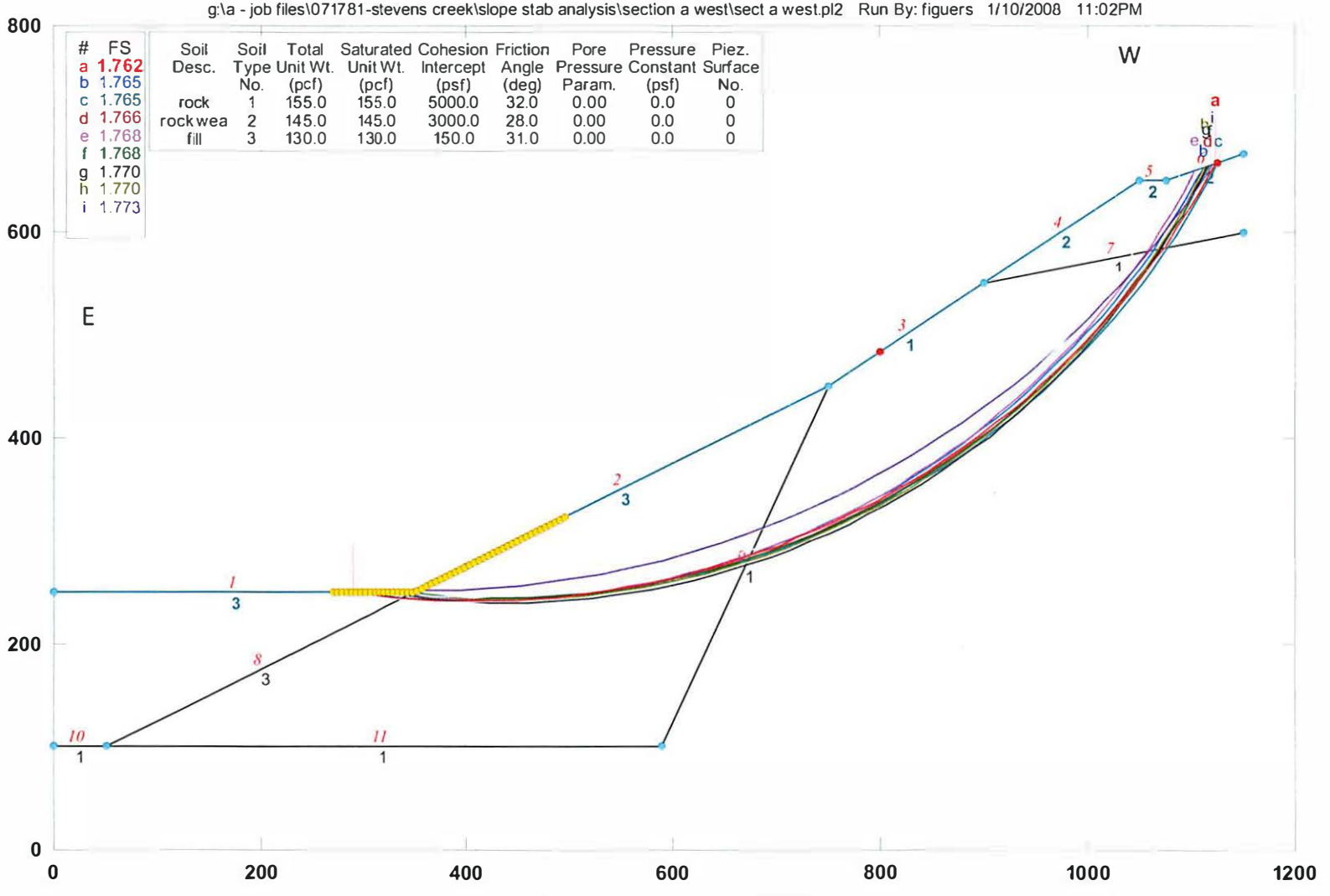
Figure 16 – Section A-A', west; Static analysis; Full slope; High rock strength.
Figure 17 – Section A-A', west; Static analysis; Full slope; Low rock strength.
Figure 18 – Section A-A', west; Static analysis; Rock slope only; High rock strength.
Figure 19 – Section A-A', west; Static analysis; Rock slope only; Low rock strength.
Figure 20 – Section A-A', west; Pseudo-static analysis; Full slope; High rock strength.
Figure 21 – Section A-A', west; Pseudo-static analysis; Full slope; Low rock strength.
Figure 22 – Section A-A', east; Static analysis; Full slope; Low rock strength.
Figure 23 – Section B-B'; Static analysis; Full slope; High rock strength.
Figure 24 – Section B-B'; Static analysis; Full slope; Low rock strength.
Figure 25 – Section B-B'; Static analysis; Rock slope only; Low rock strength.
Figure 26 – Section B-B'; Pseudo-static analysis; Full slope; High rock strength.
Figure 27 – Section B-B'; Pseudo-static analysis; Full slope; Low rock strength.
Figure 28 – Section E-E'; Static analysis; Wedge only; High rock strength.
Figure 29 – Section E-E'; Static analysis; Wedge only; Average rock strength.
Figure 30 – Section E-E'; Static analysis; Wedge only; Low rock strength.
Figure 31 – Section E-E'; Pseudo-static analysis; Wedge only; Average rock strength.
Figure 32 – Section W-W'; Static analysis; Weathered Greenstone; Low rock strength.
Figure 33 – Section W-W'; Static analysis; Weathered Greenstone; High rock strength.
Figure 34 – Section W-W'; Pseudo-static; Weathered Greenstone; High rock strength.
Figure 35 – Section Z-Z'; Static analysis; Existing greenstone slope; High rock strength.

Stevens Creek - A-A' West

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west.pl2 Run By: figuers 1/10/2008 11:02PM

#	FS
a	1.762
b	1.765
c	1.765
d	1.766
e	1.768
f	1.768
g	1.770
h	1.770
i	1.773

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	5000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	3000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.762
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, High rk strength, Full failure only, Cross-sect A-A -west'

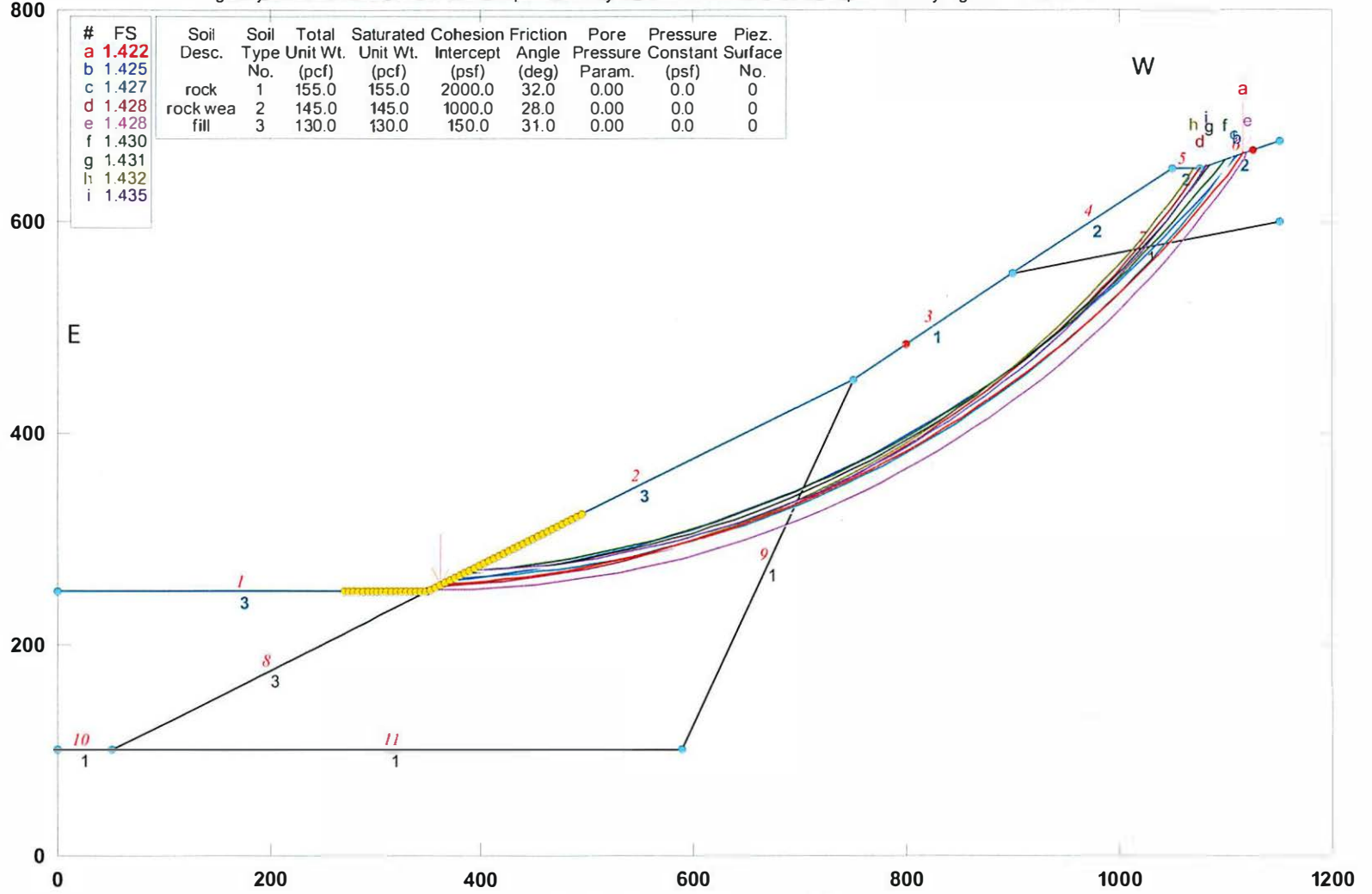
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	16

Stevens Creek - A-A' West

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west.pl2 Run By: figuers 1/10/2008 11:03PM

#	FS
a	1.422
b	1.425
c	1.427
d	1.428
e	1.428
f	1.430
g	1.431
h	1.432
i	1.435

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.422
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

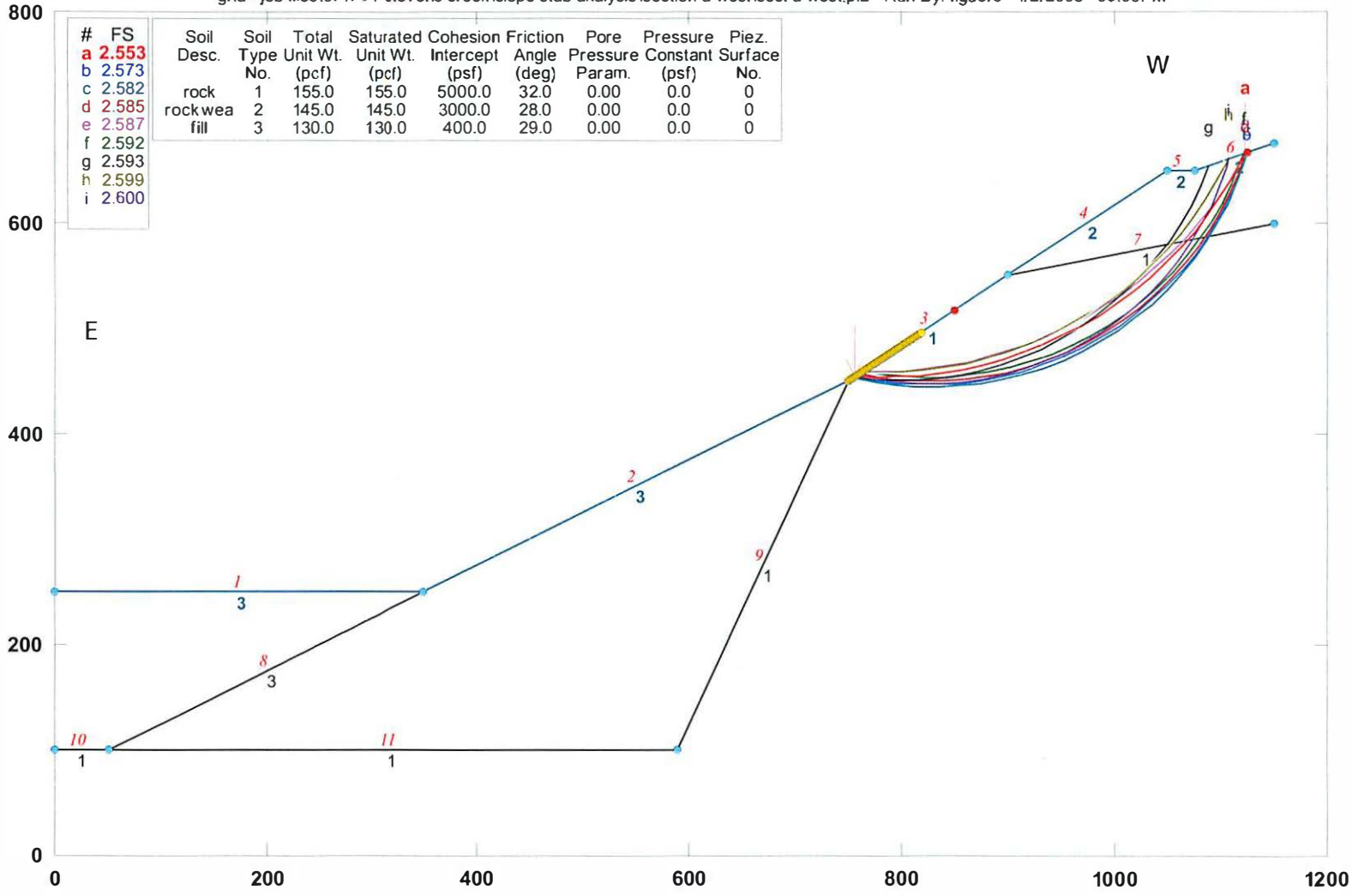
Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, Low rk strength, Full failure only, Cross-sect A-A -west'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	17

Stevens Creek sect A -rock slope

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west.pl2 Run By: figuers 1/2/2008 09:05PM



#	FS
a	2.553
b	2.573
c	2.582
d	2.585
e	2.587
f	2.592
g	2.593
h	2.599
i	2.600

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	5000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	3000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	400.0	29.0	0.00	0.0	0

GSTABL7 v.2 FSmin=2.553
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, High rk strength, Rock failure only, Cross-sect A-A -west'

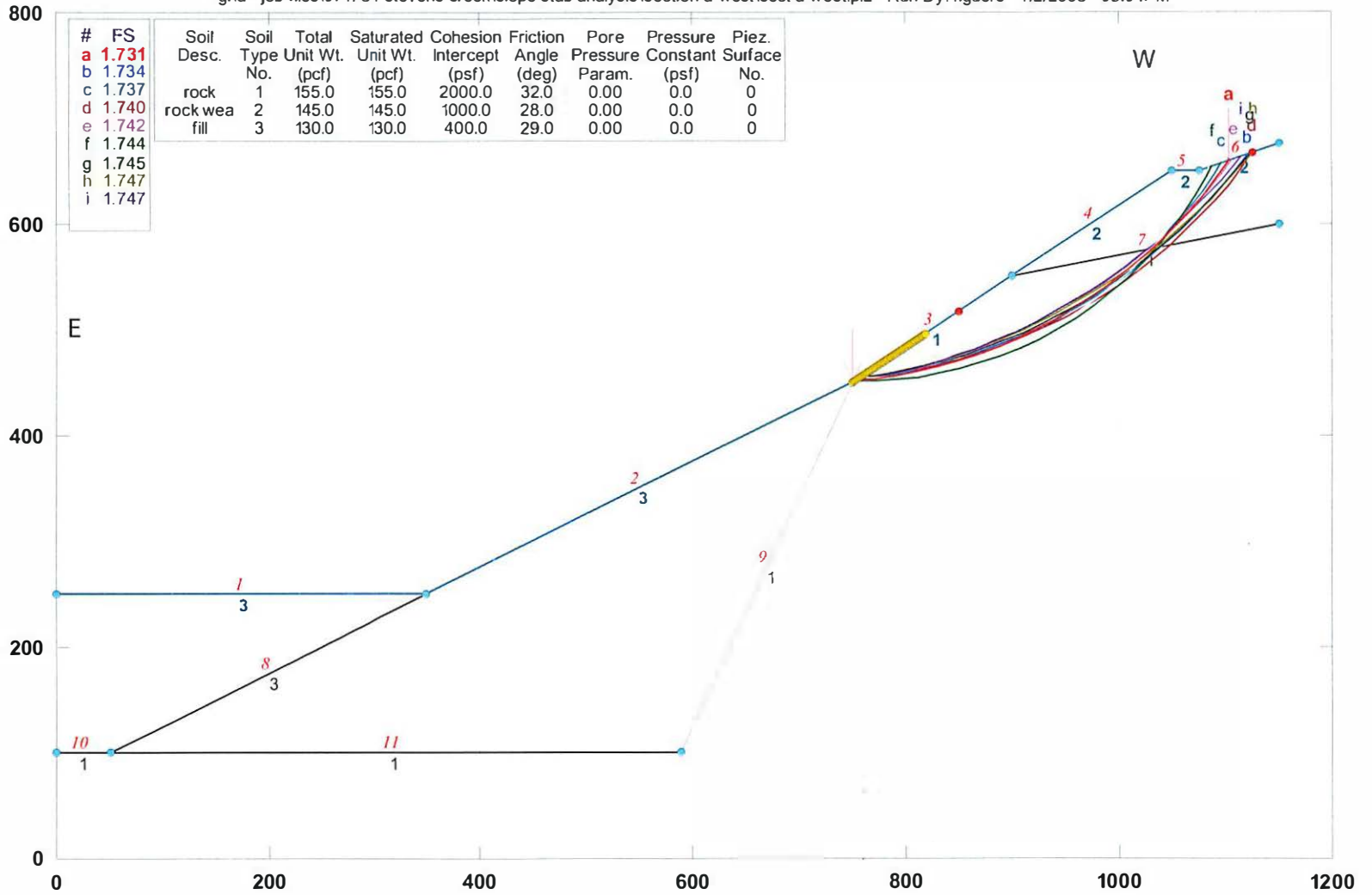
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	18

Stevens Creek sect A -rock slope

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west.pl2 Run By: figuers 1/2/2008 09:04PM

#	FS
a	1.731
b	1.734
c	1.737
d	1.740
e	1.742
f	1.744
g	1.745
h	1.747
i	1.747

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	400.0	29.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.731
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, Low rk strength, Rock failure only, Cross-sect A-A -west'

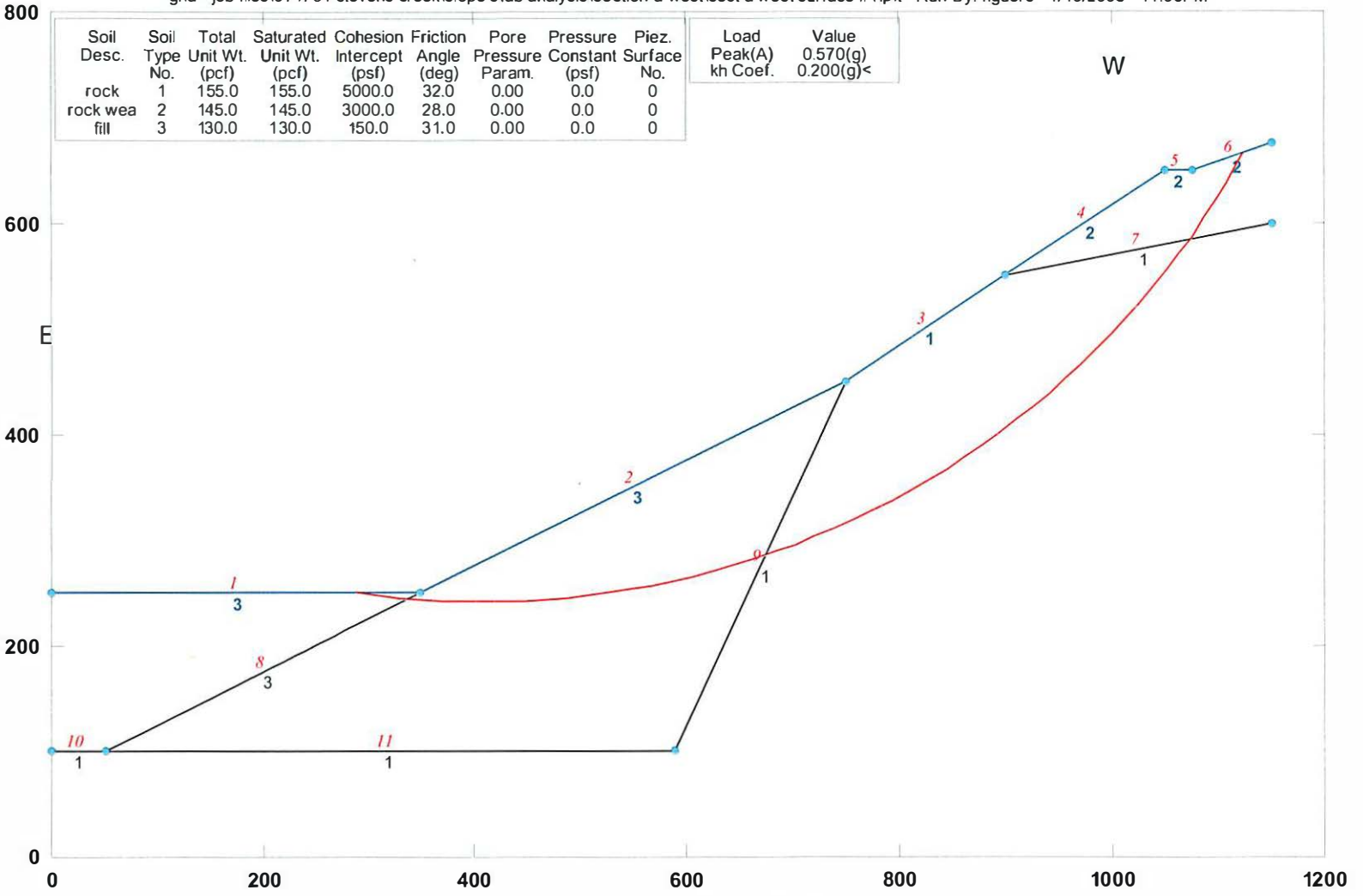
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	19

Stevens Creek - A-A' West

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west surface #1.plt Run By: figuers 1/10/2008 11:06PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	5000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	3000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=1.219
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, High strength, Full failure, Cross-sect A-A -west'

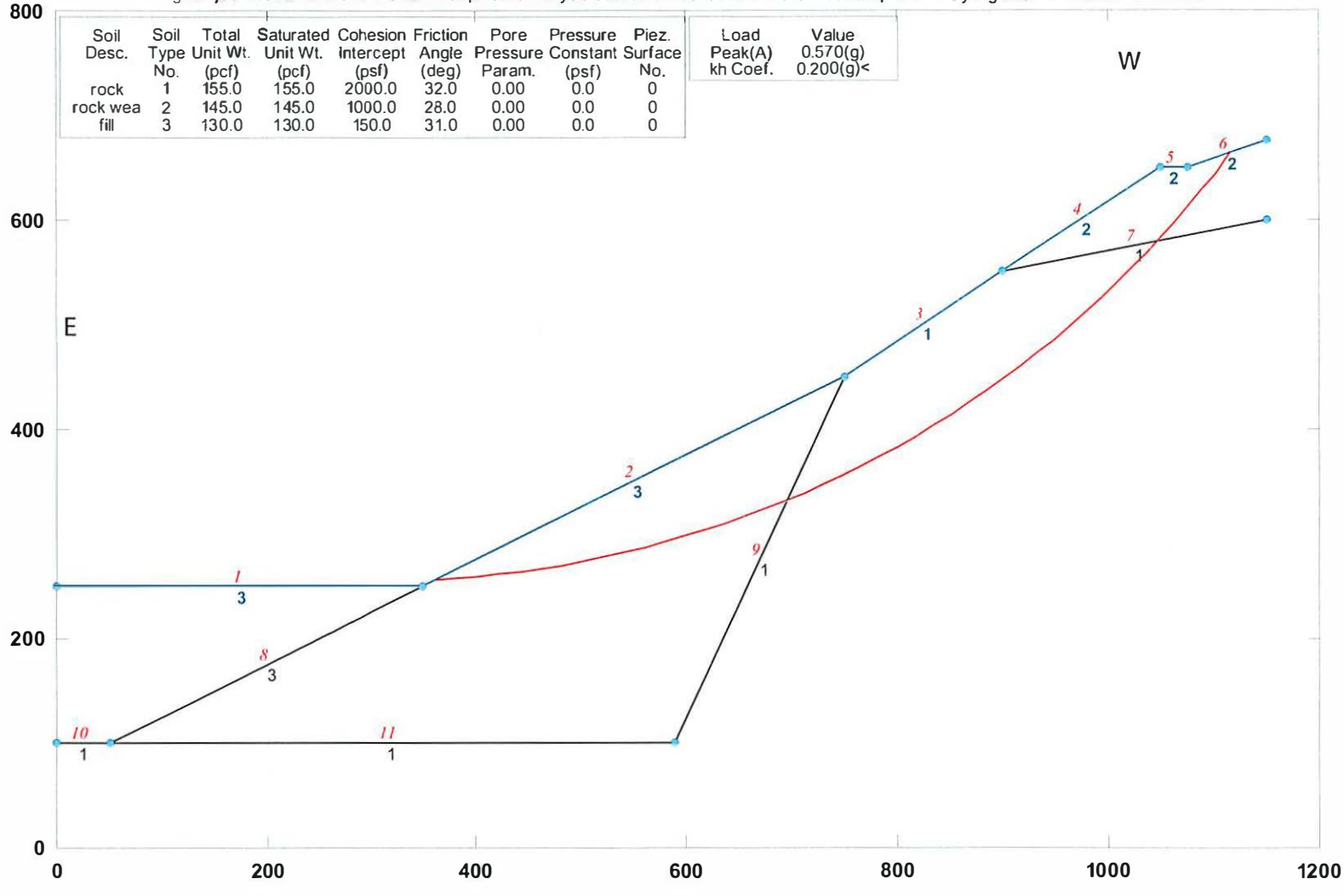
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	20

Stevens Creek - A-A' West

g:\a - job files\071781-stevens creek\slope stab analysis\section a west\sect a west surface #1.plt Run By: figuers 1/10/2008 11:04PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=0.971
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 600 ft to vertical scale for actual elevations.

Norfleet Consultants

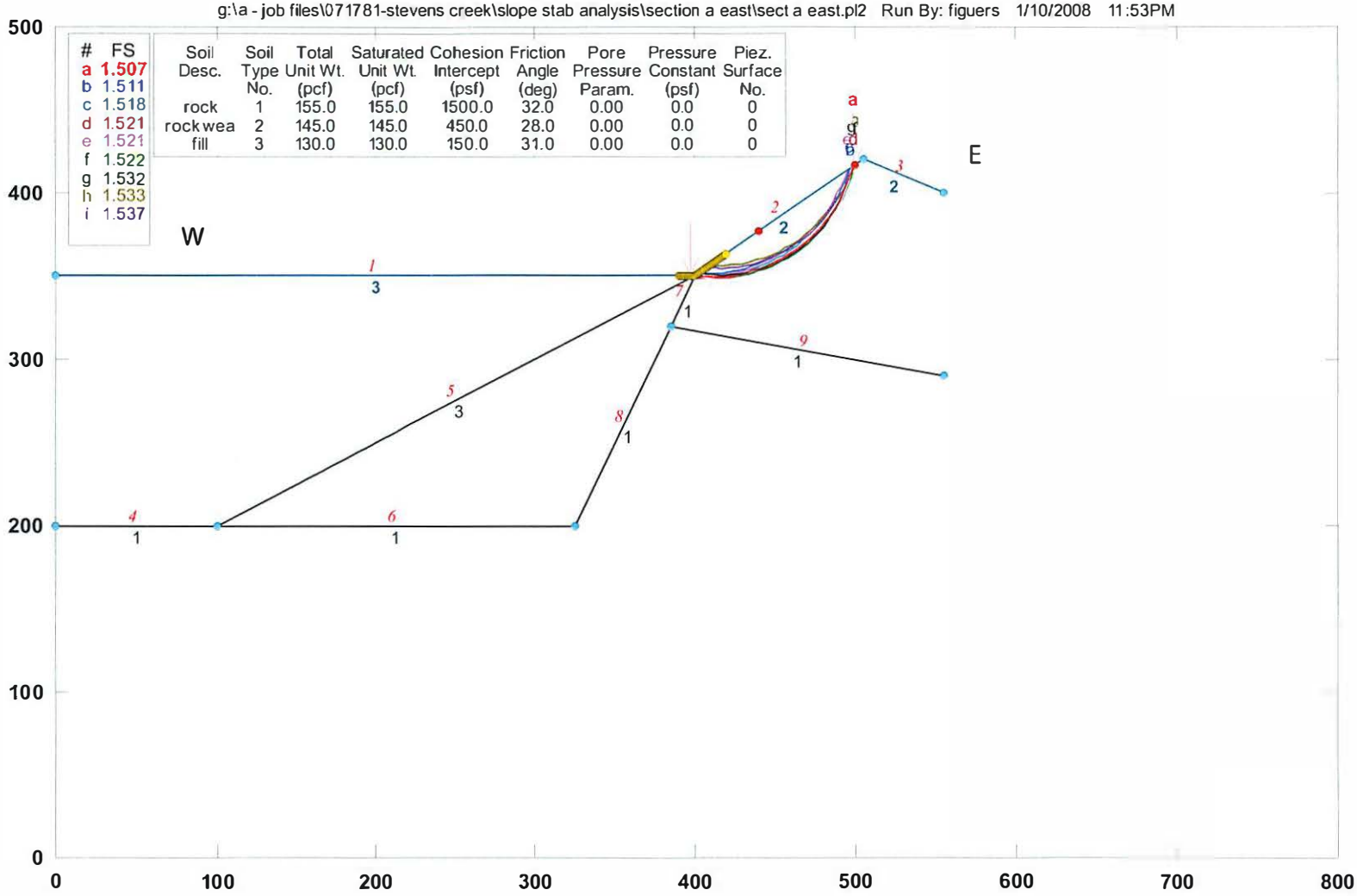
Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, Low strength, Full failure, Cross-sect A-A -west'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	21

Stevens Creek sect A east

g:\a - job files\071781-stevens creek\slope stab analysis\section a east\sect a east.pl2 Run By: figuers 1/10/2008 11:53PM



#	FS
a	1.507
b	1.511
c	1.518
d	1.521
e	1.521
f	1.522
g	1.532
h	1.533
i	1.537

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	1500.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	450.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

GSTABL7 v.2 FSmin=1.507
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, , Full failure, Cross-sect A-A'-east

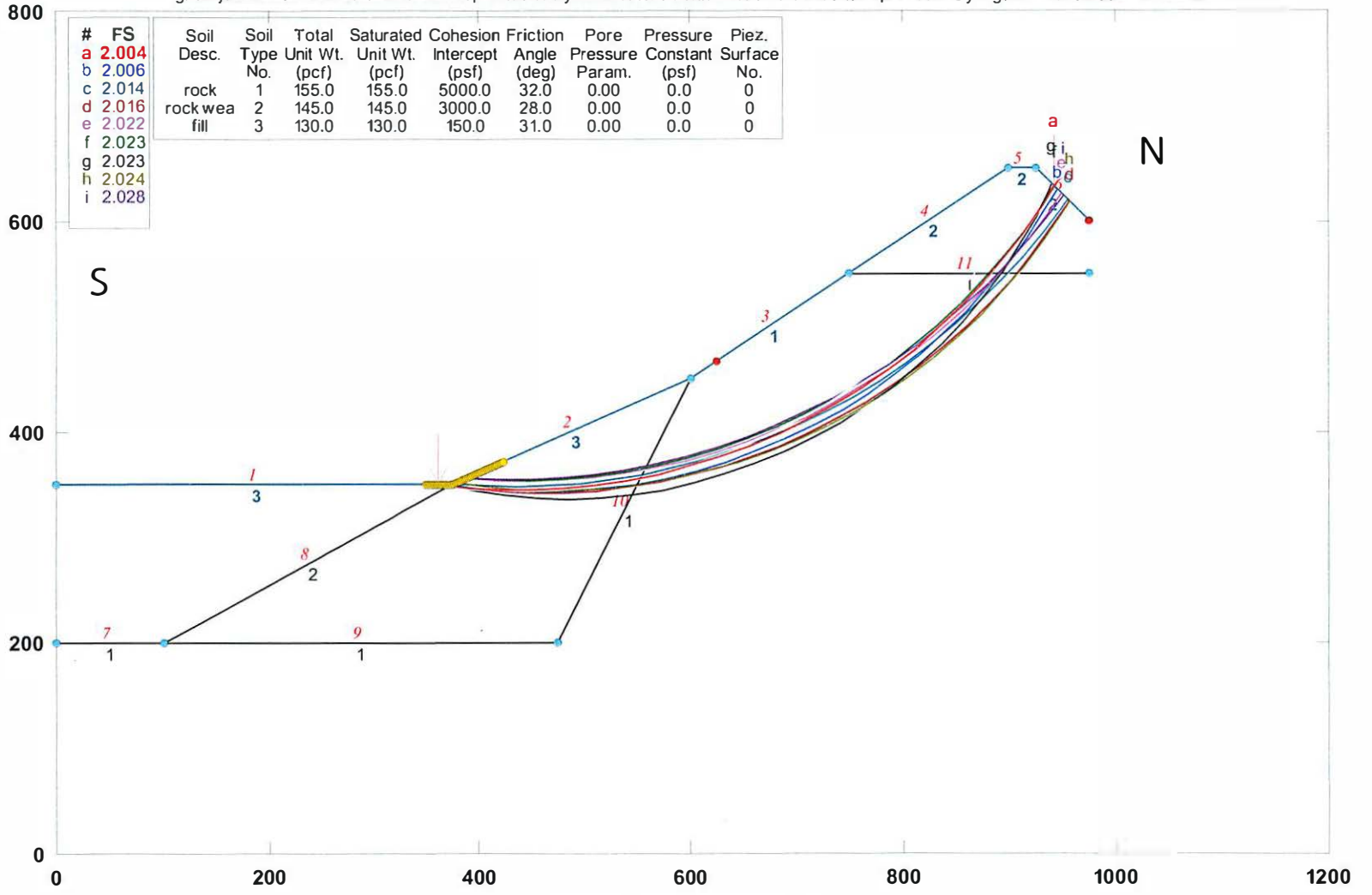
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	22

Stevens Creek sect B

g:\a - job files\071781-stevens creek\slope stab analysis\section b north\sect b north 150 ft fifl.pl2 Run By: figuers 1/10/2008 11:42PM

#	FS
a	2.004
b	2.006
c	2.014
d	2.016
e	2.022
f	2.023
g	2.023
h	2.024
i	2.028

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	5000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	3000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0



GSTABL7 v.2 FSmin=2.004
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

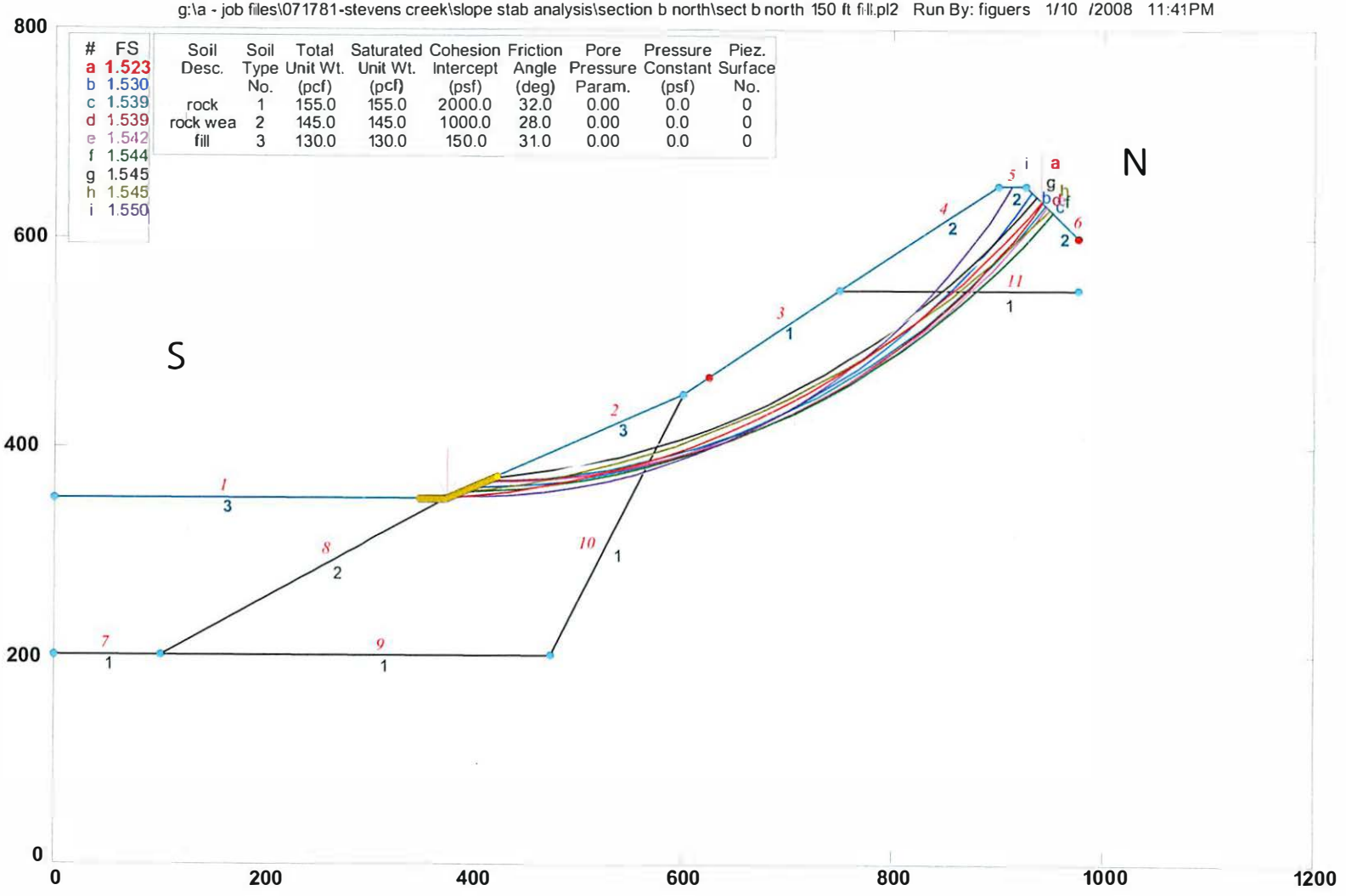
Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, High Rk Strenght, Full failure, Cross-sect B-B'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	23

Stevens Creek sect B

g:\a - job files\071781-stevens creek\slope stab analysis\section b north\sect b north 150 ft fill.pl2 Run By: figuers 1/10 /2008 11:41PM



GSTABL7 v.2 FSmin=1.523
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, Low Rk Strenght, Full failure, Cross-sect B-B'

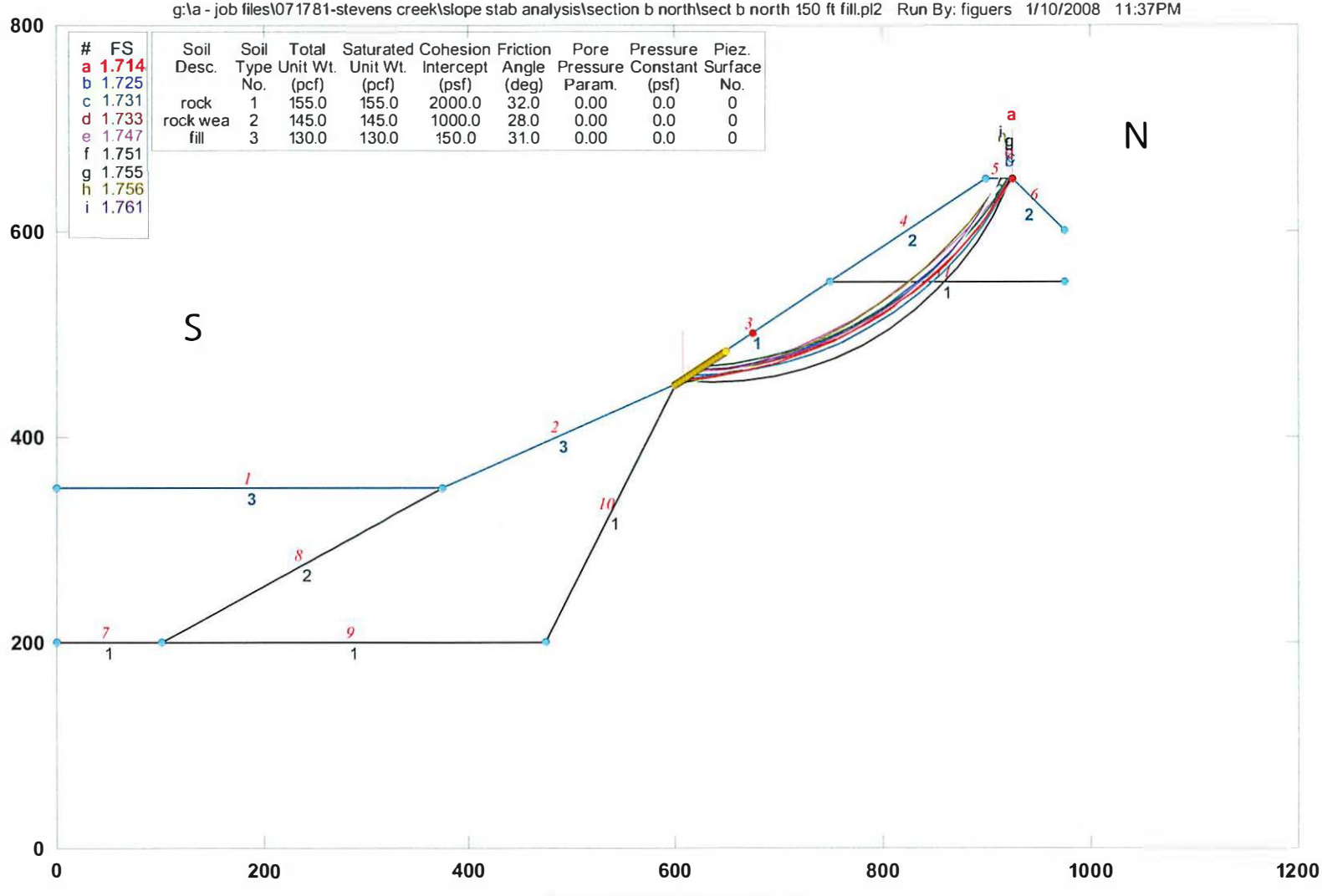
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	24

Stevens Creek sect B

g:\a - job files\071781-stevens creek\slope stab analysis\section b north\sect b north 150 ft fill.pl2 Run By: figuers 1/10/2008 11:37PM

#	FS
a	1.714
b	1.725
c	1.731
d	1.733
e	1.747
f	1.751
g	1.755
h	1.756
i	1.761

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0



GSTABL7 v.2 FSmin=1.714
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, Low Rk Strenght, Rk failure, Cross-sect B-B'

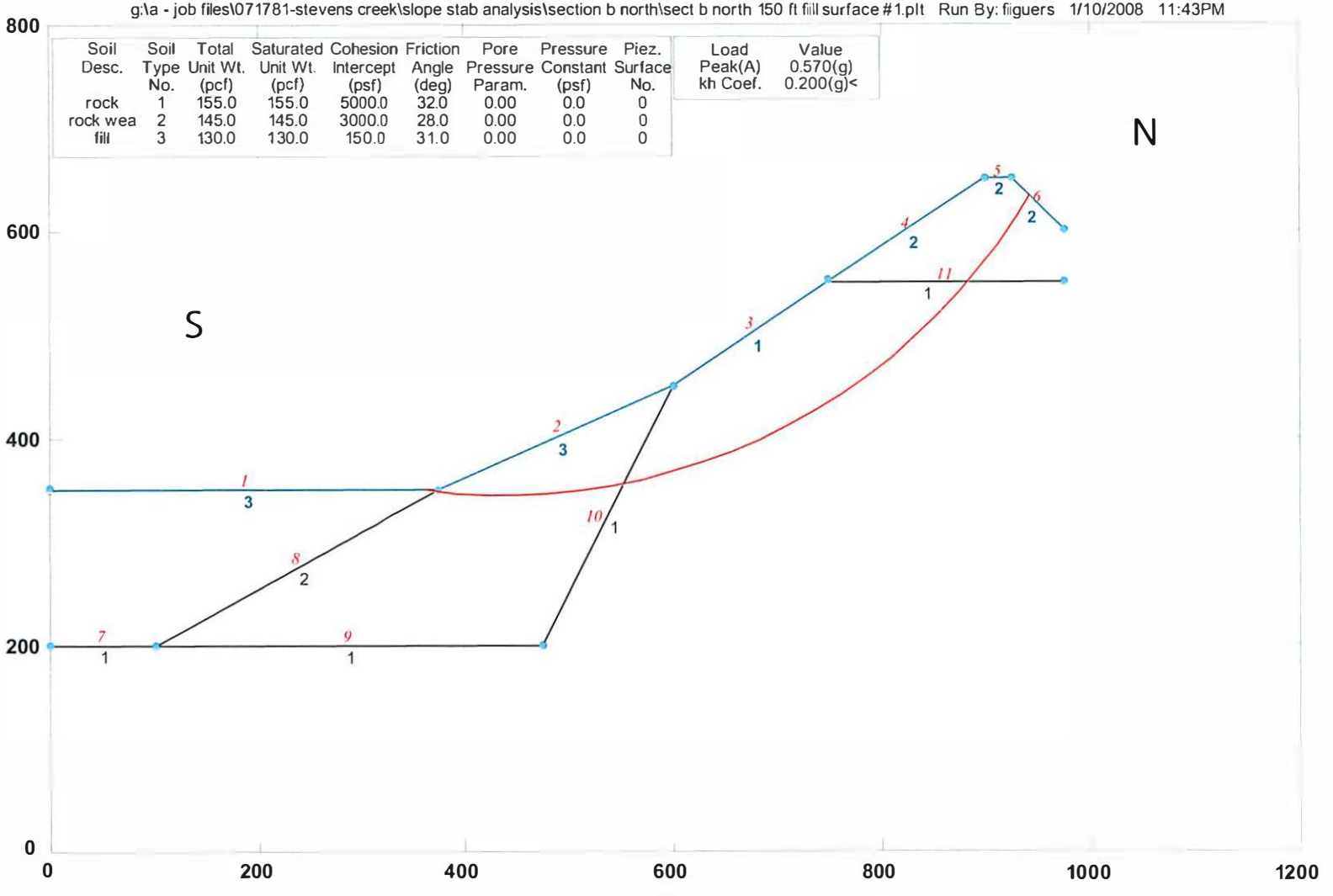
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	25

Stevens Creek sect B

g:\a - job files\071781-stevens creek\slope stab analysis\section b north\sect b north 150 ft fill surface #1.plt Run By: figuers 1/10/2008 11:43PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	5000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	3000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=1.405
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, High Rk Strenght, Cross-sect B-B'

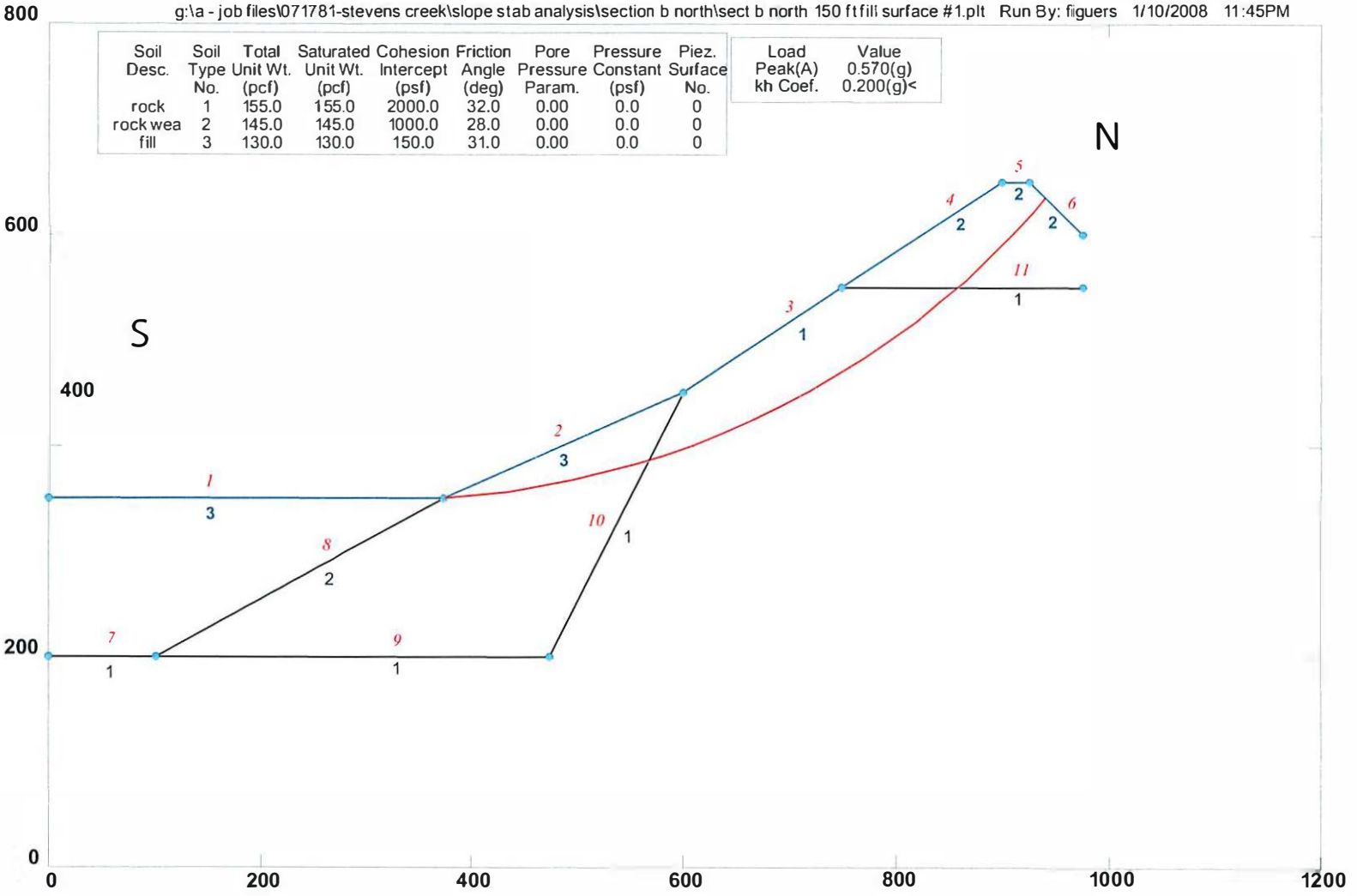
PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	26

Stevens Creek sect B

g:\a - job files\071781-stevens creek\slope stab analysis\section b north\sect b north 150 ft fill surface #1.plt Run By: figuers 1/10/2008 11:45PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=1.049
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

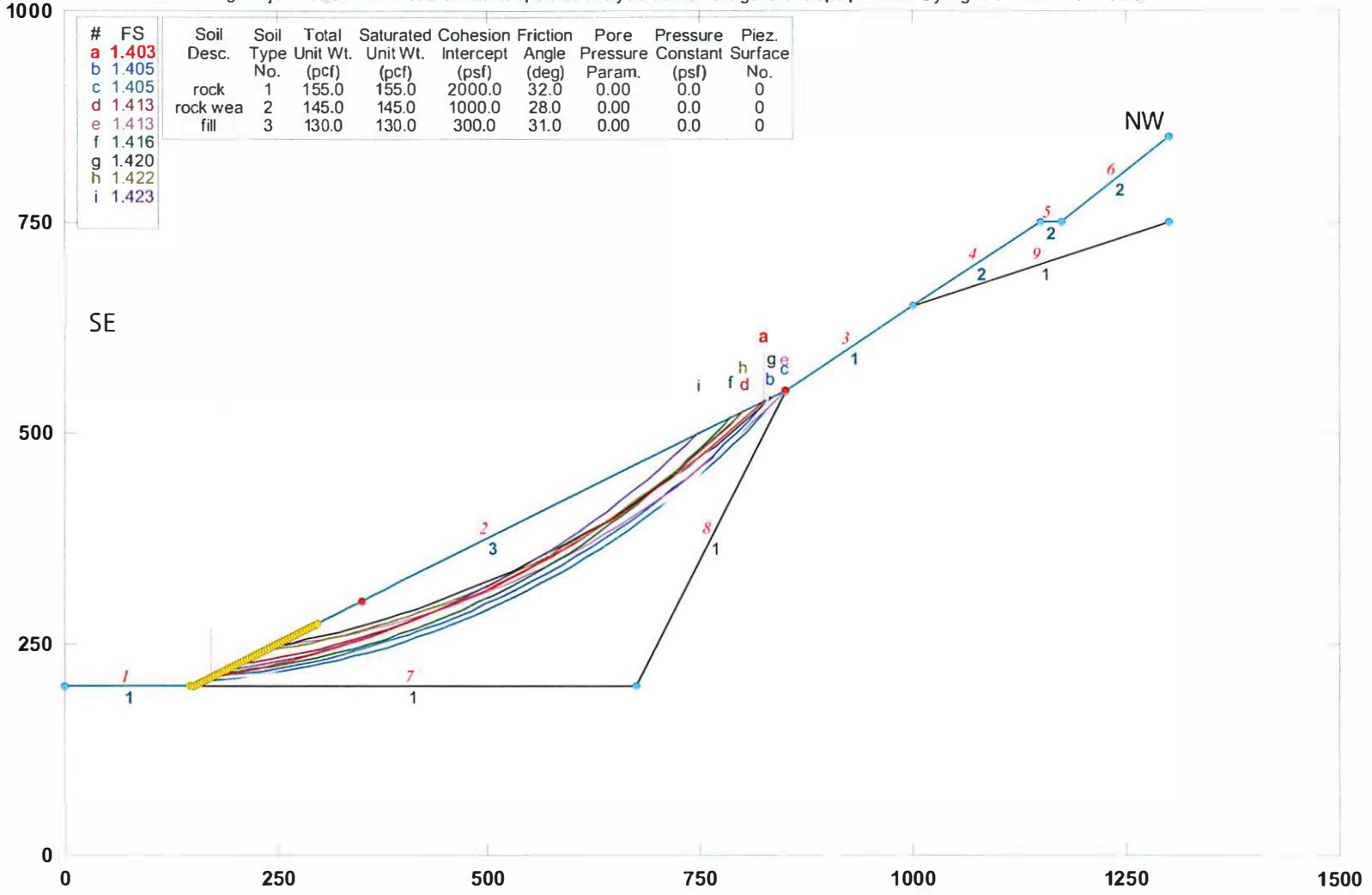
Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, Low Rk Strenght, Cross-sect B-B'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	27

Stevens Creek Section E-E'

g:\a - job files\071781-stevens creek\slope stab analysis\section e\e general slope.pl2 Run By: fiiguers 1/10/2008 06:05PM



GSTABL7 v.2 FSmin=1.403
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

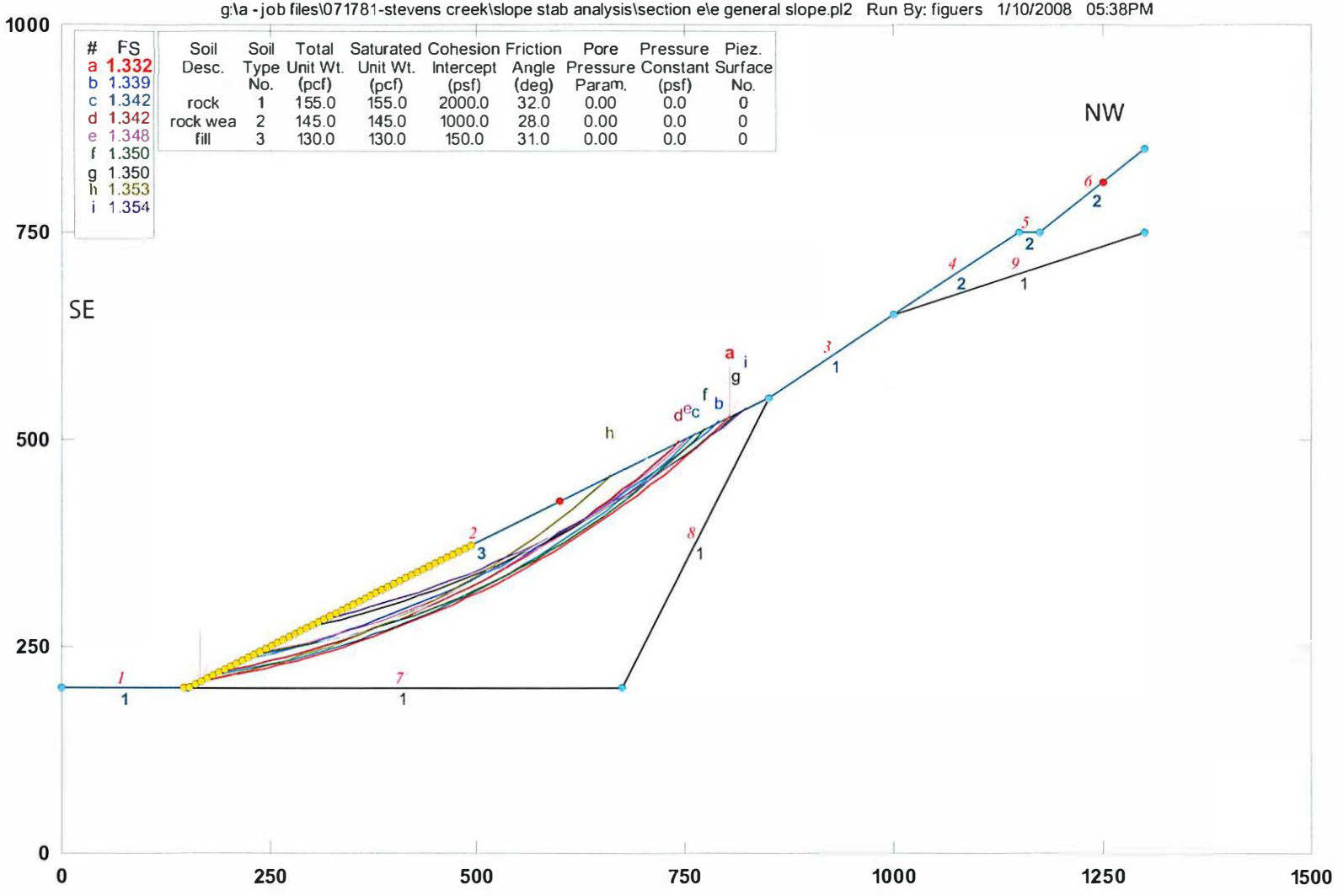
Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, 300 psf Coh. wedge fill only, cross-section E-E'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	28

Stevens Creek Section E-E'

g:\a - job files\071781-stevens creek\slope stab analysis\section e\e general slope.pl2 Run By: figuers 1/10/2008 05:38PM



GSTABL7 v.2 FSmin=1.332
Safety Factors Are Calculated By The Modified Bishop Method

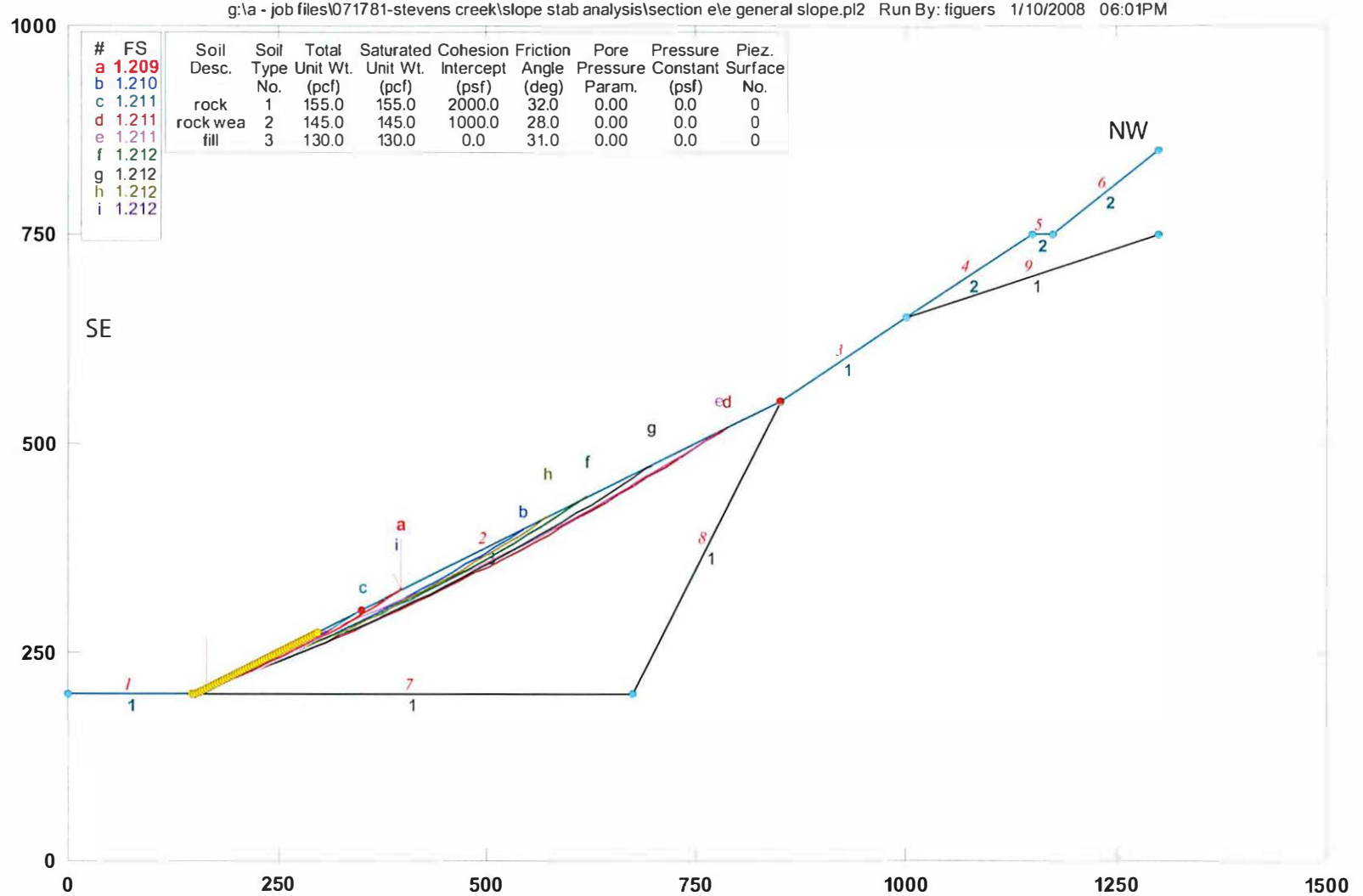
GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants	Limit Equlibrum Analysis - Stevens Creek Quarry		
	Static analysis, 150 psf Coh. wedge fill only, cross-section E-E'		
	PROJ NO: 071781	DATE: Jan 10, 2008	FIGURE: 29

Stevens Creek Section E-E'

g:\a - job files\071781-stevens creek\slope stab analysis\section e\e general slope.pl2 Run By: figuers 1/10/2008 06:01PM



GSTABL7 v.2 FSmin=1.209
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

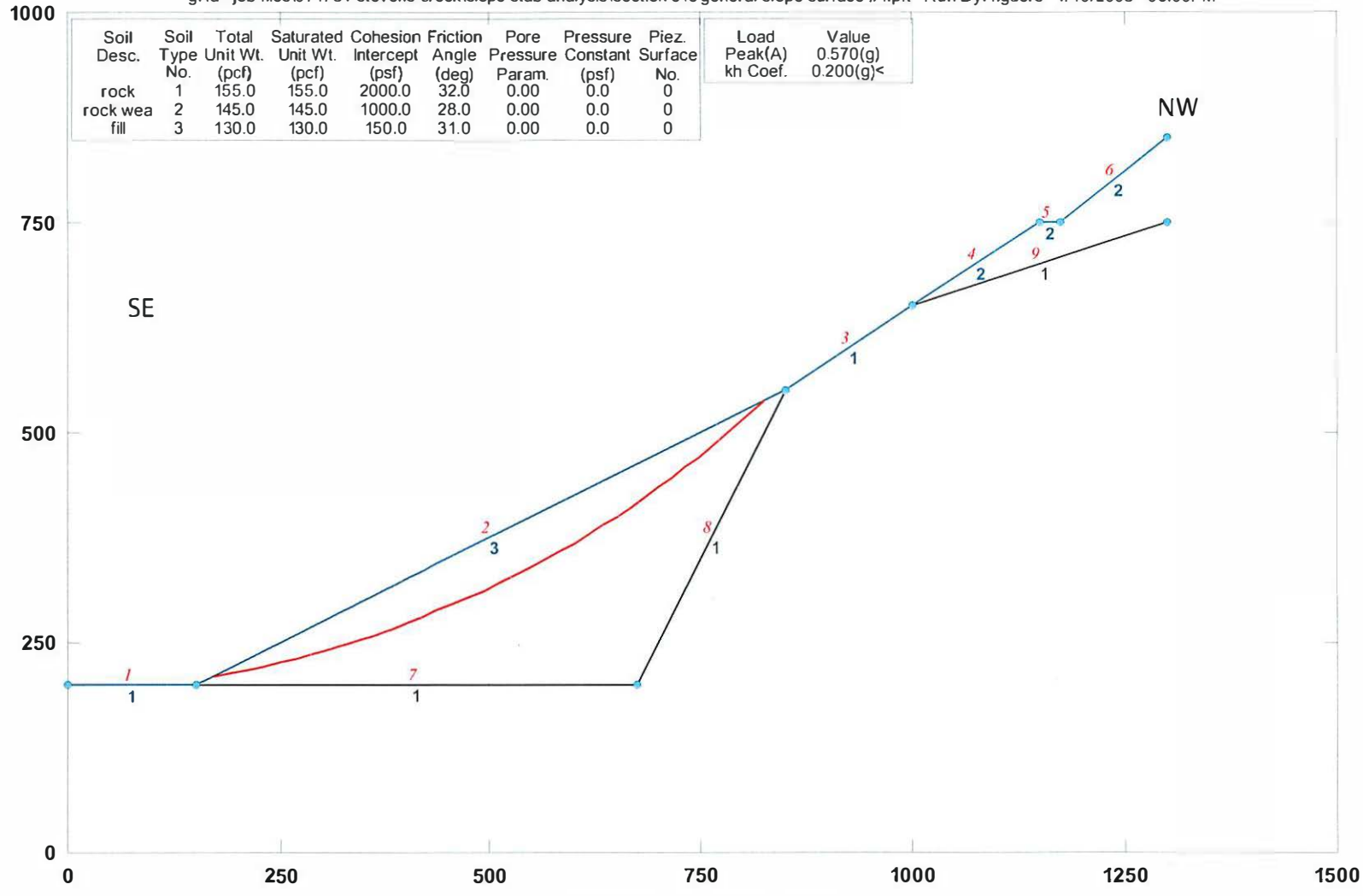
Norfleet Consultants	Limit Equlibrum Analysis - Stevens Creek Quarry		
	Static analysis, 0 Coh. wedge fill only, cross-section E-E'		
	PROJ NO: 071781	DATE: Jan 10, 2008	FIGURE: 30

Stevens Creek Section E-E'

g:\a - job files\071781-stevens creek\slope stab analysis\section e\e general slope surface #1.plt Run By: figuers 1/10/2008 06:00PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
rock	1	155.0	155.0	2000.0	32.0	0.00	0.0	0
rock wea	2	145.0	145.0	1000.0	28.0	0.00	0.0	0
fill	3	130.0	130.0	150.0	31.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=0.867
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

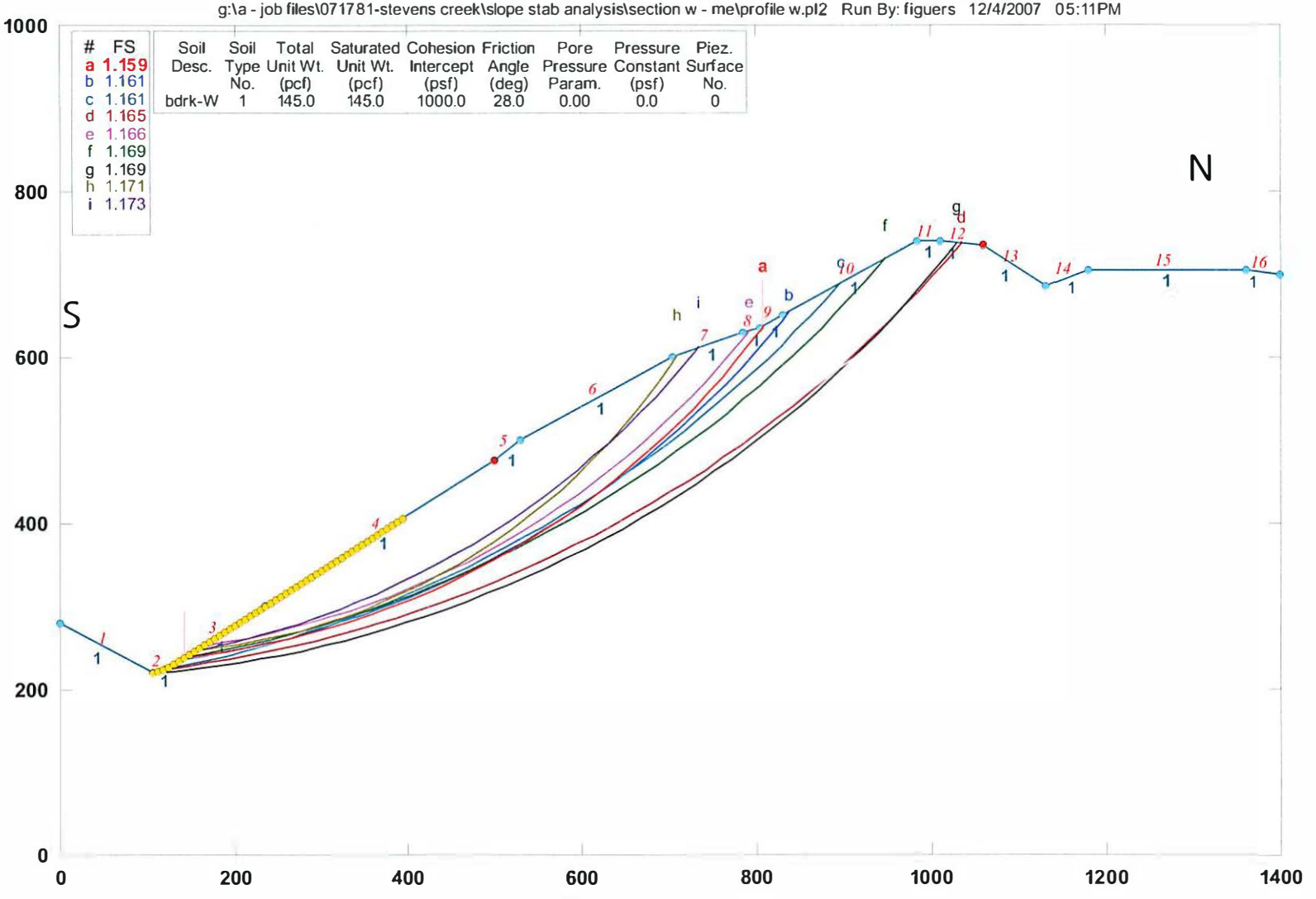
Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, 150 coh., wedge fill only, cross-section E-E'

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	31

Stevens Creek - profile W-W"

g:\a - job files\071781-stevens creek\slope stab analysis\section w - me\profile w.pl2 Run By: figuers 12/4/2007 05:11PM



GSTABL7 v.2 FSmin=1.159

Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

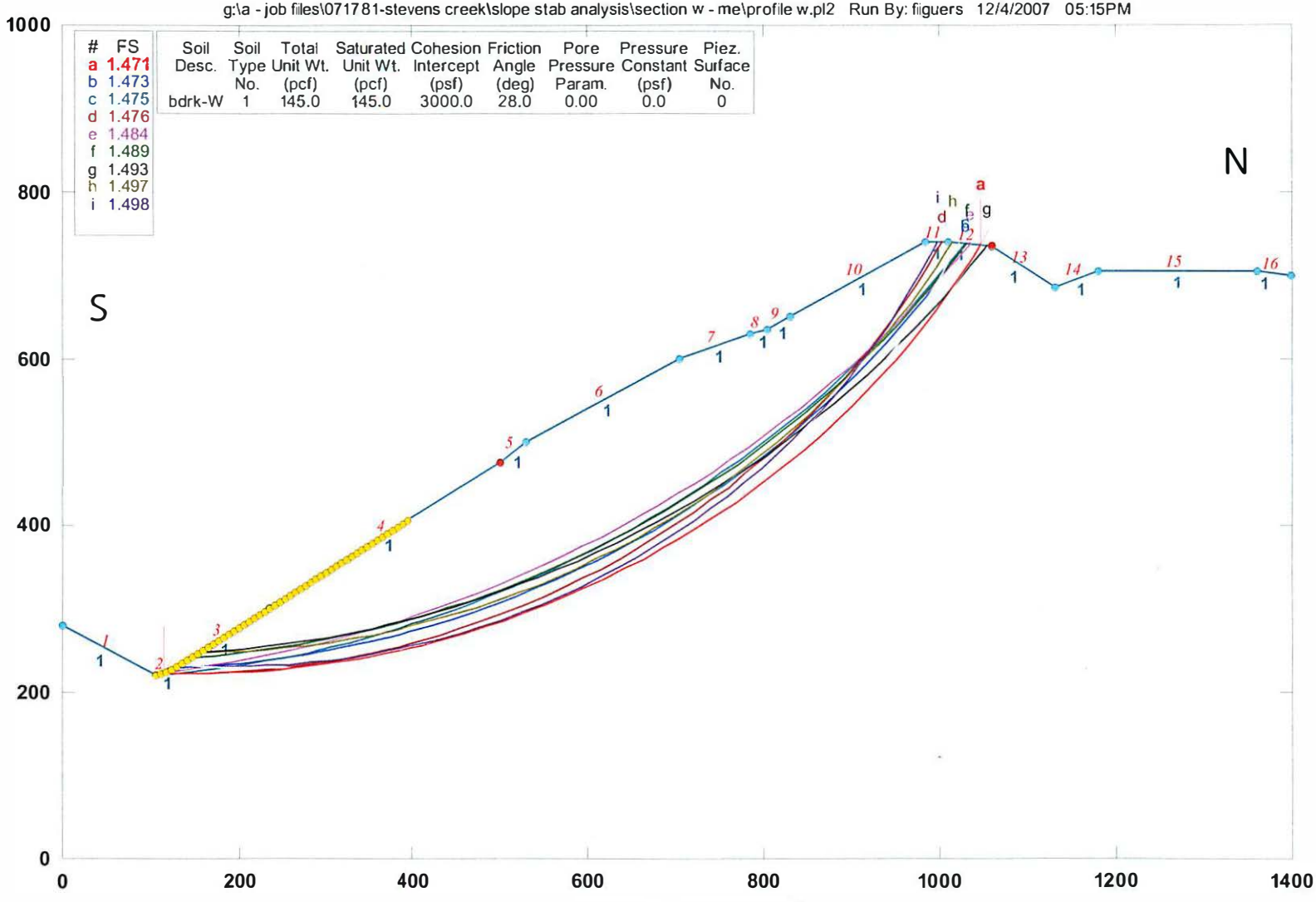
Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, 1000 psf Coh., weathered Greenstone, cross-section W

PROJ NO: 071781	DATE: Jan 10, 2008	FIGURE: 32

Stevens Creek - profile W-W"

g:\a - job files\071781-stevens creek\slope stab analysis\section w - me\profile w.pl2 Run By: figuers 12/4/2007 05:15PM



GSTABL7 v.2 FSmin=1.471
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, 3000 psf Coh., weathered Greenstone, cross-section W

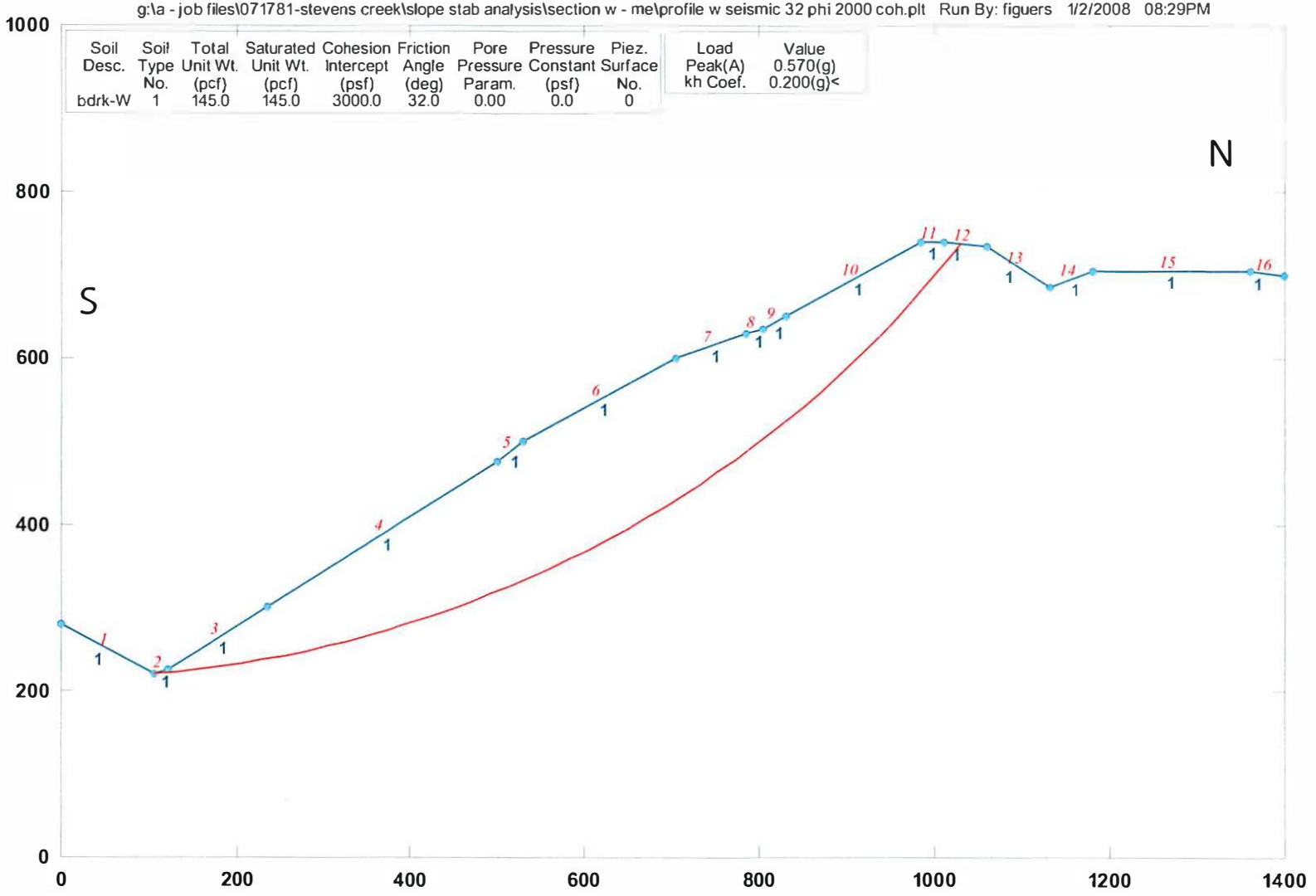
PROJ NO: 071781	DATE: Jan 10, 2008	FIGURE: 33

Stevens Creek - profile W-W" seismic 32-2000

g:\a - job files\071781-stevens creek\slope stab analysis\section w - me\profile w seismic 32 phi 2000 coh.plt Run By: figuers 1/2/2008 08:29PM

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
bdrk-W	1	145.0	145.0	3000.0	32.0	0.00	0.0	0

Load	Value
Peak(A)	0.570(g)
kh Coef.	0.200(g)<



GSTABL7 v.2 FSmin=1.143
Factor Of Safety Is Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

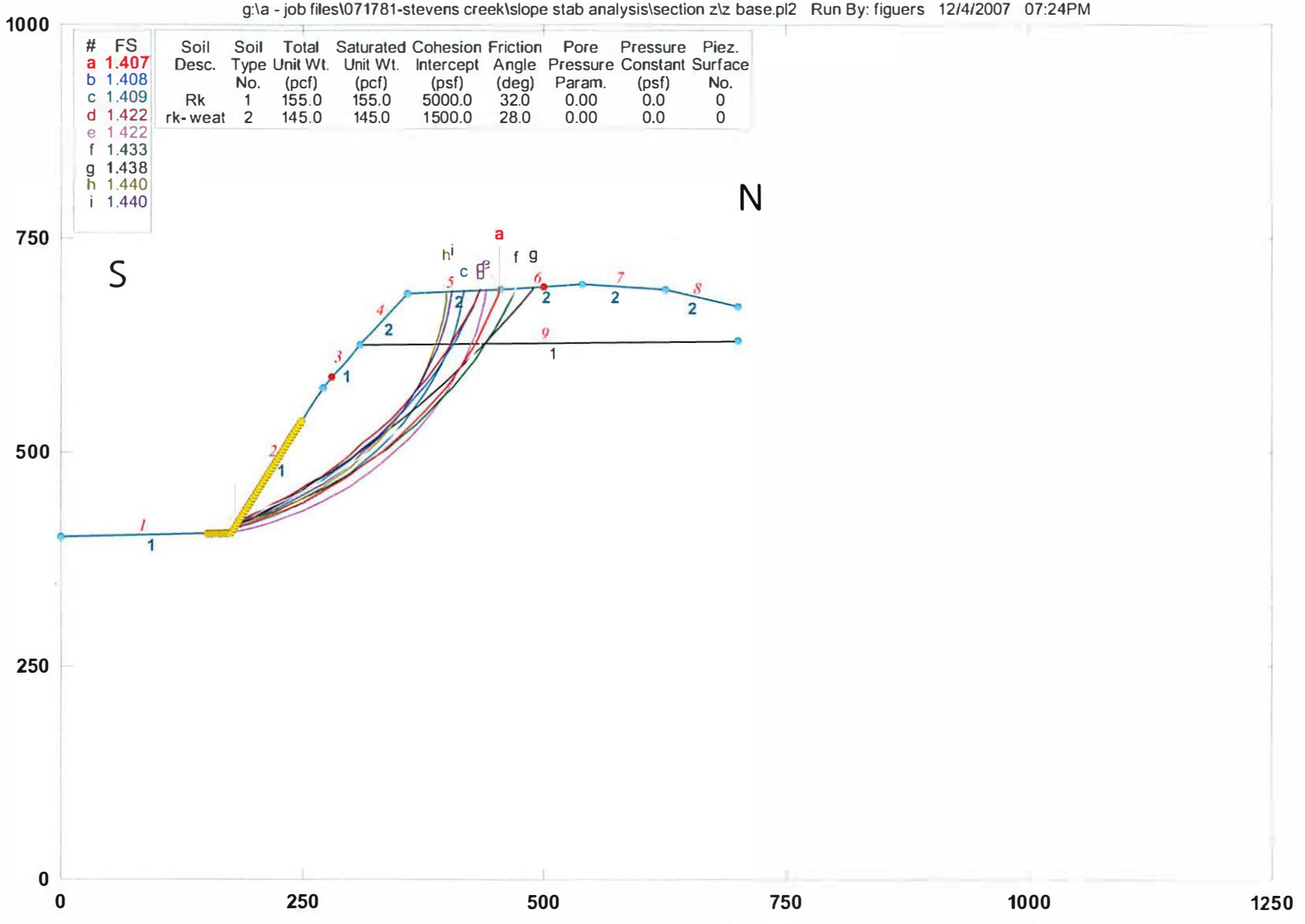
Limit Equlibrum Analysis - Stevens Creek Quarry

Pseudo-static analysis, weathered Greenstone, cross-section W

PROJ NO: 071781 | DATE: Jan 10, 2008 | FIGURE: 34

Stevens Creek - Section Z

g:\a - job files\071781-stevens creek\slope stab analysis\section z\z base.pl2 Run By: figuers 12/4/2007 07:24PM



GSTABL7 v.2 FSmin=1.407
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Add 500 ft to vertical scale for actual elevations.

Norfleet Consultants

Limit Equlibrum Analysis - Stevens Creek Quarry

Static analysis, 5000 psf Coh., unweath. Greenstone, cross-section Z

PROJ NO:	071781	DATE:	Jan 10, 2008	FIGURE:	35

PARCEL B

PARCEL A

Plant Equipment

Plant Equipment

Temporary Stockpile

Stockpile

Upper Settling Basin

Middle Settling Basin

Quarry

Lower Settling Basin

Access Road

Residence

Residence

Shop

Stables

Building

Active Mining and Recycle Area

Stockpile

Office

Stevens Canyon Rd.

SITE TOPOGRAPHY AND AERIAL PHOTOGRAPH SOURCE: Aero-Geodetic Corporation (10-26-06)

SURROUNDING AERIAL PHOTOGRAPH SOURCE: GlobeXplorer ImageAtlas (04-01-07) (Not Orthorectified)

CONTOUR INTERVAL: 5'-0"

- Site Boundary

- 100' Powerline Easement

N

200' 0 200' 400'

SCALE: 1" = 200'-0"

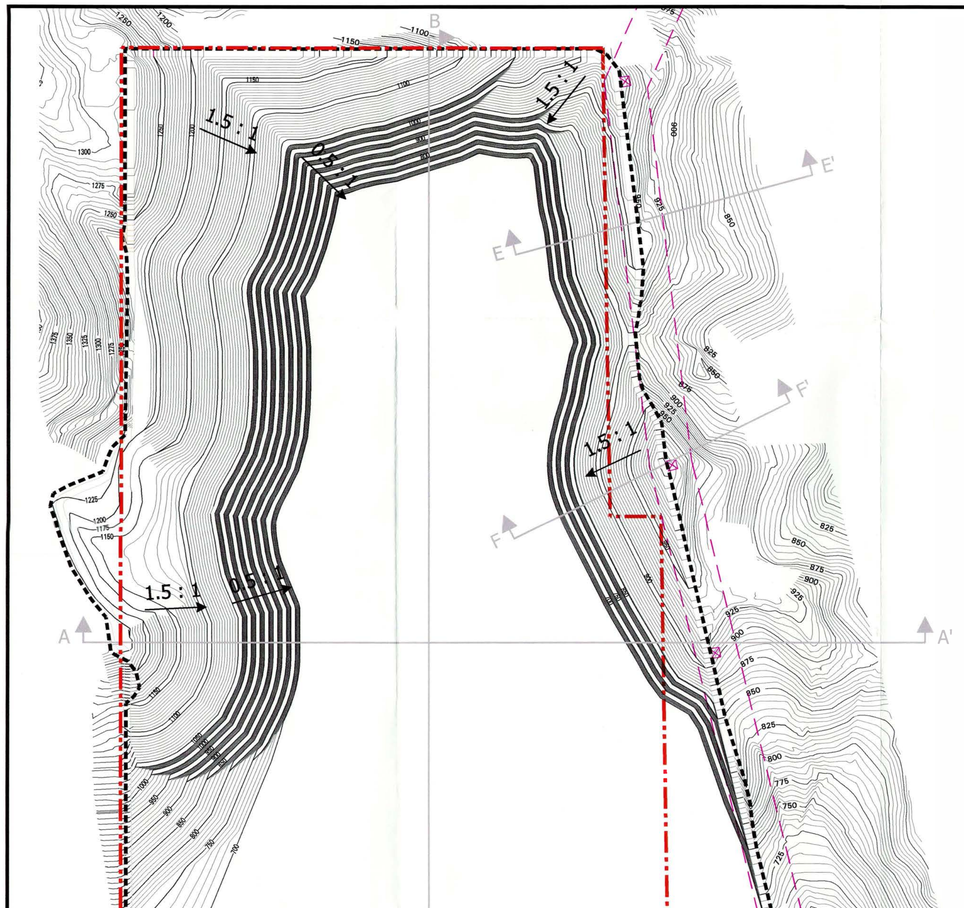
Sheet 1
Existing Conditions Aerial Photograph
STEVENS CREEK QUARRY

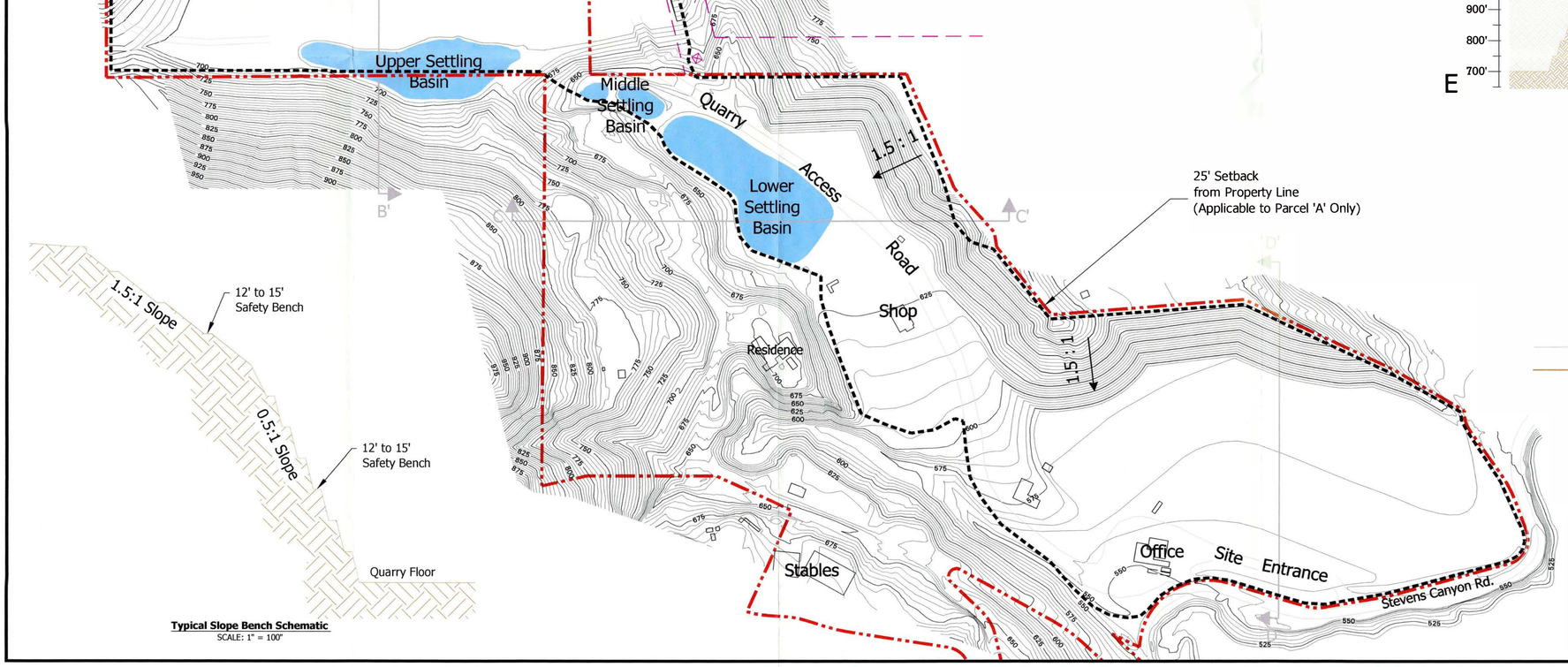
PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.

Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916) 983-9194

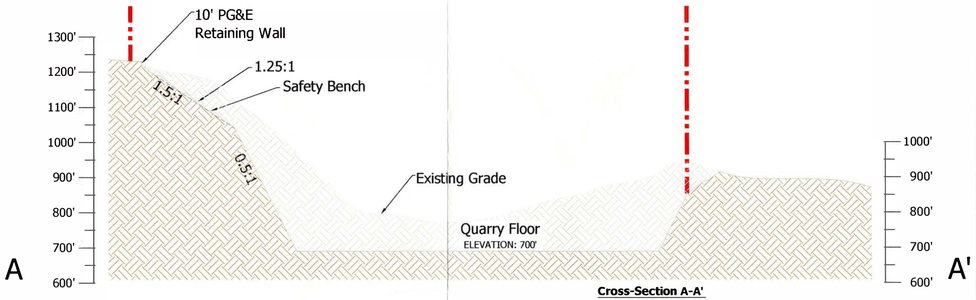
Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

SCALE: 1" = 200'-0"
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quarry
SHEET 1 OF 6



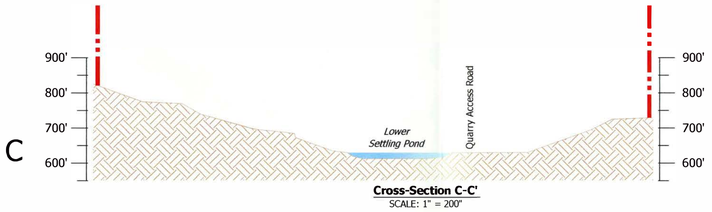


Typical Slope Bench Schematic
SCALE: 1" = 100'

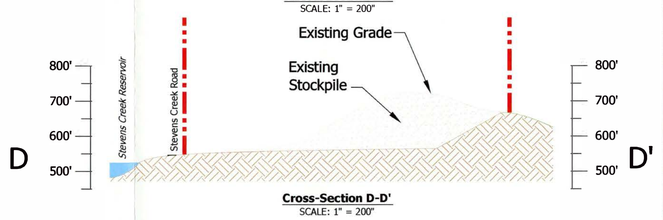


Cross-Section A-A'
SCALE: 1" = 200'

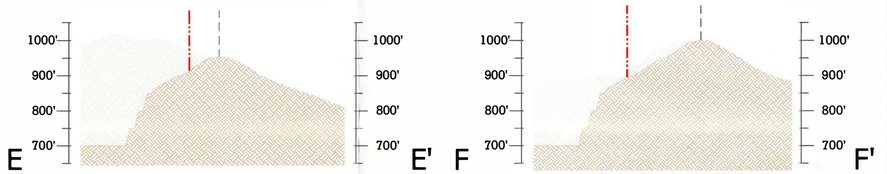
Cross-Section B-B'
SCALE: 1" = 200'



Cross-Section C-C'
SCALE: 1" = 200'

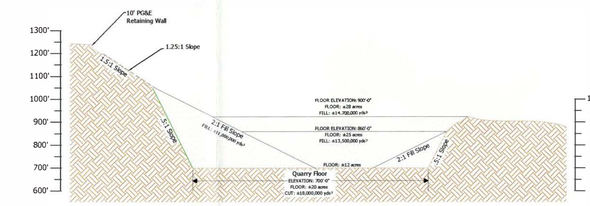


Cross-Section D-D'
SCALE: 1" = 200'



Cross-Section E-E'
SCALE: 1" = 200'

Cross-Section F-F'
SCALE: 1" = 200'



Cut and Fill Quantities
NOT TO SCALE

- Existing Surface
- Post-Mining Surface
- Property Boundary
- Surface Disturbance Boundary
- Quarry Access Road and Other Paved Surfaces
- 100' Power Line Easement

NOTE:
All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

CONTOUR INTERVAL: 5'-0"

TOPOGRAPHY SOURCE: Aero-Geodetic Corporation (10-26-06)

N

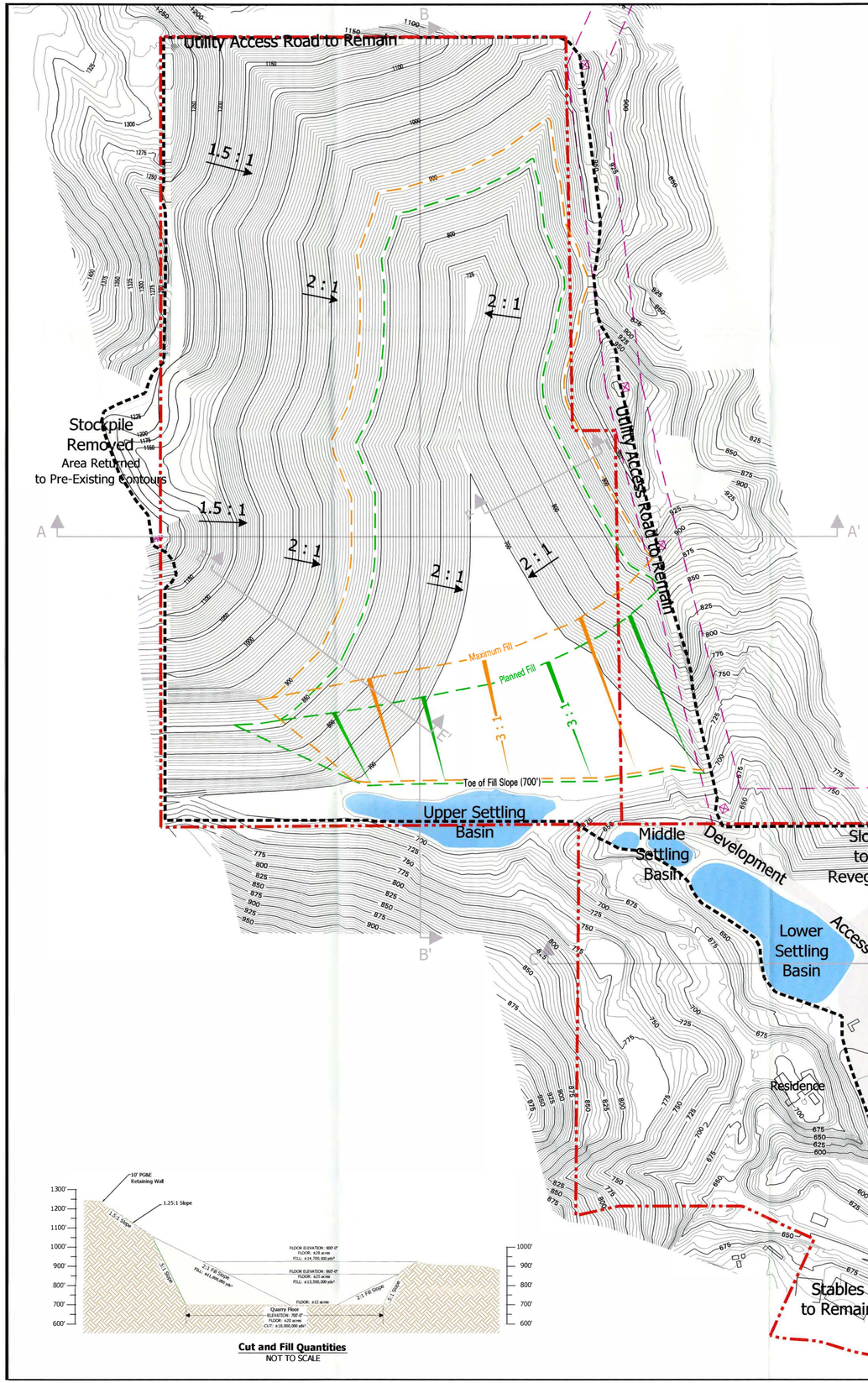
200' 0 200' 400'

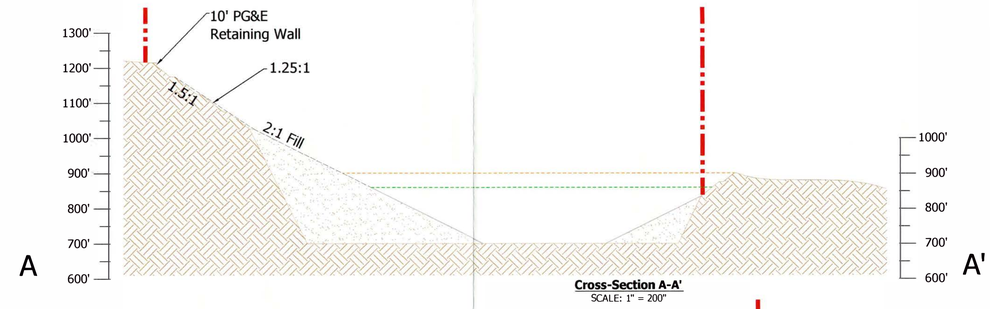
SCALE: 1" = 200'-0"

Sheet 2
Mine Plan and Cross-Sections
STEVENS CREEK *QUARRY*

PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.
Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916) 983-9194
Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

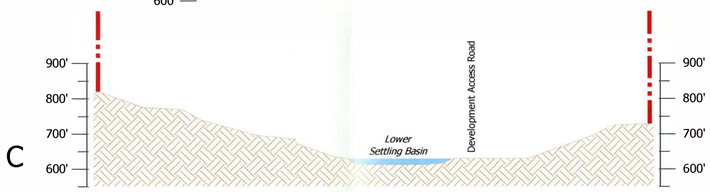
SCALE: As Noted
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quarry
SHEET 2 OF 6



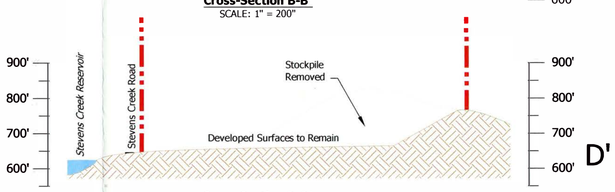


Cross-Section A-A'
SCALE: 1" = 200'

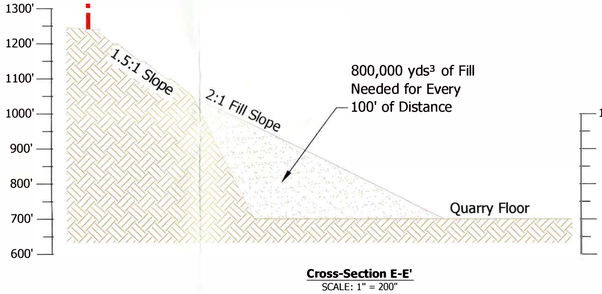
Cross-Section B-B'
SCALE: 1" = 200'



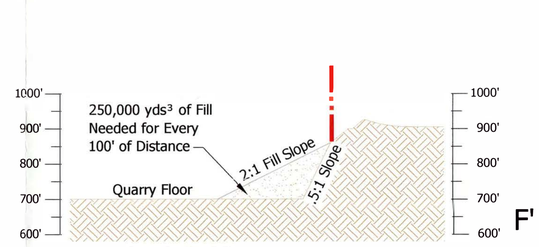
Cross-Section C-C'
SCALE: 1" = 200'



Cross-Section D-D'
SCALE: 1" = 200'



Cross-Section E-E'
SCALE: 1" = 200'



Cross-Section F-F'
SCALE: 1" = 200'

Cut and Fill Quantities
NOT TO SCALE

- 100' Power Line Easement
- Developed Surfaces to Remain
- Site Boundary
- Surface Disturbance Boundary
- 2:1 Fill Slope

This is the minimum fill slope that will be completed for purposes of final slope stability.

- Maximum Fill (Pad Elevation 900')
- Planned Fill (Pad Elevation 860')

Depending on availability, fill may continue to be imported and placed to the indicated elevations. See text of reclamation plan for full description.

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

DATA SOURCE: Stevens Creek Quarry Inc.
CONTOUR INTERVAL: 5'-0"

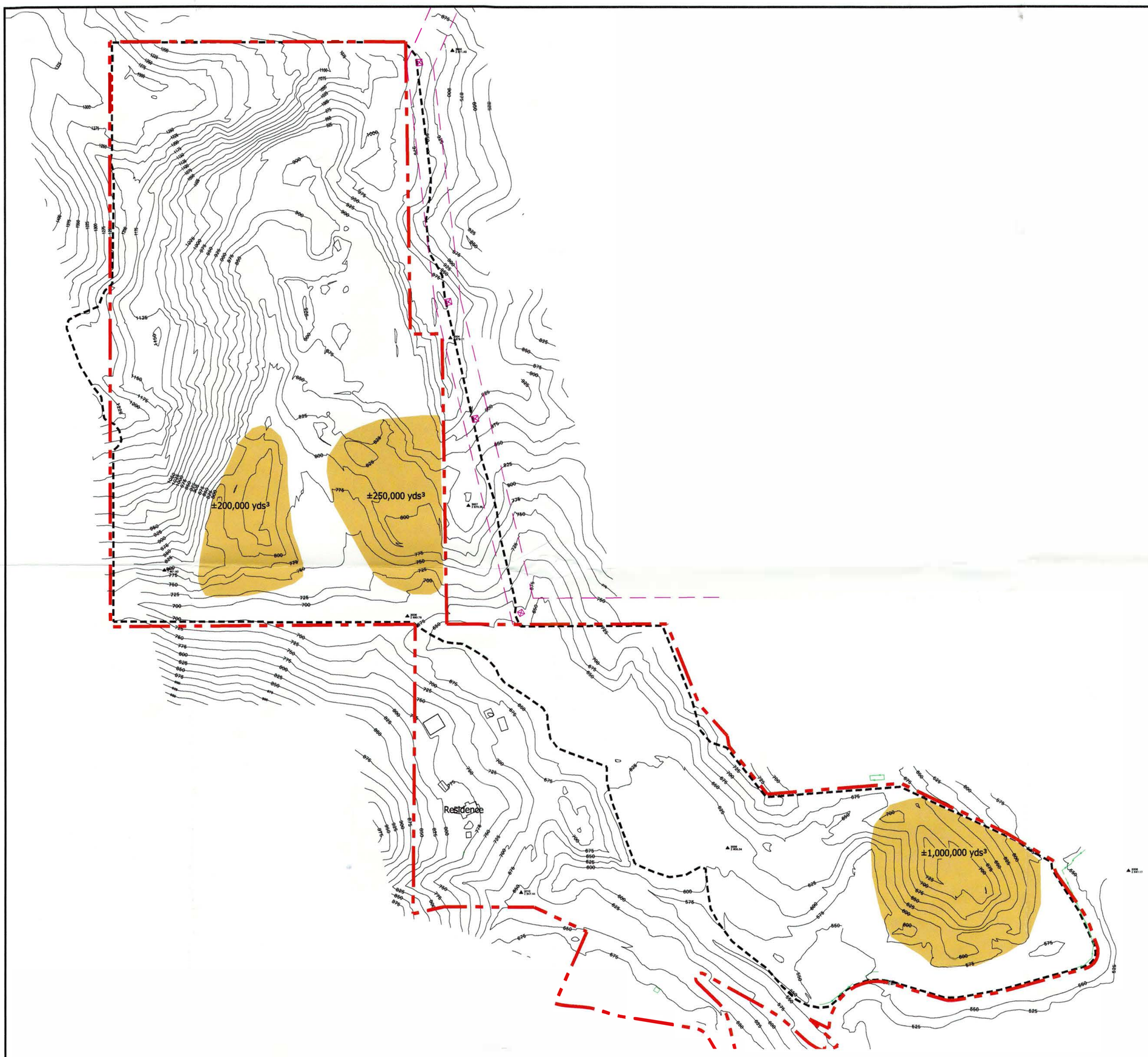
N

200' 0 200' 400'
SCALE: 1" = 200'-0"

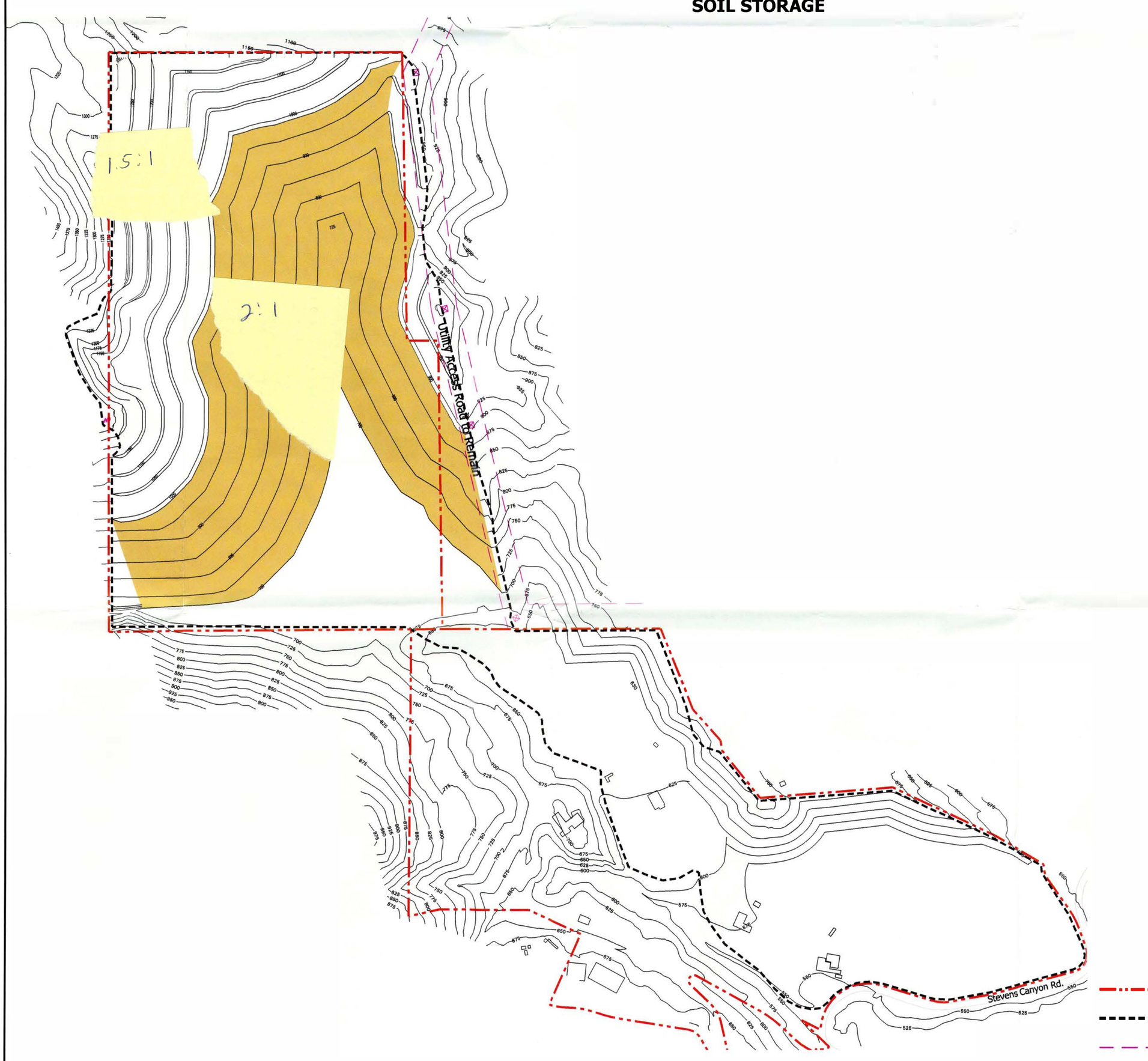
Sheet 3
Reclamation Plan and Cross-Sections
STEVENS CREEK QUARRY

PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.
Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916) 983-9194
Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

SCALE: 1" = 200'-0"
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quarry
SHEET 3 OF 6



SOIL STORAGE



SOIL PLACEMENT

NOTES:

Soil storage areas shown are largely material generated as a result of mining, or as a result of import fill. Stockpile volumes, and specific storage areas will vary over the course of operations. Stockpiled "soil" will be placed in fill slope reclamation, and as needed to assist revegetation in meeting performance standards for success.

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

DATA SOURCE: Stevens Creek Quarry Inc.

CONTOUR INTERVAL: 25'-0"

- Site Boundary
- Limit of Planned Surface Disturbance
- 100' Powerline Easement
- Soil/Fill Storage

N

300' 0 300' 600'

SCALE: 1" = 300'-0"

Sheet 4
Soil Storage and Placement
STEVENS CREEK QUARRY

PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.

Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916) 983-9194

Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

SCALE: 1" = 300'-0"
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quan
SHEET 4 OF 6

Upper Settling Basin

Middle Settling Basin

Lower Settling Basin

Access Road

Site Entrance

Stevens Canyon Rd.

TOE OF SLOPE

Existing Tree Nursery

- Site Boundary
- Limit of Planned Surface Disturbance
- 100' Powerline Easement
- Developed Surfaces to Remain (Paved and Unpaved)
- Settling Ponds/Lakes
- Grasses and Forbes
- Tree and Shrub Clusters (Schematic Location Only)

All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

Initial revegetation of completed/temporary slopes indicates that revegetation goals will be met without placement of topsoil, which reduces erosion and sedimentation problems.

The graphic shows parcel B with its minimum fill for 2:1 lower slopes. Additional fill may be placed (see sheet 3). This would not affect reclamation goals.

DATA SOURCE: Stevens Creek Quarry Inc.
CONTOUR INTERVAL: 25'-0"

N

200' 0 200' 400'

SCALE: 1" = 200'-0"

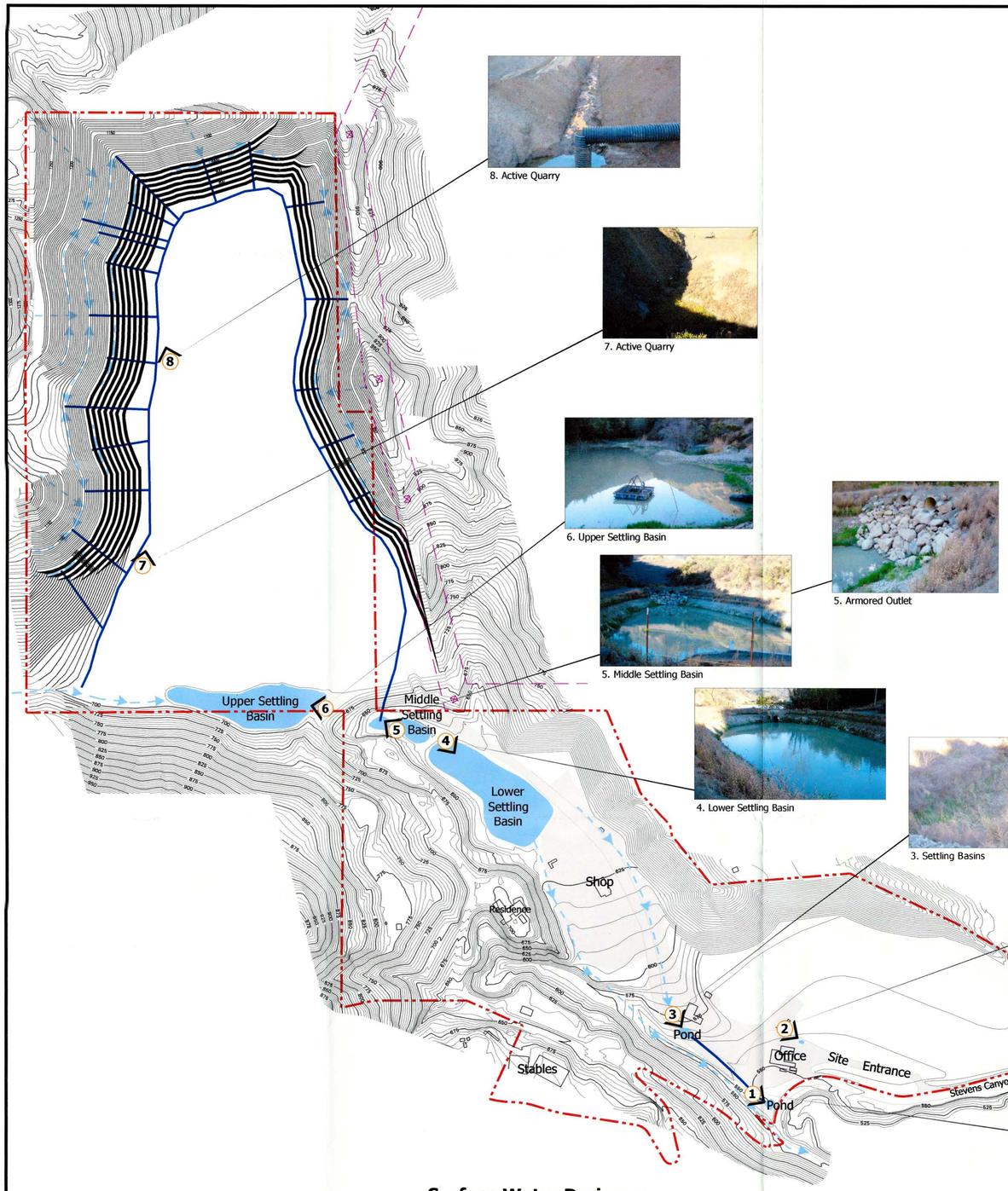
Sheet 5
Revegetation Plan
STEVENS CREEK QUARRY

PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.

Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916)983-9194

Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

SCALE: 1" = 200'-0"
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quarry



8. Active Quarry

7. Active Quarry

6. Upper Settling Basin

5. Middle Settling Basin

5. Armored Outlet

4. Lower Settling Basin

3. Settling Basins

2. Settling Basin

1. Settling Basin/Stand Pipe

Surface Water Drainage at Full Excavation

Surface Water Drainage at Reclamation

NOTE:
All facilities and configurations approximate only. In particular, surface disturbance boundaries are not expected to be identical to those depicted, although total acreage to be disturbed and reclaimed should be similar to depicted. While this plan reflects best available data, development may vary due to actual geologic conditions encountered, engineering and other considerations.

DATA SOURCE: Stevens Creek Quarry Inc.
CONTOUR INTERVAL: 5'-0"

- Site Boundary
- Surface Water Flow
- Conveyance Pipes
- (1) - Photograph Viewpoint Location

N

250' 0 250' 500'
SCALE: 1" = 250'-0"

Sheet 6
Surface Water Drainage
STEVENS CREEK QUARRY

PLANS PREPARED BY:
RESOURCE DESIGN TECHNOLOGY, INC.
Sacramento
4990 Hillsdale Circle, Suite 400
El Dorado Hills, California 95762
Phone: (916) 983-9193
Fax: (916) 983-9194
Laguna Hills
26941 Cabot Road, Suite 104
Laguna Hills, California 92653
Phone: (949) 348-7177
Fax: (949) 348-7176

SCALE: 1" = 200'-0"
DATE: January, 2008
FILE: 223 - MP.dwg
CLIENT: Stevens Creek Quarry
SHEET 6 OF 6