Attachment A

Demolition, Grading, and Improvements Plans

College of the Canyons
Valencia Boulevard
Santa Clarita, CA

GENERAL NOTES

1. A copy of the grading permit and approved grading plans must be in the possession of a responsible person and available at the site at all times.
2. Any modifications of, or changes to, approved grading plans must be approved by the City Engineer prior to implementation in the field.
3. All graded sites must have drainage swales, berms, and other drainage devices approved at the rough grading stage.
4. The Field Engineer must set drainage stakes for all drainage devices.
5. All storm drain work is to be done under continuous inspection by the Field Engineer. Weekly status reports shall be submitted by the Field Engineer to the Engineering Services Division.
6. Final grading must be approved before occupancy of buildings will be allowed.
7. Construction of the retaining wall(s) shown on these plans requires a permit from the Building and Safety Division.
8. Separate plans for temporary drainage and erosion control measures to be used during the rainy season must be submitted prior to October 1. The erosion control devices shown on said plans must be installed by no later than November 1 and maintained in operable condition until April 15 of the following year. (17.90.030)
9. All subdrain outlets are to be surveyed for line and elevation. This must be shown on the as—built grading plan included in the final geotechnical and geology report.
10. The faces of cut and fill slopes shall be prepared and maintained to control erosion. This control must consist of jute netting and effective planting, or other devices satisfactory to the City Engineer. (17.87.020 A)
11. A preventive program to protect the slopes from potential damage from burrowing rodents is required. Owner to inspect slopes periodically for evidence of burrowing rodents and at first evidence of their existence shall employ an exterminator for their removal. (17.87.020 H)
12. Where necessary, check dams, cribbing, riprap, or other devices or methods shall be employed for erosion control. Also, jute netting shall be immediately installed on any slopes having a vertical height of seven feet or more and steeper than 3:1 (H:V) to minimize or control erosion problems.
13. Roof drainage must be diverted from graded slopes.
14. All construction and grading within Storm Drain easement to be done per Storm Drain plan.

FILL NOTES

15. All fill shall be compacted to the following minimum relative compaction criteria:
    a. 90 percent of maximum dry density within 40 feet below finish grade
    b. 93 percent of maximum dry density deeper than 40 feet below finish grade, unless a lower relative compaction (not less than 90 percent of maximum dry density) is justified by the geotechnical engineer.

The relative compaction shall be determined by ASTM Soil Compaction Test D1557—91, where applicable; where not applicable a test acceptable to the City Engineer shall be used. (17.86.030 E)

16. Field density shall be determined by a method acceptable to the City Engineer, however, a minimum of 10 percent of the required density tests shall be obtained by the Sand Cone Method (ASTM D1556). The required 10 percent by Sand Cone Method shall be uniformly distributed throughout the depths and limits of the fill.
17. Sufficient tests of the fill soils shall be made to determine the relative compaction of the fill in accordance with the following minimum guidelines:

    a. One test for each two—foot vertical lift.

    b. One test for each 1,000 cubic yards of material placed.

    c. One test at the location of the final fill slope for each building site (lot) in each four—foot vertical lift or portion thereof.

    d. One test in the vicinity of each building pad for each four—foot vertical lift or portion thereof.

    Sufficient tests of fill soils shall be made to verify compliance of the soil properties with the design requirements including soil types and shear strengths. The results of such testing shall be included in the reports required by Section (17.86.030 I)
18. No fill shall be placed until stripping of vegetation, removal of unsuitable soils, and installation of subdrains (if any) have been inspected and approved by the Geotechnical Engineer. (17.86.030 B)
19. No rock or similar material greater than 12 inches in diameter will be placed in the fill unless recommendations for such placement have been submitted by the Geotechnical Engineer and approved in advance by the City Engineer. (17.86.030 D)
20. Continuous inspection by the Geotechnical Engineer or his responsible representative shall be provided during all fill placement and compaction operations where fills have a vertical height or depth greater than 30 feet or slope surface steeper than 2:1. (17.86.030 H)
21. Continuous inspection by the Geotechnical Engineer or his responsible representative shall be provided during all subdrain installations. (17.86.030 B)
22. Fill slopes in excess of 2:1 steepness ratio are to be constructed by the placement of soil at sufficient distance beyond the proposed finish slope to allow compaction equipment to be operated at the outer limits of the final slope surface. The excess fill is to be removed prior to completion of rough grading. (Other construction procedures may be used when it is demonstrated to the satisfaction of the City Engineer that the angle of slope, construction method and other factors will have equivalent effect). (17.86.030 E)
23. The Geotechnical Engineer shall provide sufficient inspections during the preparation of the natural ground and the placement and compaction of the fill to be satisfied that the work is being performed in accordance with the plan and applicable code requirements. (17.86.030 H)
24. The Grading contractor shall submit the statement requried by Section 17.88.010 L at the completion of rough grading.

GEOTECHNICAL REPORT DATA

ALL CONSTRUCTION ACTIVITY WILL COMPLY WITH THE SOILS REPORT(S) LISTED BELOW

REPORT TITLE:
REPORT DATE:
PREPARED BY:

INSPECTION NOTES

25. The permittee or his agent shall notify the Engineering Services Division at least one working day in advance of required inspections at following stages of the work:
    a. Pre—grade item. (17.88.010 G1)
    b. Initial. When the site has been cleared of vegetation and unapproved fill and it has been scarified, benched or otherwise prepared for fill. No fill shall have been placed prior to this inspection. (17.88.010 G2)
    c. Rough. When approximate final elevations have been established; drainage terraces, swales and berms installed at the top of the slopes; and the statements required in Section 17.88.010 L have been received. (17.88.010 G)
    d. Final. When grading has been completed; all drainage devices installed; slope planting established, irrigation systems installed and the as—built plans, required statements, and reports have been submitted. (17.88.010 G4)
26. In addition to the inspection required by the Engineering Services Division for Regular Grading, reports and statements shall be submitted to the City Engineer in accordance with Section 17.88.010.

AGENCY NOTES

27. Secure permission from the Engineering Services Division for construction or grading within street right—of—way.
28. Grading in future street right—of—way must be inspected by the City.
29. ~~All work within the streambed and areas outlined on the grading plans shall conform to:~~

    ~~Army Corp 404 Permit Number:~~ ____________________

    ~~California Fish & Game Permit Number:~~ ________________
30. A Storm Water Pollution Prevention Plan (SWPPP) shall be prepared and a copy available for review at the project site at all times. All measures outlined in the project SWPPP must be implemented throughout the duration of construction.

GEOLOGY AND SOILS NOTES

31. All recommendations included in the consultant's soil and geology reports must be complied with and are a part of the grading specifications. (17.83.010 F)
32. Grading operations must be conducted under periodic geologic inspection with monthly inspection reports to be submitted to the Engineering Services Division.
33. The Consulting Geologist must approve rough grading by final report prior to the approval by the City Engineer. The final report must include an as—built Geologic Map.

PLANTING AND IRRIGATION NOTES

34. All cut slopes over five feet and fill slopes over three feet shall be planted with an approved ground cover and provided with an irrigation system as soon as practical after rough grading. (17.87.020 D)

STORMWATER POLLUTION PLAN NOTES

1. Every effort should be made to eliminate the discharge of non—stormwater from the project site at all times.
2. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheetflow, swales, area drains, natural drainage courses, or wind.
3. Stockpiles of earth and other construction—related materials must be protected from being transported from the site by the forces of wind or water.
4. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
5. Excess or waste concrete may not be washed into the public right—of—way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
6. Trash and construction—related solid wastes must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
7. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public right—of—way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
8. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.
9. The following BMP's as outlined in, but not limited to, the "Best Management Practice Handbook, California Stormwater Quality Task Force, Sacramento, California, 1993," or the latest revised edition, may apply during the construction of this project (additional measures may be required if deemed appropriate by City inspectors):

EROSION CONTROL
EC1 - SCHEDULING
EC2 - PRESERVATION OF EXISTING VEGETATION
EC3 - HYDRAULIC MULCH
EC4 - HYDROSEEDING
EC5 - SOIL BINDERS
EC6 - STRAW MULCH
EC7 - GEOTEXTILES & MATS
EC8 - WOOD MULCHING
EC9 - EARTH DIKES AND DRAINAGE SWALES
EC10 - VELOCITY DISSIPATION DEVICES
EC11 - SLOPE DRAINS
EC12 - STREAMBANK STABILIZATION
EC13 - RESERVED
EC14 - COMPOST BLANKET
EC15 - SOIL PREPARATION/ROUGHENING
EC16 - NON-VEGETATIVE STABILIZATION

EQUIPMENT TRACKING CONTROL
TC1 - STABILIZED CONSTRUCTION ENTRANCE/EXIT
TC2 - STABILIZED CONSTRUCTION ROADWAY
TC3 - ENTRANCE / OUTLET TIRE WASH

NON-STORMWATER MANAGEMENT
NS1 - WATER CONSERVATION PRACTICES
NS2 - DEWATERING OPERATIONS
NS3 - PAVING AND GRINDING OPERATIONS
NS4 - TEMPORARY STREAM CROSSING
NS5 - CLEAR WATER DIVERSION
NS6 - ILLICIT CONNECTION / DISCHARGE
NS7 - POTABLE WATER / IRRIGATION
NS8 - VEHICLE AND EQUIPMENT CLEANING
NS9 - VEHICLE AND EQUIPMENT FUELING
NS10 - VEHICLE AND EQUIPMENT MAINTENANCE
NS11 - PILE DRIVING OPERATIONS
NS12 - CONCRETE CURING
NS13 - CONCRETE FINISHING
NS14 - MATERIAL AND EQUIPMENT USE
NS15 - DEMOLITION ADJACENT TO WATER
NS16 - TEMPORARY BATCH PLANTS

TEMPORARY SEDIMENT CONTROL
SE1 - SILT FENCE
SE2 - SEDIMENT BASIN
SE3 - SEDIMENT TRAP
SE4 - CHECK DAM
SE5 - FIBER ROLLS
SE6 - GRAVEL BAG BERM
SE7 - STREET SWEEPING AND VACUUMING
SE8 - SANDBAG BARRIER
SE9 - STRAW BALE BARRIER
SE10 - STORM DRAIN INLET PROTECTION
SE11 - ACTIVE TREATMENT SYSTEMS
SE12 - TEMPORARY SILT DIKE
SE13 - COMPOST SOCKS AND BERMS
SE14 - BIOFILTER BAGS

WIND EROSION CONTROL
WE1 - WIND EROSION CONTROL

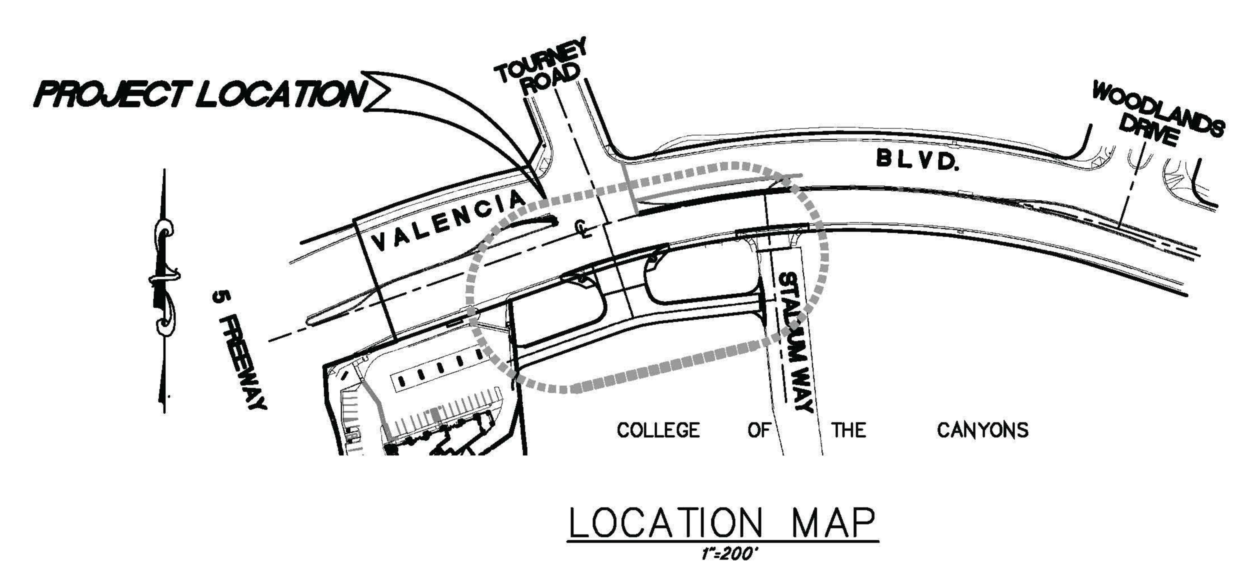
WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL
WM1 - MATERIAL DELIVERY AND STORAGE
WM2 - MATERIAL USE
WM3 - STOCKPILE MANAGEMENT
WM4 - SPILL PREVENTION AND CONTROL
WM5 - SOLID WASTE MANAGEMENT
WM6 - HAZARDOUS WASTE MANAGEMENT
WM7 - CONTAMINATION SOIL MANAGEMENT
WM8 - CONCRETE WASTE MANAGEMENT
WM9 - SANITARY / SEPTIC WASTE MANAGEMENT
WM10 - LIQUID WASTE MANAGEMENT

LEGEND

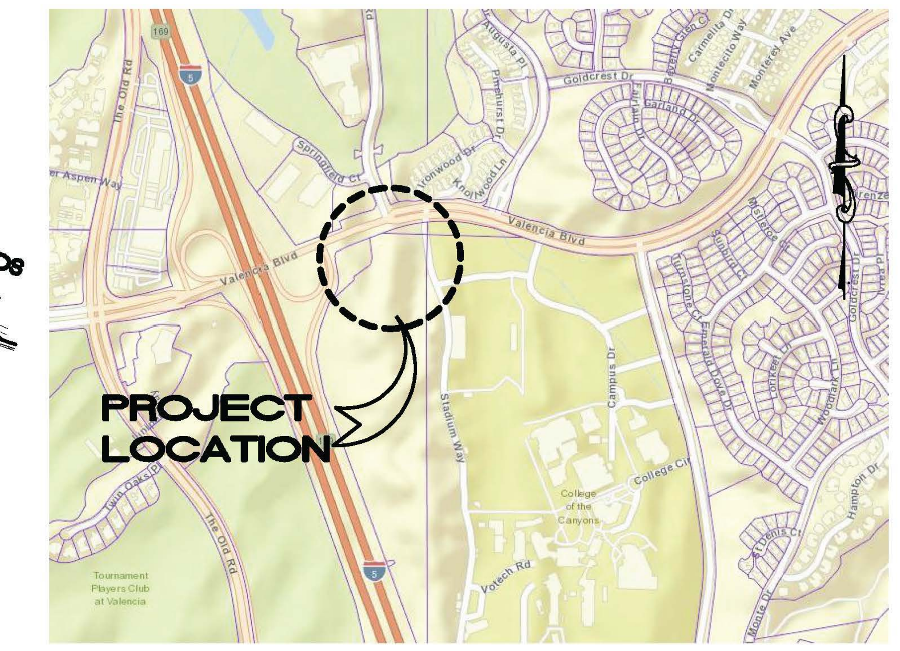
	PROPOSED	EXISTING
SHEET FLOW TO SWALE OR PAVED SURFACE.		
RIDGE LINE	R R	
DAYLIGHT CUT/FILL LINE	C F	
PROPERTY BOUNDARY		
EXISTING GRADE CONTOUR	(1100)	
PROPOSED GRADE CONTOUR	1100	
PROPOSED SLOPE		
EXISTING SPOT ELEVATION	(1100.0)	
PROPOSED SPOT ELEVATION	1100.0	
EASEMENT LINE		
FLOWLINE		
RETAINING WALL		
DAYLIGHT CONTACT		
1126.62	FINISHED SURFACE ELEVATION	
6" CF	HEIGHT OF CURB	
OVEREXCAVATION		

ABBREVIATIONS

AC	ASPHALT CONCRETE	MH	MANHOLE
CB	CATCH BASIN	NTS	NOT TO SCALE
CF	CURB FACE	PVC	POLYVINYL CHLORIDE
CL	CENTERLINE	RCP	REINFORCED CONCRETE PIPE
LD	LOCAL DEPRESSION	TC	TOP OF CURB
EG	EXISTING GRADE	TD	TOP OF DIKE
EX	EXISTING	TF	TOP OF FOOTING
FF	FINISHED FLOOR	TG	TOP OF GRATE
FG	FINISHED GRADE	TP	TOP OF PIPE
FH	FIRE HYDRANT	TW	TOP OF WALL
FL	FLOWLINE	WWM	WELDED WIRE MESH
FS	FINISHED SURFACE		
GB	GRADE BREAK		
HP	HIGH POINT		
INV	INVERT ELEVATION		
PA	PLANTER AREA		



LOCATION MAP
1"=200'



VICINITY MAP
N.T.S.

ESTIMATED STARTING AND COMPLETION DATES:

START: OCT 2022

COMPLETION: DEC 2022

EARTHWORK CALCS:

PER AUTOCAD LDT 2009, GRID METHOD, 1' GRID.
(SEE SHEET R—1)

Cut = 23,140 cu.yds.
Fill = 0.00 cu.yds.

EXPORT = 23,140 cu.yds.

DISTURBED AREA:

47,081 SQ. FT. (1.08 ACRES)

UTILITY NOTE

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FIRE ACCESS

FIRE DEPARTMENT ACCESS ROAD REQUIREMENTS CANNOT BE DETERMINED UNTIL A BUILDING PERMIT APPLICATION IS FILED.

THIS STENCIL TO BE INSTALLED ON ALL CATCH BASINS PER CODE REQUIREMENTS.

MAINTENANCE OF ON-SITE SLOPES, CURBS, PAVEMENT, AND DRAINAGE DEVICES (SURFACE AND SUBSURFACE) ARE THE RESPONSIBILITY OF THE PROPERTY OWNERS.

DIGALERT
DIAL TOLL FREE
1-800-227-2600
AT LEAST TWO DAYS BEFORE YOU DIG
UNDERGROUND SERVICE ALERT OF SOUTHERN CALIFORNIA

Assessors ID Number(s): 2861—004—900

Property Zoning: PI (PUBLIC/INSTITUTIONAL)

Intended Land Use: ACCESS ROAD / COMMUNITY COLLEGE

SHEET INDEX

SHEET	DESCRIPTION
1	VICINITY MAP, BENCH MARK, AND STANDARD NOTES
2	EXISTING CONDITIONS AND REMOVALS
3	FINE GRADING PLAN
4	SECTIONS and DETAILS
R-1	EARTHWORK REFERENCE

AS THE PROJECT OWNER OR AGENT OF THE OWNER, I HAVE READ AND UNDERSTAND THE REQUIREMENTS LISTED ABOVE, NECESSARY TO CONTROL STORM WATER POLLUTION FROM SEDIMENTS, EROSION, AND CONSTRUCTION MATERIALS, AND I CERTIFY THAT I WILL COMPLY WITH THESE REQUIREMENTS.

PRINT NAME: RON KOESTER SIGNATURE: ______ DATE: 31 MAY 2022

BENCH MARK: LACFCD B.M. #VL6059

RCE TAG #16913 IN S CB VALENCIA BL 69' S/O C/L @ C/L PROD TOURNEY RD.

ELEVATION: 1186.031' NAVD '88 (ADJ. 2018)

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ______

DATE: ______

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GEOTECHNICAL REVIEW BY:
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com
PLANS PREPARED UNDER THE DIRECTION OF:
XXX DATE

PLANS PREPARED FOR:
Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

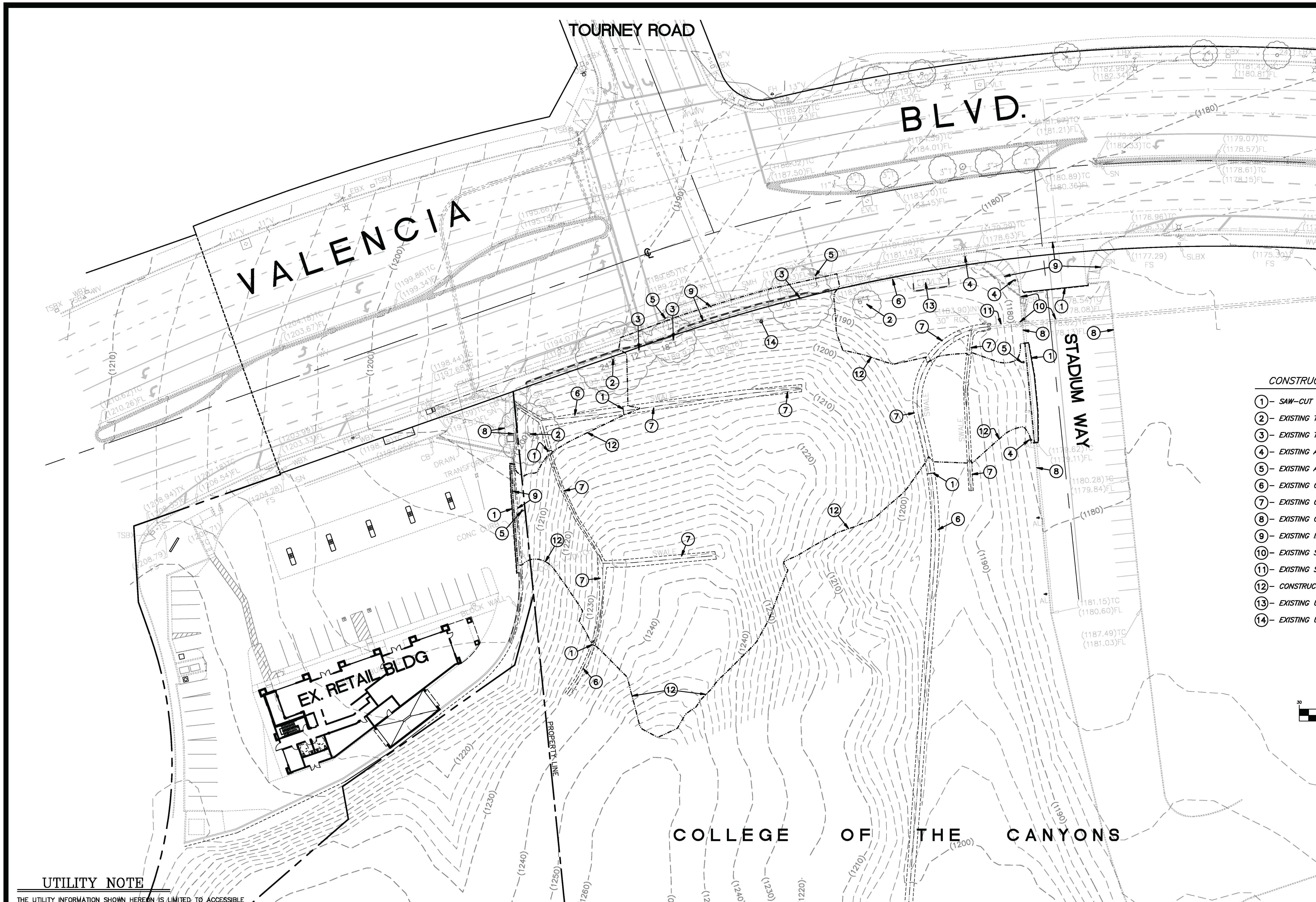
PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com
PLANS PREPARED UNDER THE DIRECTION OF:
RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
△				

CITY OF SANTA CLARITA
GRADING PLAN
VICINITY MAP, SHEET INDEX, BENCH MARK, STANDARD NOTES

SCALE: AS SHOWN
DATE: 05/31/22
JOB NO. 3547
CASE NO: GRA22—00000
SHEET: 1 OF 4



CONSTRUCTION NOTES:

1 – SAW-CUT
2 – EXISTING TREE TO REMAIN, PROTECT IN PLACE.
3 – EXISTING TREE TO BE REMOVED.
4 – EXISTING AREA LIGHT TO REMAIN, PROTECT IN PLACE.
5 – EXISTING AREA LIGHT TO BE REMOVED.
6 – EXISTING CONC. SWALE TO REMAIN.
7 – EXISTING CONC. SWALE TO BE REMOVED.
8 – EXISTING CONC. CURB TO REMAIN.
9 – EXISTING IMPROVEMENTS TO BE REMOVED.
10 – EXISTING STORM DRAIN TO REMAIN.
11 – EXISTING STORM DRAIN TO BE REMOVED.
12 – CONSTRUCTION LIMITS.
13 – EXISTING UTILITY TO REMAIN.
14 – EXISTING UTILITY TO BE REMOVED OR RELOCATED.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

UTILITY NOTE

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CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY:

DATE:

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PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
⚠				

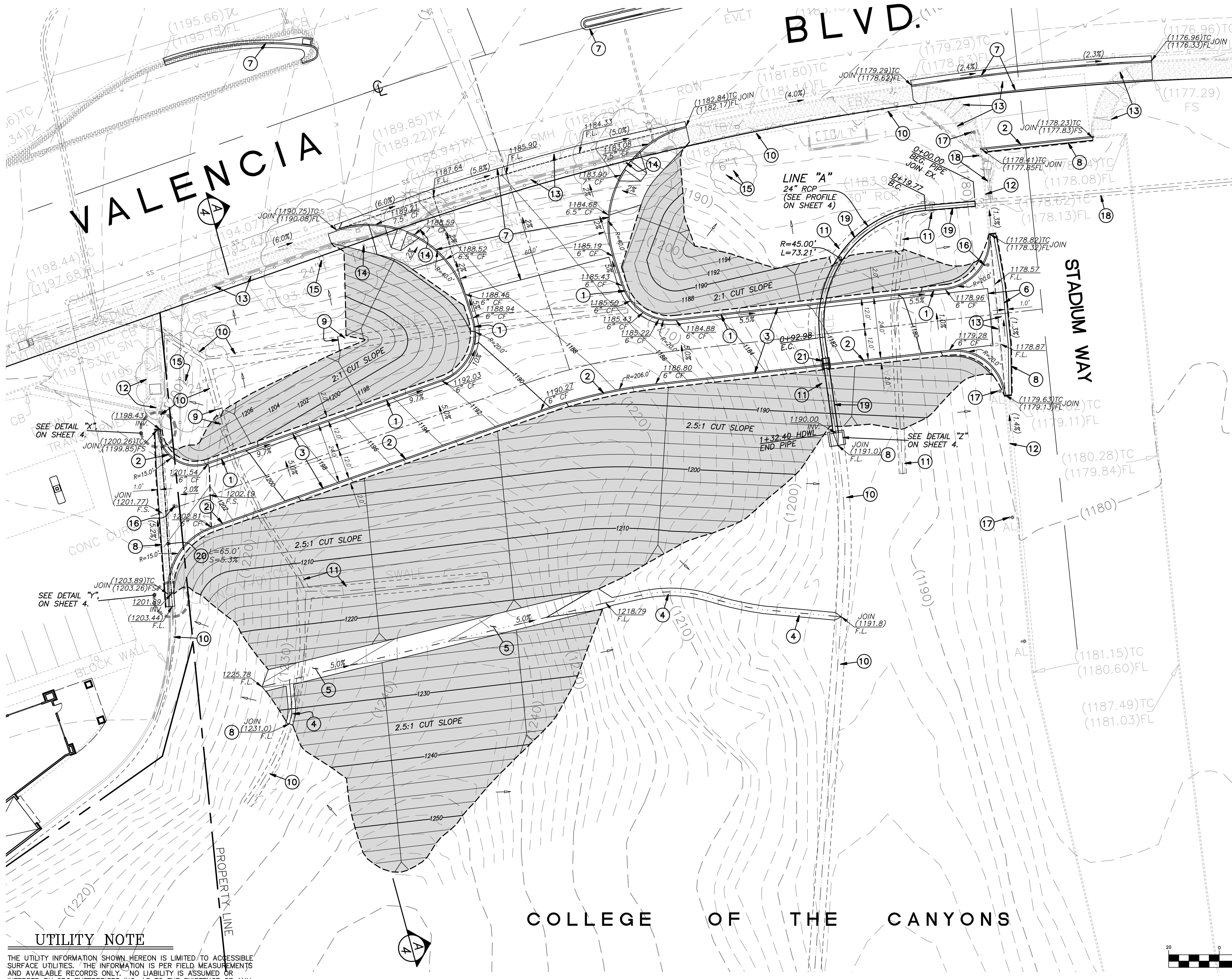
CITY OF SANTA CLARITA

GRADING PLAN

EXISTING CONDITIONS AND REMOVALS

SCALE:	1"=30'
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	2 OF 4

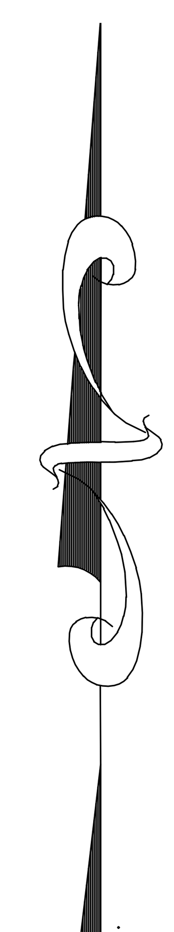
GRA22-00000



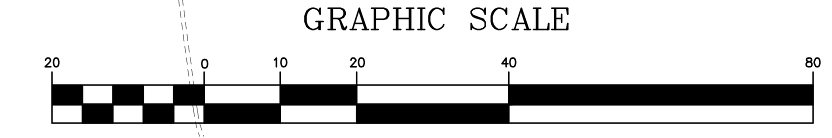
CONSTRUCTION NOTES:

1. CONSTRUCT 6" CONC. CURB AND 18" GUTTER PER SPPWC 120-3, A2-6(150).
2. CONSTRUCT 6" CONC. CURB PER SPPWC 120-3, A1-6(150).
3. CONSTRUCT 24' WIDE PRIVATE ROAD PER DETAIL "A", ON SHEET 4.
4. CONSTRUCT 36" CONC. SWALE PER DETAIL "B", ON SHEET 4.
5. CONSTRUCT 8' WIDE CONC. TERRACE DRAIN PER DETAIL "C", ON SHEET 4.
6. CONSTRUCT CONC. CROSS GUTTER PER SPPWC 122-3.
7. CONSTRUCT STREET IMPROVEMENTS PER SEPARATE ROAD PLANS.
8. SAW-CUT AND JOIN EXISTING.
9. SAW-CUT AND REMOVE EXISTING.
10. EXISTING CONC. SWALE TO REMAIN.
11. EXISTING CONC. SWALE TO BE REMOVED.
12. EXISTING CONC. CURB TO REMAIN.
13. EXISTING IMPROVEMENTS TO BE REMOVED.
14. EXISTING TREE TO BE REMOVED.
15. EXISTING TREE TO REMAIN, PROTECT IN PLACE.
16. EXISTING AREA LIGHT TO BE REMOVED OR RELOCATED.
17. EXISTING AREA LIGHT TO REMAIN, PROTECT IN PLACE.
18. EXISTING STORM DRAIN TO REMAIN.
19. PROPOSED 24" RCP. SEE DETAILS AND PROFILE "A", ON SHEET 4.
20. INSTALL 6" I.D. STEEL PIPE, L=65', S=5.3%.
21. CONSTRUCT CONC. COLLAR PER SPPWC 380-4.

USE TYPE II PORTLAND CEMENT FOR CONCRETE STRUCTURES.



GRAPHIC SCALE



(IN FEET)
1 inch = 20 ft.

CITY OF SANTA CLARITA
APPROVED
FOR
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UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ____________

DATE: ____________

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GEOTECHNICAL REVIEW BY:
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27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com

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XXX ____________ DATE ____________

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Attn: Mr. Jim Schrage

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Telephone (661) 297-2336 email: crc@socal.rr.com

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RON KOESTER RCE # 42399 — 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
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STATE OF CALIFORNIA

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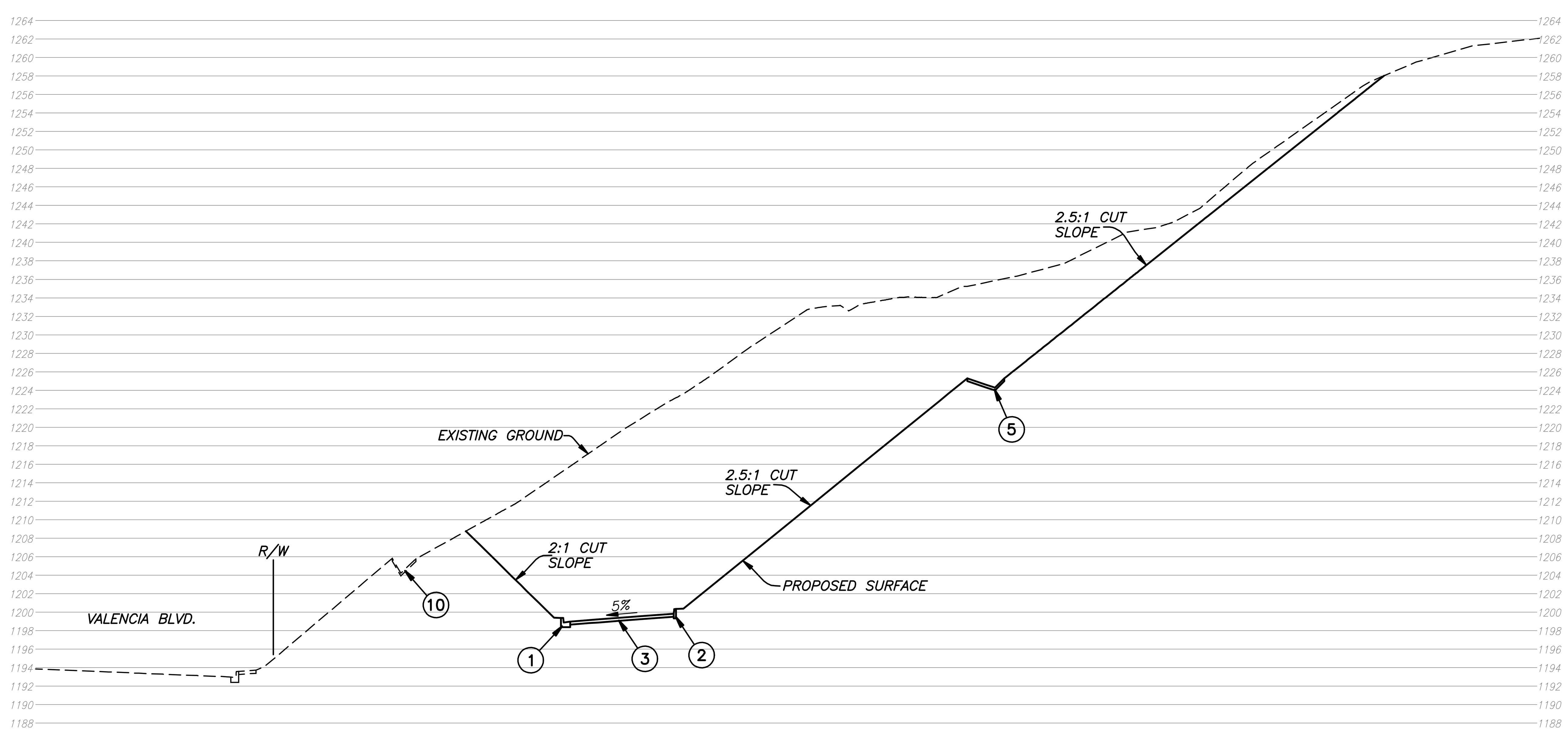
CITY OF SANTA CLARITA
GRADING PLAN
FINE GRADING PLAN

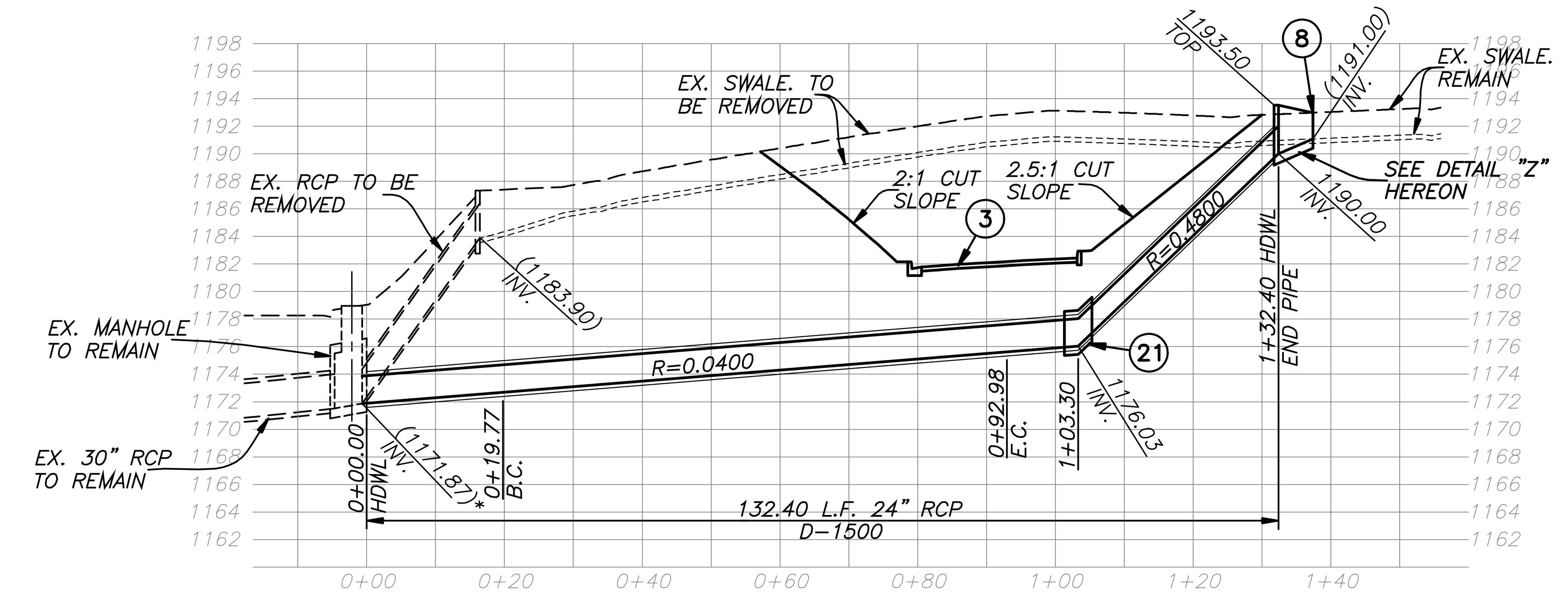
SCALE:	1"=20'
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	3 OF 4

GRA22-00000



SECTION A-A

SCALE: HORIZ: 1"=20'
VERT: 1"=10'



* EXIST. ELEVATION CALC'D AND ADJUSTED TO CURRENT BM PER EXIST. PLANS. ELEV. TO BE FIELD VERIFIED.

PRIVATE STORM DRAIN SYSTEM. TO BE MAINTAINED BY THE SANTA CLARITA COMMUNITY COLLEGE DISTRICT.

LINE 'A' PROFILE

SCALE: HORIZ: 1"=20'
VERT: 1"=10'

CONSTRUCTION NOTES:

1. CONSTRUCT 6" CONC. CURB AND 18" GUTTER PER SPPWC 120-3, A2-6(150).
2. CONSTRUCT 6" CONC. CURB PER SPPWC 120-3, A1-6(150).
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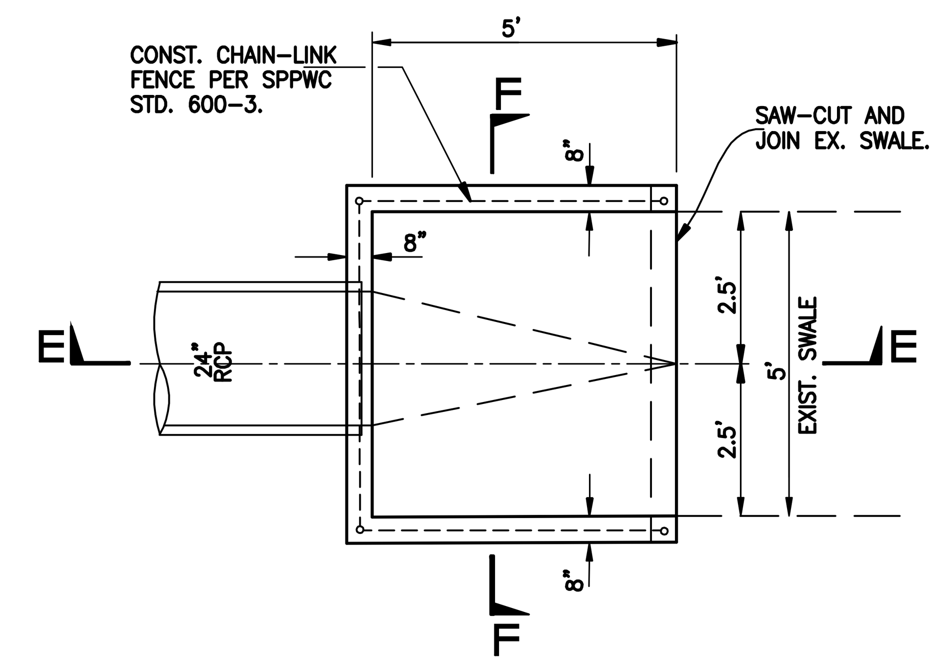
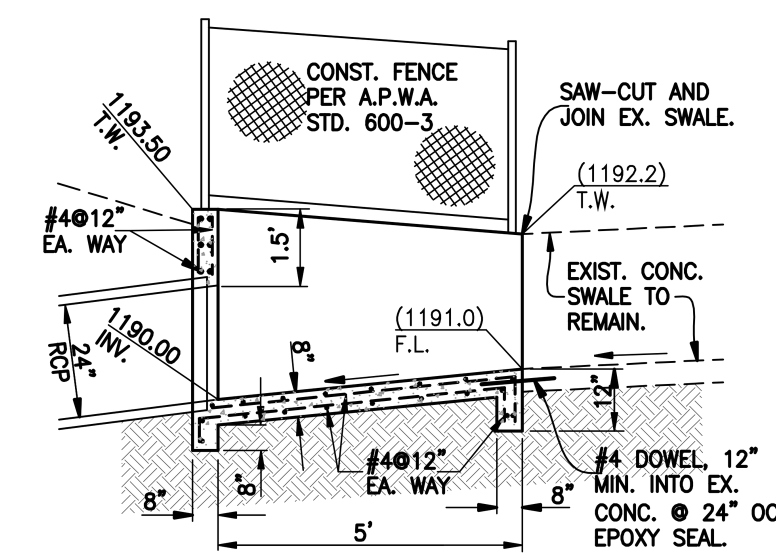
4. CONSTRUCT 36" CONC. SWALE PER DETAIL "B", ON SHEET 4.
5. CONSTRUCT 8' WIDE CONC. TERRACE DRAIN PER DETAIL "C", ON SHEET 4.
6. CONSTRUCT CONC. CROSS GUTTER PER SPPWC 122-3.
7. CONSTRUCT STREET IMPROVEMENTS PER SEPARATE ROAD PLANS.
8. SAW-CUT AND JOIN EXISTING.
9. SAW-CUT AND REMOVE EXISTING.
10. EXISTING CONC. SWALE TO REMAIN.
11. EXISTING CONC. SWALE TO BE REMOVED.
12. EXISTING CONC. CURB TO REMAIN.
13. EXISTING IMPROVEMENTS TO BE REMOVED.
14. EXISTING TREE TO BE REMOVED.
15. EXISTING TREE TO REMAIN, PROTECT IN PLACE.
16. EXISTING AREA LIGHT TO BE REMOVED OR RELOCATED.
17. EXISTING AREA LIGHT TO REMAIN, PROTECT IN PLACE.
18. EXISTING STORM DRAIN TO REMAIN.
19. PROPOSED 24" RCP. SEE DETAILS AND PROFILE "A", ON SHEET 4.
20. INSTALL 6" I.D. STEEL PIPE, L=65', S=5.3%.
21. CONSTRUCT CONC. COLLAR PER SPPWC 380-4.

USE TYPE II PORTLAND CEMENT FOR CONCRETE STRUCTURES.



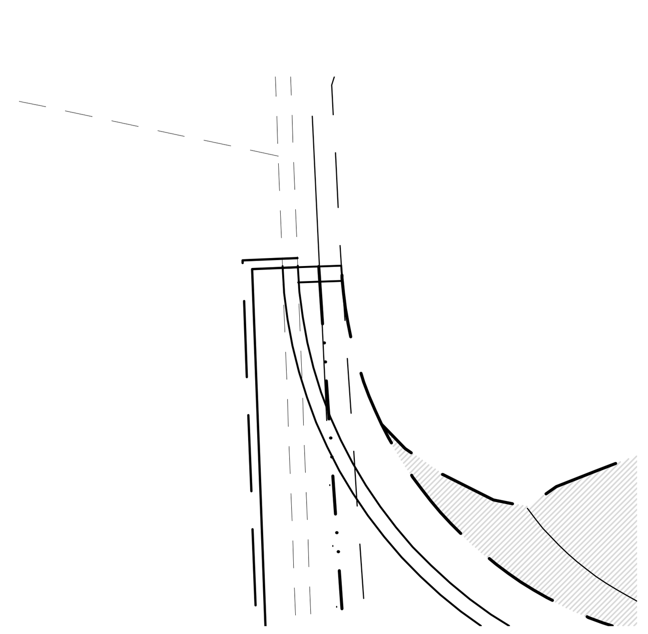
Z INLET STRUCTURE

NOT TO SCALE



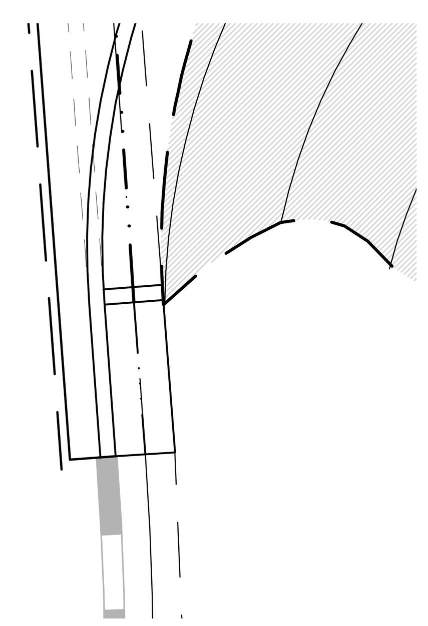
SECTION "E-E"

N.T.S.



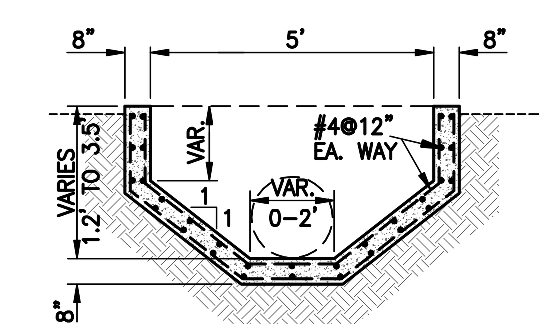
X DETAIL

SCALE: 1"=5'



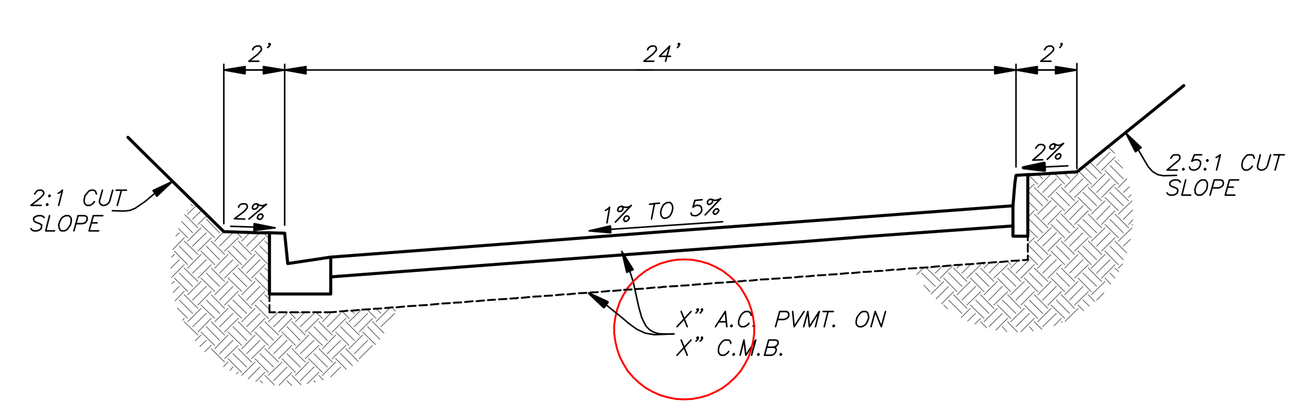
Y DETAIL

SCALE: 1"=5'



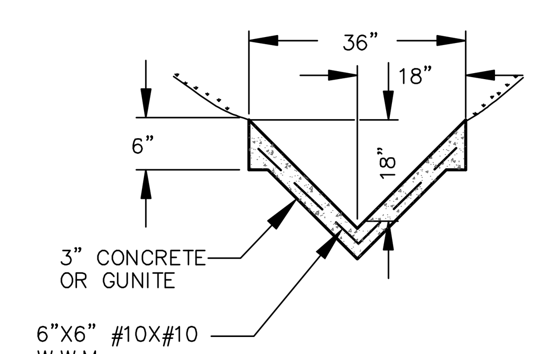
SECTION "F-F"

N.T.S.



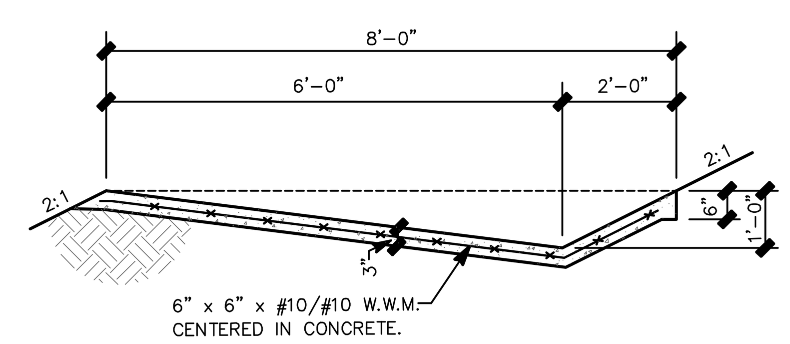
A ACCESS ROAD

N.T.S.



B 36" SWALE

N.T.S.



C 8' TERRACE DRAIN

N.T.S.

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ____________

DATE: ____________

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

THE STAMPING OF THESE PLANS AND SPECIFICATIONS SHALL NOT BE USED AS A SUBSTITUTE FOR PERMIT OR MEANS AS AN APPROVAL OF ANY VIOLATION OF THE PROVISIONS OF ANY CITY OR COUNTRY ORDINANCE OR STATE LAW.

GEOTECHNICAL REVIEW BY:
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com
PLANS PREPARED UNDER THE DIRECTION OF:
XXX DATE

PLANS PREPARED FOR:
Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com
PLANS PREPARED UNDER THE DIRECTION OF:
RON KOESTER RCE # 42399 31 MAY 2022 DATE

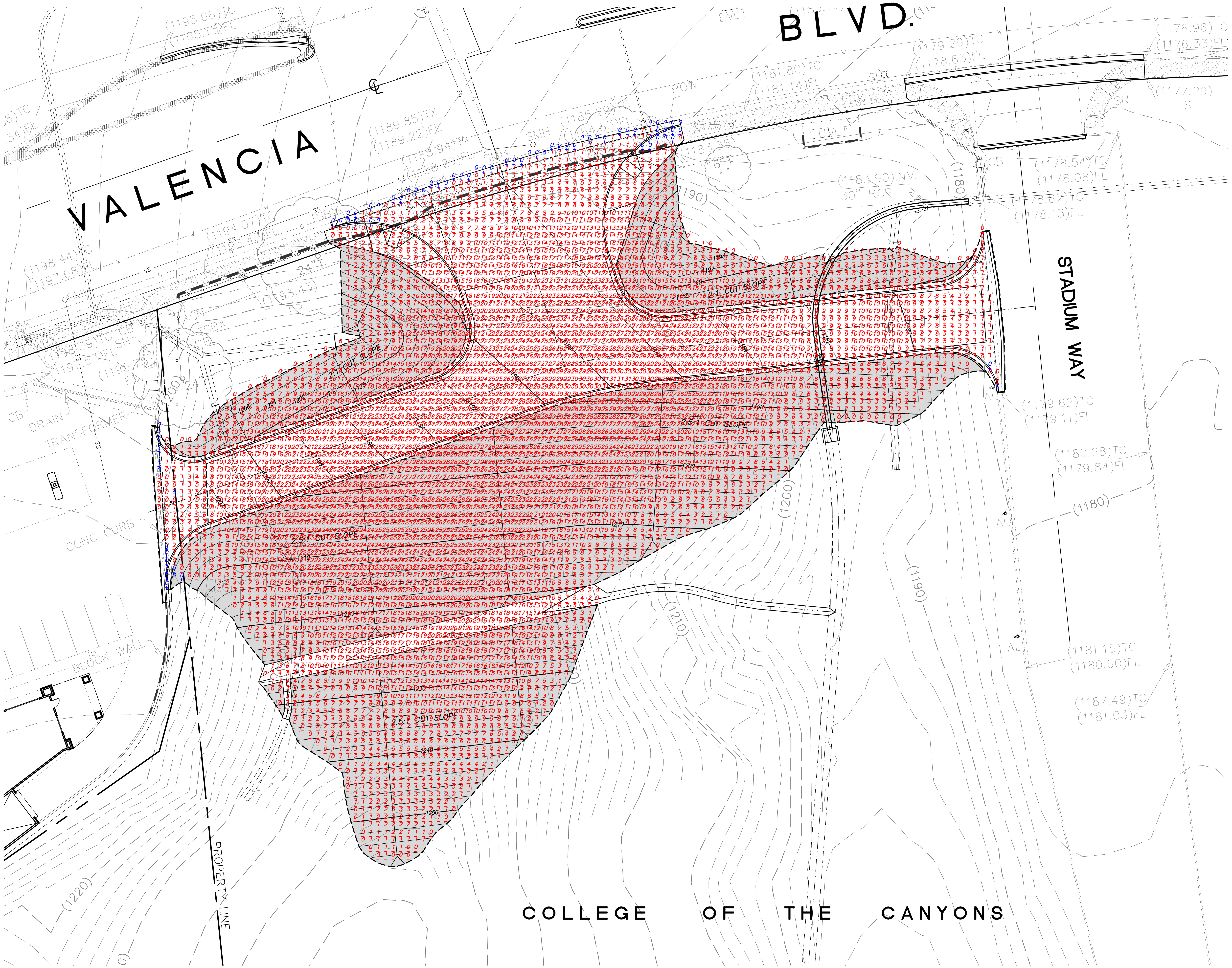
REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
X				

CITY OF SANTA CLARITA
GRADING PLAN
SECTIONS AND DETAILS

SCALE:	AS SHOWN
DATE:	05/31/22
JOB NO.	3547
CASE NO.	GRA22-00000
SHEET:	4 OF 4

GRA22-00000



YARDAGE CALCULATIONS:

GROSS YARDAGE VOLUMES:

CUT = 23,140 C.Y.   FILL = 0.0 C.Y.

EXPORT MATERIAL REQUIRED
23,140 C.Y

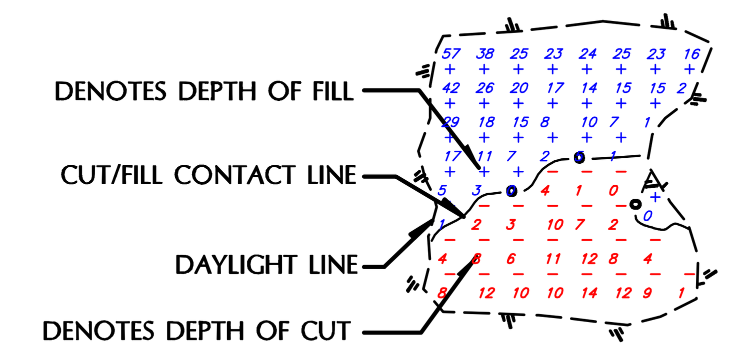
NOTES:

I. QUANTITIES SHOWN HEREON ARE FOR COST ESTIMATE PURPOSES ONLY AND SHALL NOT BE USED FOR BIDDING OR CONSTRUCTION PURPOSES. CONTRACTOR IS REQUIRED TO VERIFY ALL QUANTITIES PRIOR TO COMMENCEMENT OF WORK.

II. SEE SOILS REPORT FOR ADDITIONAL INFORMATION AND/OR REQUIREMENTS

III. EARTHWORK CALCULATIONS WERE DERIVED FROM UTILIZING AUTOCAD LDT 2009. THE GRID METHOD WAS USED WITH A GRID VALUE AND TERRAIN SAMPLING OF 1'X1'.

CUT-FILL LEGEND:



FOR REFERENCE ONLY

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:

CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER   RCE # 42399   31 MAY 2022
DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
X				

CITY OF SANTA CLARITA
GRADING PLAN
EARTHWORK REFERENCE

SCALE:	1"=20'
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	R-1 OF 1

Attachment B

Oak Tree Report

Oak Tree Report

Site:

APN #2861-001-900 and APN #2861-004-900
25000 Valencia Boulevard
Santa Clarita, California 91355

Prepared for:

Michael Baker International, Inc.
for:
Santa Clarita Community College District
26455 Rockwell Canyon Road
Valencia, California 91355

Prepared by:

Kay J. Greeley
Board Certified Master Arborist WE-1140B
5328 Alhama Drive
Woodland Hills, California 91364
(805) 577-8432

Date:

May 24, 2023

TABLE OF CONTENTS

Oak Tree Report

APN #2861-001-900 and APN #2861-004-900
Santa Clarita Community College District
25000 Valencia Boulevard
Santa Clarita, California 91355

INTRODUCTION

This Oak Tree Report was prepared at the request of Michael Baker International, Inc. The Santa Clarita Community College District proposes to construct a new driveway on APN #2861-001-900 and a portion of APN #2861-004-900. The driveway would connect W Road, located along the easterly edge of College of the Canyons' Cougar Stadium, and Valencia Boulevard at its intersection with Tourney Road. The driveway would also extend to the adjacent Union 76 gas station and car wash east of the two parcels.

This new driveway will improve access to and egress from both the adjacent Stadium parking and the Union 76 station. Currently all traffic exiting the northerly Stadium parking lot and the Union 76 station must make a right turn onto Valencia Boulevard. Traffic heading toward Interstate 5 or other points west must then make a U-turn on Valencia Boulevard to access the freeway. The proposed driveways will allow cars to make a left turn at the existing traffic signal at Valencia Boulevard and Tourney Road.

The site contains 29 protected oak trees, including 27 coast live oaks (*Quercus agrifolia*) and 2 valley oaks (*Q. lobata*).

A Heritage tree is defined as any oak measuring 108 inches or more in circumference or, in the case of a multiple-trunk oak tree, two or more trunks measuring 72 inches each or greater in circumference, measured four and one-half feet above the natural grade surrounding such tree. None of the oaks inventoried are Heritage trees.

The purpose of this Oak Tree Report is to document findings related to a ground-level visual analysis of the subject trees and to provide a project impact analysis, tree photographs, a tree location map, and a recommended tree replacement plan.

SCOPE OF WORK

Oak trees within the City of Santa Clarita are recognized for their significant historical, aesthetic, and environmental value. Unless allowed by an Oak Tree Permit, no person shall cut, remove, encroach into the Protected Zone, or relocate any tree of the genus *Quercus* that is at least 6 inches in circumference when measured at a point 4-1/2 feet above natural grade. An Oak Tree Permit is not required for this project, as the trees are on property owned by the Santa Clarita Community College District. However, this report was prepared in a manner consistent with the approach and methodology of the City of Santa Clarita Oak Tree Ordinance.

The scope of work included a full ground field observation of the cultural and physical conditions of a total of 29 oak trees. Pertinent data was observed and recorded on July 30 and August 4, 2021, by associate Certified Arborist Ann Burroughs. This data is summarized in the Table 1 in Appendix A. Photographs for reference and record purposes are included in Appendix B.

A Tree Location Map is included in Appendix D. This map was prepared using the preliminary DRC site plan prepared by CRC Enterprises dated May 31, 2022.

All information provided by the preparer is certified to be true and correct as of the date of the field observations.

TREE CHARACTERISTICS AND SITE CONDITIONS

A 1-1/4 inch diameter metal tag stamped with the tag number shown on the Tree Location Map in Appendix D was attached to the north side of 28 of the 29 oak trees located on the site. The tag numbers used include ‘154’ through ‘181’. Due to steep terrain, the tree referenced as #153 was not physically tagged.

Trees #154, #155, #160 through #172 and #178 through #181 are in the northeasterly portion of the site. Trees #156 and trees #173 through #177 are located within the southeasterly portion of the site. Trees #157, #158 and #159 are located within the northwesterly portion of the site. Tree #153 is located within the southwesterly portion of the site.

The trees range in age from sapling to mature. All the on-site oaks appear to be self-generated, and most are stump-sprouts.

The subject property is located on the southerly side of Valencia Boulevard at its intersection with Tourney Road, approximately 750 feet east of Interstate Highway 5. The site is bounded by Valencia Boulevard to the north, W Road to the east, undeveloped College of the Canyons property to the south and a gasoline station to the west. Currently the property is undeveloped, except for several concrete v-ditches to facilitate drainage.

The site topography is relatively steep, rising approximately 50 feet from Valencia Boulevard at the north to the southerly edge of the proposed project. The exception is the northeasterly corner of the property near the intersection of Valencia Boulevard and W Road, which rises gently to a small flat area. In addition to the oak trees there are a number of ornamental trees and shrubs planted along the north, east and west edges of the site.

The subject trees’ scientific name, common name, diameter at breast height, average canopy width, overall height, appearance rating, and significant comments are summarized in the Table 1 in Appendix A.

TREE HEALTH AND DEFECTS

The trees’ health ratings and significant comments are included in the Tree Data Table in Appendix A.

Issues of particular concern were noted as follows:

- The root crown of tree #154 is growing within approximately 6 inches of an adjacent concrete swale. The tree exhibits severe fire damage, a severe trunk wound, large areas of loose and missing bark on both the trunk and scaffold limbs, and co-dominant trunks with a severe amount of included bark. Co-dominant limbs are defined as two limbs or trunks of approximately the same diameter that arise from the same point. These limbs lack a normal branch union and therefore form a weak attachment. A bark inclusion can occur between limbs with narrow angles of attachment. As the tree expands radially, ingrown layers of bark form between the two. The embedded bark creates a weak structure and is a potential point of failure.

- Trees #155, #162 through #165, #168 through #172, #174, and #175 all exhibit multiple trunks with narrow angles of attachment and included bark. All 12 of the trees are still saplings and, if retained should be structurally pruned while still small to remove one or more of the co-dominant trunks to prevent future structural problems.
- Tree #157 exhibits multiple trunks with narrow angles of attachment and included bark. If the tree is retained, the two 1-inch trunks should be removed to prevent future structural problems.
- Tree #166 exhibits co-dominant scaffold limbs with a narrow angle of attachment and included bark. If retained, this young tree should be structurally pruned while still small to prevent future structural problems.
- Tree #167 exhibits co-dominant trunks with a narrow angle of attachment and a moderate amount of included bark. If retained, this young tree should be structurally pruned while still small to prevent future structural problems.
- Tree #176 exhibits moderate to severe fire damage, a severe trunk wound, large areas of loose and missing bark on the trunk and co-dominant trunks with a low amount of included bark. If the tree is retained, the 3-inch trunk should be removed to prevent future structural problems.
- The root crown of tree #178 is growing immediately against the adjacent concrete culvert. If this tree is retained, there will be wounding of the trunk over time, and possible eventual damage to the culvert.

IMPACT ANALYSIS

The property owner proposes to construct a new driveway connecting W Road and Valencia Boulevard at its intersection with Tourney Road. A second driveway leading from the adjacent Union 76 gas station and car wash west of the parcels will also connect with Valencia Boulevard at this intersection. Grading of the parcels to accommodate the driveways will also be required.

Eight of the subject trees would experience no encroachment within their protected zones if the proposed work is implemented as designed. Nine trees would experience encroachment within their protected zones. Twelve of the subject trees would require removal if the proposed work is implemented as designed. The disposition, general location and reason for the proposed removal are summarized in Table 2 in Appendix A.

In determining whether a tree could be preserved, guidelines contained in the International Society of Arboriculture Best Management Practices (BMP) for Managing Trees during Construction and BMP for Root Management were utilized. Coast live oaks are reported to exhibit a high tolerance to construction impacts; valley oaks are reported to have a moderate tolerance to construction impacts. Specific comments are as follows:

No Encroachment:

Trees #153, #158, #167 and #173 through #177 would experience no direct impacts within their protected zones.

Removal:

Trees #154, #155, #160 through #163, #165, #169, #171, #172, #178 and #179 would require removal to implement the project as designed. No heritage trees would require removal to implement the project as proposed.

Trees #154 and #155: This mature coast live oak and young coast live oak, respectively, are located within the footprint of the exit lane leading from W Road. They would require removal to implement the project as proposed.

Tree #156: This mature valley oak is located near the southerly edge of the project. Using the BMP, the recommended tree protection zone (TPZ) for a mature valley oak of this size is 14 feet.

Construction of a new concrete swale to connect with the existing within the easterly portion of the site would occur within approximately 14 feet of its trunk, just within the edge of the drip line. Given the distance of the construction from its trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #157: This mature coast live oak is located near the westerly property line. Using the BMP, the recommended TPZ for a mature coast live oak of this size is 4.1 feet.

Demolition of an existing concrete swale would occur within approximately 6 feet of its trunk and grading to accommodate the westerly driveway would occur within approximately 7.9 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #159: This young coast live oak is located within the westerly portion of the site near the sidewalk that runs along Valencia Boulevard. Using the BMP, the recommended TPZ for a young coast live oak of this size is approximately 1 foot.

Grading to accommodate the Valencia Boulevard entry/exit would occur within approximately 8.8 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Trees #160 and #161: This young coast live oak and young valley oak, respectively, are located within the footprint of the exit lane leading to Valencia Boulevard. They would require removal to implement the project as proposed.

Trees #162 and #163: These two young coast live oaks are located east of the exit to Valencia Boulevard. They are within the footprint of grading to accommodate the exit. They would require removal to implement the project as proposed.

Tree #164: This young coast live oak is located east of the exit to Valencia Boulevard. Using the BMP, the recommended TPZ for a young coast live oak of this size is approximately 1 foot.

Grading to accommodate the exit driveway would occur within approximately 8.2 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #165: This young coast live oak is located within the footprint of the ADA accessible curb ramp east of the exit lane leading to Valencia Boulevard. It would require removal to implement the project as proposed.

Tree #166: This mature coast live oak is located east of the exit to Valencia Boulevard. Using the BMP, the recommended TPZ for a mature coast live oak of this size is 4 feet.

Grading to accommodate the exit driveway would occur within approximately 14.5 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #168: This young coast live oak is located within the easterly portion of the site. Using the BMP, the recommended TPZ for a young coast live oak of this size is approximately 1 foot.

Demolition of an existing concrete swale and installation of new reinforced concrete pipe would occur within approximately 11.2 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #169: This young coast live oak is located within easterly portion of the site. It is within the footprint of demolition of an existing concrete swale and installation of new reinforced concrete pipe. It would require removal to implement the project as proposed.

Tree #170: This young coast live oak is located within easterly portion of the site. Using the BMP, the recommended TPZ for a young coast live oak of this size is 1.5 feet.

Demolition of an existing concrete swale would occur within approximately 4.2 feet of its trunk and grading to accommodate the easterly driveway would occur within approximately 13 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #171: This young coast live oak is located within the easterly portion of the site. It is within the footprint of grading to accommodate the easterly driveway. It would require removal to implement the project as proposed.

Tree #172: This young coast live oak is located within the footprint of the exit lane leading from W Road. It would require removal to implement the project as proposed.

Tree #178: This young coast live oak is located within the easterly portion of the site. It is within the footprint of demolition of an existing concrete swale and installation of new reinforced concrete pipe. It would require removal to implement the project as proposed.

Tree #179: This young coast live oak is located within the easterly portion of the site. It is within the footprint of grading to accommodate the easterly driveway. It would require removal to implement the project as proposed.

Tree #180: This young coast live oak is located within the easterly portion of the site. Using the BMP, the recommended TPZ for a young coast live oak of this size is 1 foot.

Demolition of an existing concrete swale and installation of new reinforced concrete pipe would occur within approximately 14.2 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

Tree #181: This young coast live oak is located within the easterly portion of the site. Using the BMP, the recommended TPZ for a mature coast live oak of this size is 1.5 feet.

Demolition of an existing concrete sidewalk would occur within approximately 10.2 feet of its trunk. Given the distance of the work from the trunk, it is likely the tree can sustain this level of impact without long term adverse impacts if the work is performed in accordance with the procedures described in the General Recommendations section.

All work within the tree's protected zone should be performed with hand tools or small equipment under the observation of this office.

TREE APPRAISALS AND REPLACEMENTS

An appraisal was developed for each tree to be removed using the 10th Edition of the Guide for Plant Appraisal. The calculations are provided in Appendix C. The total value of the 12 trees to be removed is $45,680. A draft Tree Replacement Plan was prepared to cover the newly graded slopes with new oak trees to create a mixed valley oak and coast live oak habitat comprised of a mix of 36” box, 24” box, and 15 gallon sized valley oaks and coast live oaks. The graded areas would be sprayed with an erosion control hydroseed mix to provide slope stabilization while the trees establish. An above-ground temporary irrigation system will also be provided to operate for three to five years, until the trees establish sufficiently to survive on native rainfall.

The Tree Replacement Plan is included in Appendix D. It includes the following mix of trees:

Size	Quantity	Price	Total
15 gallon	13	$500	$6,500
24” box	23	$1,200	$27,600
36” box	4	$3,000	$12,000

The above total for the trees to be installed is $46,100, slightly more than the trees removed at $45,680. The sizes of the replacement trees selected are layered to place larger specimens near Valencia Boulevard and the new driveway. The graded slopes are steep, at 2.5:1, which limits the ability to plant larger specimens higher on the slope.

GENERAL RECOMMENDATIONS

The following general recommendations are provided for educational purposes and should be followed to establish and maintain a healthy cultural environment for trees. These recommendations apply to trees in general; specific questions should always be referred to the project arborist. The recommendations also apply to the care of most ornamental trees.

WORK WITHIN THE PROTECTED ZONE

The Protected Zone is an area surrounding a tree, defined within the City of Santa Clarita Oak Tree Ordinance. It includes all area within the dripline of the tree, plus 5 feet beyond the dripline. This distance must be no less than 15 feet from the trunk. Given the high sensitivity of trees in general, great care must be taken when work is conducted within the Protected Zone. Specifically:

Observation -- All work conducted within the Protected Zone of an oak tree should be performed within the presence of a qualified arborist. This will help to ensure that work is performed in a manner that will not harm the tree.

Notice – A minimum of 48 hours’ notice should be provided to the project arborist prior to the planned start of work. The notice will ensure that the project receives the highest possible scheduling priority and avoid delays.

Hand Tools -- All work within the Protected Zone of trees to remain should be accomplished with the use of hand tools only. Except under special circumstances, tractors, backhoes, and other vehicles cannot be operated in a manner that will preserve major tree roots, minimize soil compaction, and ensure the safety of both the vehicle operator and the tree.

WORK OUTSIDE OF THE PROTECTED ZONE

To protect trees within the vicinity of major construction, trees should be temporarily fenced at the edge of the Protected Zone prior to the beginning of construction operations on a site. The fence should be constructed of chain link material, a minimum of five feet in height. The project arborist should be contacted to develop a fencing plan. The temporary fencing may be removed at the completion of the construction.

PLANTING WITHIN THE PROTECTED ZONE

Planting within the Protected Zone of native trees is generally discouraged. Ideally, the natural leaf litter should be allowed to collect beneath the tree, creating a natural mulch and fertilizer. If planting is necessary or the natural leaf litter is removed, the following should be considered:

Plant Material -- Only compatible plantings should be utilized. A good reference planting under oak trees is Compatible Plantings Under and Around Oaks by the California Oak Foundation.

Irrigation -- No spray-type irrigation systems should be used within the Protected Zone. It is important that sprinkler systems do not throw water against the trunk of any tree. A continuously wet soil condition near the root crown (the area where the tree trunk meets the ground) favors the growth of predatory disease organisms. The two most prominent organisms in southern California are avocado root rot (*Phytophthora cinnamomi*) and oak root fungus (*Armillaria mellea*). At a minimum, all spray irrigation should be kept at least 15 feet from the trunk to prevent drift onto the root crown.

Resistant Varieties -- Avoid plants that are susceptible to either avocado root rot or oak root fungus. Oak trees are particularly susceptible to these diseases in developed areas. Avoiding other plants susceptible to these diseases will also help to keep the diseases in a dormant state. Consult publications by the University of California Cooperative Extension for plant lists.

Mulch -- Place a 4-inch-thick layer of organic mulch throughout the Protected Zone of each tree. Arborist wood chips perform well in terms of moisture retention, temperature moderation, weed control, and sustainability. Wood chips should not be incorporated into the soil. All mulch should be kept from direct contact with the tree. These mulches are beneficial when the natural leaf litter is not available.

TREE MAINTENANCE AND PRUNING OPERATIONS

Most trees require very little pruning, except for periodic deadwooding. However, if a tree has a major defect, the employment of proper pruning practices may be more desirable than the uncontrolled damage that could otherwise occur. Always consult qualified professionals for advice.

Ornamental or Aesthetic Pruning -- Removal of live tissue for the purpose of altering the appearance of an oak tree is not desirable. Activities such as thinning out, heading up, or other similar practices contribute to the onset of insect and disease attacks.

Deadwooding -- Removal of dead tissue, regardless of size, may usually be performed without a permit. All pruning should follow standards endorsed by the International Society of Arboriculture.

Other Pruning Operations -- Branches that are considered to be unsafe due to decay, cavities, cracks, physical imbalance, fire damage, disease, or insects should be referred to a qualified arborist for inspection, especially if the branches exceed 6 inches in circumference at the location of the cut. A brief written report will be prepared by the project arborist to provide the basis for the request.

Cavities and Hollows -- Cavities and hollows should be kept free of loose debris. Some contain decayed wood; these should generally be referred to a qualified arborist for treatment. Concrete or other materials should not be used to seal or fill in cavities or hollows. These materials create a haven for diseases and insects over time. Openings may be covered with screening to prevent debris build-up and habitation by bees.

Wound Seal -- Pruning wounds should not be sealed with any type of compound. Over time, these materials crack and create entry points for disease and insects. A proper pruning cut will heal naturally over a short period of time.

WATERING AND FERTILIZATION

Winter rains should be sufficient to provide the water needed for native trees in natural areas. Trees in landscaped areas will usually receive enough water from adjacent plantings. If you suspect that a tree needs supplemental water, contact the project arborist for advice.

Watering -- If supplemental water is required, use a water probe, such as a "Ross Root Feeder" to apply the water. Alternatively, a low volume soaker hose could be utilized. Apply the water at various locations, just outside the dripline of the tree. A total of 15 to 20 hours of low-volume application should suffice. Repeat this watering cycle every one to two months as needed. Water should generally not be applied to native trees in the summer, as they are effectively dormant and cannot accept the water.

Fertilization -- Fertilizer can be applied along with the water. A total of 0.75 pound of actual nitrogen per inch of trunk diameter per year is a basic rule-of-thumb. However, ask your local certified nurseryman for a specific recommendation and follow the manufacturer's directions carefully. Over-fertilization can be deadly and is generally not required for native trees.

Aeration -- Ventilation of the root system can be very beneficial in areas where soil has been compacted. Hand dig holes 6 inches in diameter to a depth of 2 feet. Do not cut any roots more than 1 inch in diameter. Dig the holes 2 feet on center, in concentric circles around the trunk, throughout the dripline. If possible, add holes outside of the dripline. Fill the holes with an organic matter. If leaf litter is not available, organic mulch will be beneficial. This organic matter will be decomposed, producing a year-round source of fertilizer for the tree.

DISEASES AND INSECTS

Effective pest control starts with regular observation by the property owner. Issues such as abnormal leaf drop, oozing sap, and discolored or dying leaves indicate that something has changed, and expert inspection is required. Property owners should be very careful when using pesticides around trees. Herbicides should never be utilized within one hundred feet of a tree, unless applied by a certified pesticide applicator.

Misuse of these compounds can lead to the death of beneficial organisms or even to the death of the tree.

GRADE CHANGES

Any change to the grade at the root crown of a tree can have a negative impact. As little as 6 inches can lead to the death of the tree. Drainage patterns should be maintained to prevent water from flowing and ponding at the base of a tree. If excess material builds up at the root crown, use a small shovel to remove the excess soil and debris. The flare at the root crown should just be visible.

INSPECTION

Trees should be inspected on a periodic basis by a qualified arborist. The inspection basis should be determined by the relative hazard value of the tree. For example, trees surrounding a high-use business should be inspected on a quarterly basis, whereas trees located within a low-use open space might only require bi-annual inspection. It is the responsibility of the property owner to establish and implement an appropriate inspection schedule upon the recommendation provided by the qualified arborist.

WARRANTY

The trees discussed herein were generally reviewed for physical, biological, functional, and aesthetic conditions. This examination was conducted in accordance with presently accepted industry procedures: an at-grade, macro-visual observation only. No extensive microbiological, soil/root excavation, upper crown examination, nor internal tree investigation was conducted and therefore, the reportings herein reflect the overall visual appearance of the trees on the date reviewed. No warranty is implied as to the potential failure, health, or demise of any part or the whole of any tree described in this report.

Clients are advised that should physical or biological concerns be evidenced for any specimen within this report, prudent further investigation, detailed analysis, or remedial action may be required.

As living organisms, plants continually exhibit growth and response to environmental changes that influence the development, health, and vigor of the specimen. These influences may not be externally visible and may be present or develop over various time periods depending on the site conditions.

It is recommended that due to the general nature of plant development and continued environmental and physical influences on vegetation at a specific site, regular monitoring by a qualified arborist is scheduled.

Locations of property lines or exact tree locations, site amenities, structures or easements are assumed to be as illustrated on any enclosed maps. They are a composite of information provided by the client, records of fact and/or on-site field review. No investigation was made to verify these conditions.

This report represents the independent opinion of the preparer and was conducted per the client's scope of request. The report is therefore limited to the extent described herein.

APPENDIX A – SUMMARY TABLES

TABLE 1
OAK TREE INVENTORY

Tree Number	Species		dBH (inches)	Canopy (feet)	Height (feet)	Health	Appearance	Comments
	Scientific Name	Common Name						
153	*Quercus agrifolia*	coast live oak	4 (est.)	5	16	A	A	
154	*Quercus agrifolia*	coast live oak	18, 18	42	43	C-	C-	severe fire damage; loose, missing bark; co-dominant trunks with included bark; trunk 6 inches from concrete swale
155	*Quercus agrifolia*	coast live oak	2, 2, 1, 1	16	18	B	B+	stump sprout; additional dead trunk
156	*Quercus lobata*	valley oak	14	34	45	C	C	low to moderate dead wood
157	*Quercus agrifolia*	coast live oak	6, 1, 1	23	18	B	B	co-dominant trunks with included bark
158	*Quercus agrifolia*	coast live oak	6	15	14	B+	B	
159	*Quercus agrifolia*	coast live oak	1, 1	9	13	B	B	slightly sparse
160	*Quercus agrifolia*	coast live oak	3 @ 4.0'	11	15	B	B	slightly sparse; co-dominant trunks with included bark
161	*Quercus lobata*	valley oak	4	14	17	C	B-	sparse; small leaves
162	*Quercus agrifolia*	coast live oak	1, 1	9	13	B-	B-	slightly sparse; some necrotic foliage
163	*Quercus agrifolia*	coast live oak	1, 1, 1, 0.5, 0.5, 0.5	6	6	B	B	stump sprout
164	*Quercus agrifolia*	coast live oak	1, 1, 1, 1, 1, 1, 0.5	10	8	B+	B+	stump sprout co-dominant trunks with included bark
165	*Quercus agrifolia*	coast live oak	2, 2, 2	10	20	B	B-	stump sprout co-dominant trunks with included bark
166	*Quercus agrifolia*	coast live oak	6	18	28	B+	B+	co-dominant scaffolds with included bark
167	*Quercus agrifolia*	coast live oak	5, 4	22	25	A-	A-	co-dominant trunks with included bark

TABLE 1
OAK TREE INVENTORY

Tree Number	Species		dBH (inches)	Canopy (feet)	Height (feet)	Health	Appearance	Comments
	Scientific Name	Common Name						
168	*Quercus agrifolia*	coast live oak	1, 0.5, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,	5	6	B+	B+	stump sprout; codominant trunks with included bark
169	*Quercus agrifolia*	coast live oak	1, 1, 0.5, 0.5, 0.25, 0.25	6	8	A-	B+	stump sprout; codominant trunks with included bark
170	*Quercus agrifolia*	coast live oak	1.5, 1, 1, 1, 1, 0.5, 0.5	8	10	B	B	stump sprout; codominant trunks with included bark; slightly sparse
171	*Quercus agrifolia*	coast live oak	2, 1, 1, 0.5, 0.5	10	17	B+	B+	stump sprout; codominant trunks with included bark
172	*Quercus agrifolia*	coast live oak	2, 2, 1, 1	9	16	B+	B+	stump sprout co-dominant trunks with included bark
173	*Quercus agrifolia*	coast live oak	2, 1, 1	11	9	B+	B+	stump sprout; slightly sparse
174	*Quercus agrifolia*	coast live oak	3, 1, 1	10	15	A-	A-	stump sprout co-dominant trunks with included bark
175	*Quercus agrifolia*	coast live oak	1, 1, 0.5, 0.5	6	10	B+	B+	stump sprout co-dominant trunks with included bark
176	*Quercus agrifolia*	coast live oak	10 @ 4.0', 3	19	23	B-	B+	moderate to severe fire damage; loose, cracked and missing bark
177	*Quercus agrifolia*	coast live oak	11, 3, 2	24	32	C	B	severe fire damage; loose, cracked, missing bark; main trunk removed at 15 feet
178	*Quercus agrifolia*	coast live oak	2	7	19	B	B	
179	*Quercus agrifolia*	coast live oak	1, 1, 1	7	9	A-	B	stump sprout
180	*Quercus agrifolia*	coast live oak	1, 1, 1, 1	10	12	A-	B	stump sprout
181	*Quercus agrifolia*	coast live oak	2, 1	12	7	B-	B	severe bow in trunk

TABLE 2
IMPACT ANALYSIS

			Impact				
Tree #	Species	Diameter (dbh)	None	Encroach	Remove	Impacts	Comments
153	*Quercus agrifolia*	4 (est.)	X			no direct impacts anticipated	
154	*Quercus agrifolia*	18, 18			X	within exit leading from W Road	severe fire damage; loose, missing bark; co-dominant trunks, included bark; trunk 6 inches from concrete swale
155	*Quercus agrifolia*	2, 2, 1, 1			X	within exit leading from W Road	stump sprout; additional dead trunk
156	*Quercus lobata*	14		X		construction of concrete v-ditch south of driveways	low to moderate dead wood
157	*Quercus agrifolia*	6, 1, 1		X		removal of swale and grading to accommodate westerly driveway	co-dominant trunks with included bark
158	*Quercus agrifolia*	6	X			no direct impacts anticipated	
159	*Quercus agrifolia*	1, 1		X		grading for Valencia Boulevard entry/exit	slightly sparse
160	*Quercus agrifolia*	3 @ 4.0'			X	within Valencia Boulevard entry/exit	slightly sparse; co-dominant trunks with included bark
161	*Quercus lobata*	4			X	within Valencia Boulevard entry/exit	sparse; small leaves
162	*Quercus agrifolia*	1, 1			X	within grading east of Valencia Boulevard entry/exit	slightly sparse; some necrotic foliage
163	*Quercus agrifolia*	1, 1, 1, 0.5, 0.5, 0.5			X	within grading east of Valencia Boulevard entry/exit	stump sprout
164	*Quercus agrifolia*	1, 1, 1, 1, 1, 1, 0.5		X		grading east of Valencia Boulevard entry/exit	stump sprout co-dominant trunks with included bark
165	*Quercus agrifolia*	2, 2, 2			X	within new ADA curb ramp east of Valencia Boulevard entry/exit	stump sprout co-dominant trunks with included bark
166	*Quercus agrifolia*	6		X		grading to accommodate Valencia Boulevard entry/exit	co-dominant scaffolds with included bark
167	*Quercus agrifolia*	5, 4	X			no direct impacts anticipated	co-dominant trunks with included bark
168	*Quercus agrifolia*	1, 0.5, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25, 0.25,		X		removal of swale and installation of pipe northeast corner of site	stump sprout; codominant trunks with included bark
169	*Quercus agrifolia*	1, 1, 0.5, 0.5, 0.25, 0.25			X	removal of swale and installation of pipe northeast corner of site	stump sprout; codominant trunks with included bark
170	*Quercus agrifolia*	1.5, 1, 1, 1, 1, 0.5, 0.5		X		removal of swale and grading at northeast corner of site	stump sprout; codominant trunks with included bark; slightly sparse

TABLE 2
IMPACT ANALYSIS

			Impact				
Tree #	Species	Diameter (dbh)	None	Encroach	Remove	Impacts	Comments
171	*Quercus agrifolia*	2, 1, 1, 0.5, 0.5			X	within grading east to accommodate easterly driveway	stump sprout; codominant trunks with included bark
172	*Quercus agrifolia*	2, 2, 1, 1			X	within exit leading from W Road	stump sprout co-dominant trunks with included bark
173	*Quercus agrifolia*	2, 1, 1	X			no direct impacts anticipated	stump sprout; slightly sparse
174	*Quercus agrifolia*	3, 1, 1	X			no direct impacts anticipated	stump sprout co-dominant trunks with included bark
175	*Quercus agrifolia*	1, 1, 0.5, 0.5	X			no direct impacts anticipated	stump sprout co-dominant trunks with included bark
176	*Quercus agrifolia*	10 @ 4.0', 3	X			no direct impacts anticipated	moderate to severe fire damage; loose, cracked and missing bark
177	*Quercus agrifolia*	11, 3, 2	X			no direct impacts anticipated	severe fire damage; loose, cracked, missing bark; main trunk removed at 15 feet
178	*Quercus agrifolia*	2			X	removal of swale and installation of pipe northeast corner of site	
179	*Quercus agrifolia*	1, 1, 1			X	within grading east of Valencia Boulevard entry/exit	stump sprout
180	*Quercus agrifolia*	1, 1, 1, 1		X		removal of swale and installation of pipe northeast corner of site	stump sprout
181	*Quercus agrifolia*	2, 1		X		demolition of existing concrete sidewalk	severe bow in trunk
	Total		**8**	**9**	**12**		

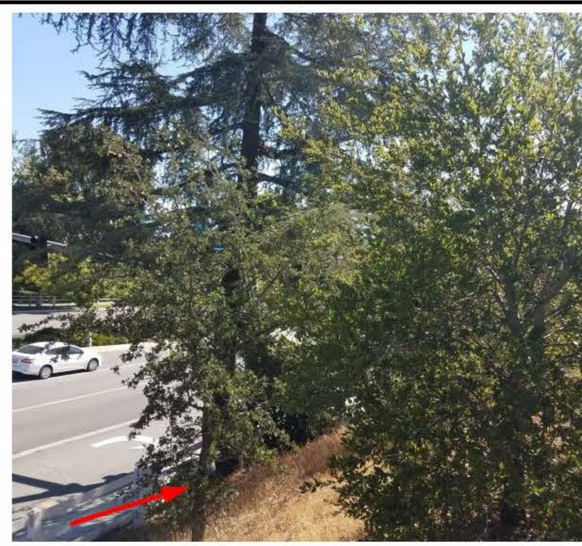
APPENDIX B – PHOTOGRAPHS

Tree #153

Tree #154

Tree #155

Tree #156

	
Tree #157	Trees 158 (right), 159 (left)
	
Tree #160	Tree #161

Tree #162

Tree #163

Tree #164

Tree #165


Tree #166


Tree #167


Tree #168


Tree #169

	
Tree #170	Tree #171
	
Tree #172	Tree #173

Tree #174

Tree #175

Tree #176

Tree #177

Tree #178

Tree #179

Tree #180

Tree #181

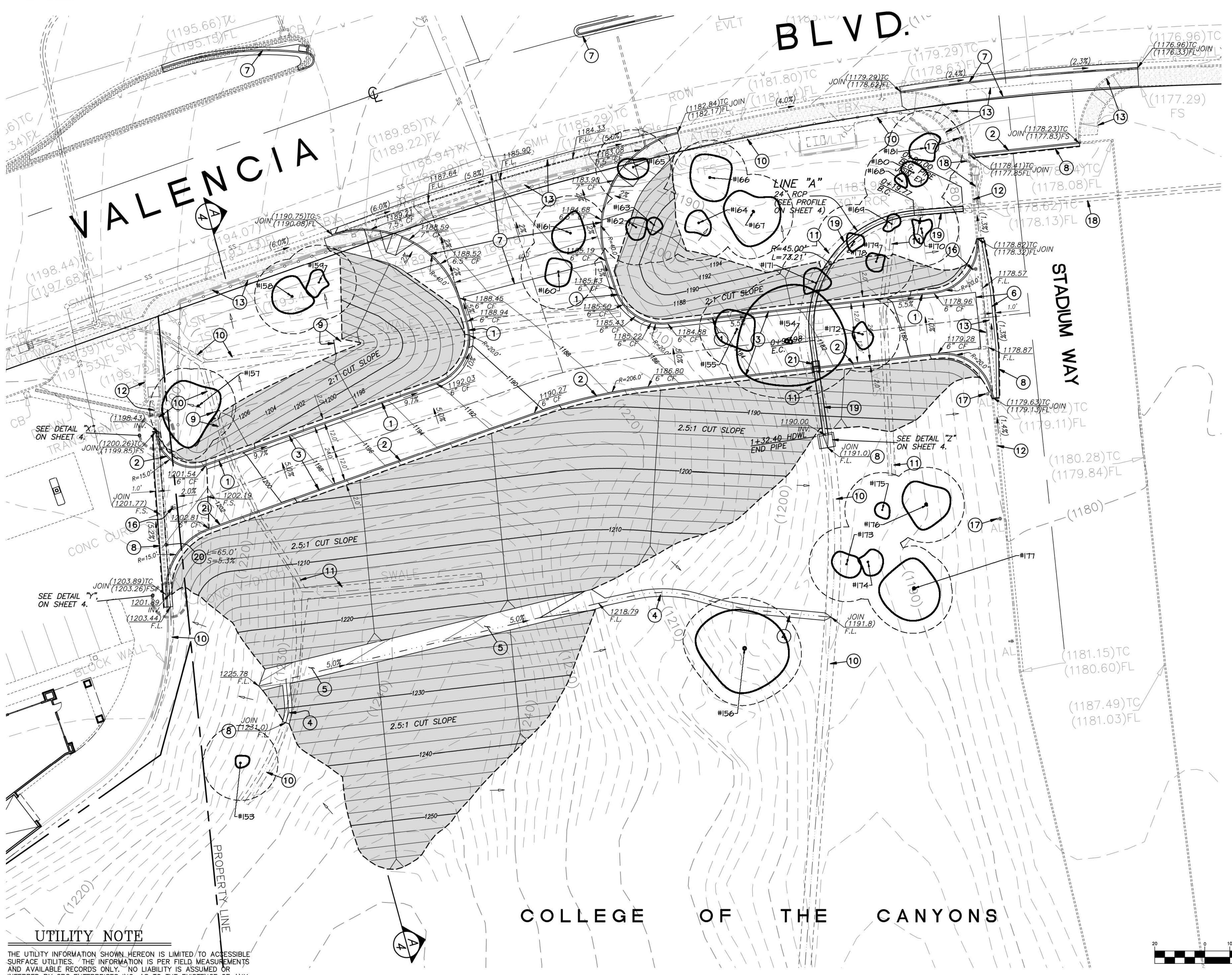
APPENDIX C – TREE APPRAISALS

TREE APPRAISALS

		Subject Tree									Replacement Tree			Calculations			Additional Costs					
Tree Number	Species	Trunk Diameter (in.)	Cross Sectional Area (in^2.)	Condition Rating: Health	Condition Rating: Structure	Condition Rating: Form	Condition Rating: Overall Rating	Functional Limitations	External Limitations	Trunk Diameter (in.)	Cross Sectional Area (in^2.)	Replacement Cost	Unit Tree Cost	Basic Reproduction Cost	Depreciated Reproduction Cost	Clean-up	Replacement Tree Installation	Aftercare	Total Additional Costs	Total Reproduction Cost	Rounded
154	*Quercus agrifolia*	25.5	508.9	50%	25%	50%	42%	75%	100%	2.0	3.1	$597.00	$190.03	$96,714	$30,223	$0	$600	$0	$600	$30,823	$30,800
155	*Quercus agrifolia*	3.2	7.9	85%	25%	50%	53%	100%	100%	2.0	3.1	$597.00	$190.03	$1,493	$796	$0	$600	$0	$600	$1,396	$1,400
160	*Quercus agrifolia*	3.0	7.1	85%	95%	90%	90%	100%	100%	2.0	3.1	$597.00	$190.03	$1,343	$1,209	$0	$600	$0	$600	$1,809	$1,810
161	*Quercus agrifolia*	4.0	12.6	85%	95%	90%	90%	100%	100%	2.0	3.1	$597.00	$190.03	$2,388	$2,149	$0	$600	$0	$600	$2,749	$2,750
162	*Quercus agrifolia*	1.4	1.6	85%	50%	90%	75%	100%	100%	2.0	3.1	$597.00	$190.03	$299	$224	$0	$600	$0	$600	$824	$820
163	*Quercus agrifolia*	1.9	2.9	85%	25%	85%	65%	100%	100%	2.0	3.1	$597.00	$190.03	$560	$364	$0	$600	$0	$600	$964	$960
165	*Quercus agrifolia*	3.5	9.4	85%	50%	50%	62%	100%	100%	2.0	3.1	$597.00	$190.03	$1,791	$1,104	$0	$600	$0	$600	$1,704	$1,700
169	*Quercus agrifolia*	1.6	2.1	85%	25%	90%	67%	100%	100%	2.0	3.1	$597.00	$190.03	$392	$261	$0	$600	$0	$600	$861	$860
171	*Quercus agrifolia*	2.5	5.1	85%	25%	85%	65%	100%	100%	2.0	3.1	$597.00	$190.03	$970	$631	$0	$600	$0	$600	$1,231	$1,230
172	*Quercus agrifolia*	3.2	7.9	85%	25%	90%	67%	100%	100%	2.0	3.1	$597.00	$190.03	$1,493	$995	$0	$600	$0	$600	$1,595	$1,600
178	*Quercus agrifolia*	2.0	3.1	85%	95%	85%	88%	100%	50%	2.0	3.1	$597.00	$190.03	$597	$264	$0	$600	$0	$600	$864	$860
179	*Quercus agrifolia*	1.7	2.4	85%	25%	85%	65%	100%	100%	2.0	3.1	$597.00	$190.03	$448	$291	$0	$600	$0	$600	$891	$890
																					$45,680

APPENDIX D– TREE LOCATION MAP AND REPLACEMENT PLANS

GRA22-00000



CONSTRUCTION NOTES:

1 – CONSTRUCT 6" CONC. CURB AND 18" GUTTER PER SPPWC 120–3, A2–6(150).
2 – CONSTRUCT 6" CONC. CURB PER SPPWC 120–3, A1–6(150).
3 – CONSTRUCT 24' WIDE PRIVATE ROAD PER DETAIL "A", ON SHEET 4.
4 – CONSTRUCT 36" CONC. SWALE PER DETAIL "B", ON SHEET 4.
5 – CONSTRUCT 8' WIDE CONC. TERRACE DRAIN PER DETAIL "C", ON SHEET 4.
6 – CONSTRUCT CONC. CROSS GUTTER PER SPPWC 122–3.
7 – CONSTRUCT STREET IMPROVEMENTS PER SEPARATE ROAD PLANS.
8 – SAW–CUT AND JOIN EXISTING.
9 – SAW–CUT AND REMOVE EXISTING.
10 – EXISTING CONC. SWALE TO REMAIN.
11 – EXISTING CONC. SWALE TO BE REMOVED.
12 – EXISTING CONC. CURB TO REMAIN.
13 – EXISTING IMPROVEMENTS TO BE REMOVED.

16 – EXISTING AREA LIGHT TO BE REMOVED OR RELOCATED.
17 – EXISTING AREA LIGHT TO REMAIN, PROTECT IN PLACE.
18 – EXISTING STORM DRAIN TO REMAIN.
19 – PROPOSED 24" RCP. SEE DETAILS AND PROFILE "A", ON SHEET 4.
20 – INSTALL 6" I.D. STEEL PIPE, L=65', S=5.3%.
21 – CONSTRUCT CONC. COLLAR PER SPPWC 380–4.

USE TYPE II PORTLAND CEMENT FOR CONCRETE STRUCTURES.

OAK TREE LOCATION MAP
PREPARED BY:
KAY J. GREELEY, RLA, BCMA
5328 ALHAMA DRIVE
WOODLAND HILLS, CALIFORNIA 91364
(805) 577-8432

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ______________________

DATE: ______________________

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

THE STAMPING OF THESE PLANS AND SPECIFICATIONS SHALL NOT BE USED AS A SUBSTITUTE FOR PERMIT OR MEANS AS AN APPROVAL OF ANY VIOLATION OF THE PROVISIONS OF ANY CITY OR COUNTRY ORDINANCE OR STATE LAW.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY NOTE

THE UTILITY INFORMATION SHOWN HEREON IS LIMITED TO ACCESSIBLE SURFACE UTILITIES. THE INFORMATION IS PER FIELD MEASUREMENTS AND AVAILABLE RECORDS ONLY. NO LIABILITY IS ASSUMED OR INFERRED BY CRC ENTERPRISES INC. AS TO THE EXISTENCE OF ANY UNDERGROUND, OR INACCESSIBLE UTILITY STRUCTURES.

GEOTECHNICAL REVIEW BY:
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com

PLANS PREPARED UNDER THE DIRECTION OF:

XXX ______________ DATE ______________

PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

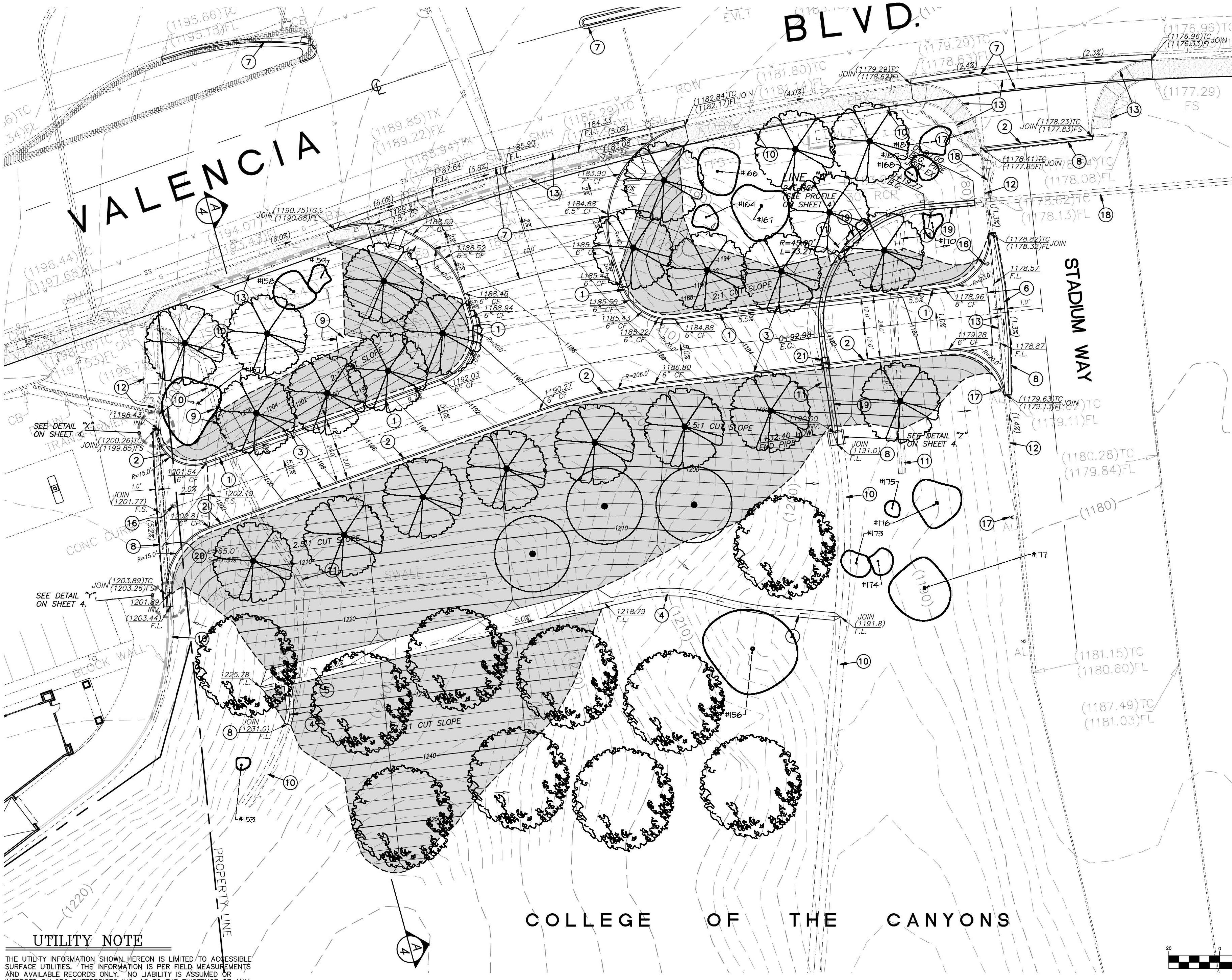
RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
△				

CITY OF SANTA CLARITA
GRADING PLAN
FINE GRADING PLAN

SCALE:	1"=20'
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	3 OF 4



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8. – SAW-CUT AND JOIN EXISTING.
9. – SAW-CUT AND REMOVE EXISTING.
10. – EXISTING CONC. SWALE TO REMAIN.
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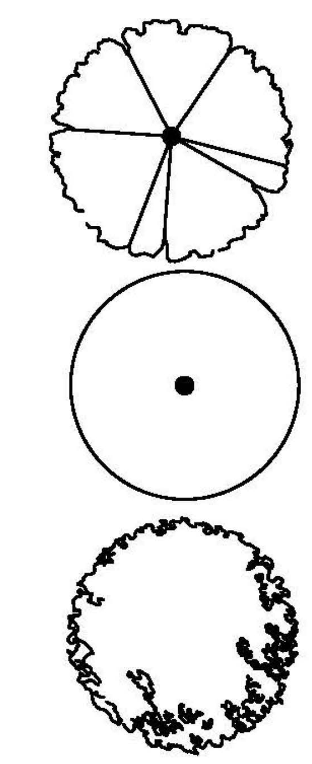
21. – CONSTRUCT CONC. COLLAR PER SPPWC 380–4.

USE TYPE II PORTLAND CEMENT FOR CONCRETE STRUCTURES.

OAK TREE REPLACEMENT PLAN



ALL GRADED AREAS TO BE HYDROSEEDED WITH BASIC NATIVE EROSION CONTROL MIX FROM S&S SEEDS
BROMUS CARINATUS 'CUCAMONGA' (CUCAMONGA BROME)
FESTUCA MICROSTACHYS (SMALL FESCUE)
TRIFOLIUM CILIOLATUM (TREE CLOVER)

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ______________________

DATE: ______________________

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

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GRAPHIC SCALE

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(IN FEET)
1 inch = 20 ft.

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GEOTECHNICAL REVIEW BY:
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com

PLANS PREPARED UNDER THE DIRECTION OF:

XXX DATE

PLANS PREPARED FOR:
Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:
RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
1				

CITY OF SANTA CLARITA
GRADING PLAN
FINE GRADING PLAN

SCALE: 1"=20'
DATE: 05/31/22
JOB NO. 3547
CASE NO. GRA22-00000
SHEET: 3 OF 4

Parking Lot Planting Plan
Legend
LEGEND
FOUR 36" BOX QUERCUS LOBATA (VALLEY OAK)
STOP
200 ft
N
Google Earth

Attachment C

Biological Resources Assessment

July 11, 2022 JN 188385

COLLEGE OF THE CANYONS
Attn: *Jim Schrage*
Assistant Superintendent/VP, Facilities Planning, Operations & Construction, Facilities
26455 Rockwell Canyon Road
Santa Clarita, California 91355

SUBJECT: Results of a Biological Resources Assessment for the proposed New Driveway on Valencia Boulevard at Tourney Road – City of Santa Clarita, Los Angeles County, California

Dear Mr. Schrage:

Michael Baker International (Michael Baker) is pleased to submit this report to the College of the Canyons (College) documenting the results of a biological resources assessment for the proposed New Driveway on Valencia Boulevard at Tourney Road (project or project site) located in the City of Santa Clarita, Los Angeles County, California. Michael Baker conducted a thorough literature review and a field survey to confirm existing site conditions and assess the potential for special-status[1] plant and wildlife species that have been documented or that are likely to occur on or within the project site and a 300-foot buffer (survey area). Specifically, this report provides a detailed assessment of the suitability of the on-site habitat to support special-status plant and wildlife species that were identified in the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CNDDB; CDFW 2022a), the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CIRP; CNPS 2022), the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation Project Planning Tool (IPaC; USFWS 2022a), and other databases as potentially occurring in the vicinity of the project site.

Project Location

The project site is generally located north and west of State Route 14 (SR-14), east of Interstate 5 (I-5), and south of SR-126/Newhall Ranch Road in the City of Santa Clarita, Los Angeles County, California. The project site is depicted in unsectioned areas of Township 4 North, Range 16 West and Township 4 North, Range 17 West on the U.S. Geological Survey's (USGS) *Newhall, California* 7.5-minute quadrangle. Specifically, the project site is located north of McBean Parkway, west of W Road/Stadium Way, south of

[1] As used in this report, "special-status" refers to plant and wildlife species that are federally-/State-listed, proposed, or candidates; plant species that have been designated a California Rare Plant Rank species by the California Native Plant Society; wildlife species that are designated by the California Department of Fish and Wildlife as Fully Protected, Species of Special Concern, or Watch List species; and State/locally rare vegetation communities.

Valencia Boulevard, and east of I-5 on an undeveloped hillside between the 76 gas station/Circle K (gas station) and Parking Lot 8 at the College.

Project Description

The proposed project involves construction of the south leg of the existing T-intersection at Valencia Boulevard and Tourney Road. The new segment of Tourney Road would provide access to a new driveway that would connect to W Road on the east and a gas station/convenience store at 25048 Valencia Boulevard, on the west. Vehicles exiting the new leg of the intersection would have the options to drive north onto Tourney Road or make right or left turns onto Valencia Boulevard. Deceleration and acceleration lanes (right in and right out) would be provided at the intersection. A new traffic signal would be installed, and upgrades to the existing signals at the intersection would be made. ADA accessible crosswalks would be provided on all four legs of the intersection. The project would require the closure of W Road at Valencia Boulevard. A raised sidewalk would be constructed across the existing road. The existing left turn pocket on westbound Valencia Boulevard to W Road would also be removed.

The elevation of the new driveway would be similar with the existing elevations of Valencia Boulevard, W Road, and 25048 Valencia Boulevard. The hillside south of the new driveway would be modified to accommodate a 2.5:1 slope, i.e., the hillside would be engineered to drop a foot for every 2.5 horizontal feet, and a retaining wall would not be required.

Methodology

Literature Review

Michael Baker conducted thorough literature reviews and records searches to determine which special-status biological resources have the potential to occur on or within the general vicinity (5-mile radius) of the project site. Previous special-status plant and wildlife species occurrence records within the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles were determined through a query of the CNDDB (CDFW 2022a) and CIRP (CNPS 2022), and through a query of IPaC for the project region (USFWS 2022a). Although a portion of the *San Fernando*, *California* USGS quadrangle coincides with the 5-mile radius, this quadrangle was excluded from the CNDDB and CIRP queries as the radius only extends approximately 0.25 mile into the quadrangle, essentially only encompassing SR-14 and its immediate vicinity.

Current conservation status of species was verified through lists and resources provided by the CDFW, specifically the *Special Animals List* (CDFW 2022b), *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2022c), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2022d), and *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFW 2022e). In addition, Michael Baker reviewed previously prepared reports, survey results, and literature, as available, detailing the biological resources previously observed on or within the vicinity of the project site to gain an understanding of existing site conditions, confirm previous species observations, and note the extent of any disturbances that have occurred within the project site that could limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status species, as well as the following resources:

- Google Earth Pro Historical Aerial Imagery from 1985 to 2021 (Google, Inc. 2021)

- Species Accounts provided by Birds of the World (Billerman et. al 2020)
- *Custom Soil Resource Report for Antelope Valley Area, California* (U.S. Department of Agriculture [USDA] 2022)
- USFWS Critical Habitat Mapper and Environmental Conservation Online System (USFWS 2022b)

Habitat Assessment/Field Survey

Michael Baker biologist Ryan Winkleman conducted a habitat assessment/field survey on March 24, 2022, to confirm existing site conditions within the survey area . Mr. Winkleman surveyed the entire survey area south of Valencia Boulevard on foot, but due to concerns regarding private property and trespassing, portions of the survey area north of Valencia Boulevard were only viewed from the public right-of-way. Vegetation communities occurring within the project site were mapped on an aerial photograph and classified in accordance with the vegetation descriptions provided in *A Manual of California Vegetation* (Sawyer et al. 2009) and cross referenced with the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) for the purposes of evaluating the presence or absence of special-status vegetation communities identified in the CNDDB records search, which uses the Holland vegetation classification system. In addition, site characteristics within the survey area such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site vegetation communities, and the presence of potentially regulated jurisdictional features (e.g., streams, flood control channels) were noted. Michael Baker used Geographic Information Systems (GIS) ArcView software to digitize the mapped vegetation communities and depict them over aerial photography to document existing conditions and quantify the acreage of each vegetation community. Refer to Table 1 below for a summary of the survey date, timing, surveyors, and weather conditions.

Table 1: Survey Date, Time, Surveyor, and Weather Conditions

Date	Time (start / finish)	Surveyor	Weather Conditions	
			Temperature (°F) (start / finish)	Wind Speed (mph) (start / finish)
March 24, 2022	0820 / 0950	Ryan Winkleman	67F, mostly cloudy / 68F, partly cloudy	0 – 2

All plant and wildlife species observed, as well as dominant plant species within each vegetation community, were recorded. Plant species observed during the habitat assessment/field survey were identified by visual characteristics and morphology in the field while unusual and less familiar plant species were photographed and identified later using taxonomic guides. Plant nomenclature used in this report follows the *Jepson eFlora* (Jepson Flora Project 2022) and scientific names are provided immediately following common names of plant species (first reference only). Wildlife detections were made through aural and visual detection, as well as observation of sign including scat, trails, tracks, burrows, and nests. Field guides used to assist with identification of wildlife species during the habitat assessment included *The Sibley Guide to Birds* (Sibley 2014), *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003), *Bats of the United States and Canada* (Harvey et al. 2011), and *A Field Guide to Mammals of North America* (Reid 2006). Although common names of wildlife species are well standardized, scientific names are provided immediately following common names of wildlife species in this report (first reference only). To the extent possible, nomenclature of birds follows the most recent annual supplement of the American Ornithological Society's *Checklist of North American Birds* (Chesser et al. 2020), nomenclature of amphibians and reptiles follows *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding* (Crother 2017), and nomenclature for mammals follows the *Revised Checklist of North American Mammals North of Mexico* (Bradley et al. 2014).

Existing Site Conditions

According to the *Custom Soil Resource Report for Antelope Valley Area, California* (USDA 2022), the project site is underlain by Ojai-Zamora loams, 15 to 30 percent slopes (OzE). The surrounding survey area is a mixture of natural vegetation communities with developed and ornamental land uses. The project site consists of an undeveloped hillside managed by the College. The surrounding 300-foot survey area includes more of the hillside, the gas station, Valencia Boulevard, residential housing and associated landscaping across Valencia Boulevard, and a portion of Parking Lot 8 at the College. Based on historic aerial imagery, the hillside remained relatively undisturbed until 2018, when trees along the eastern portion of the hillside abutting the College were removed and replaced with ornamental vegetation, and the western portion of the hillside was planted with ornamental vegetation during construction of the gas station (Google, Inc. 2022). During the March 2022 field survey, it was observed that off-road activity had occurred on the site, leaving scars of tire tracks among the on-site vegetation. Topographically, the project site is on a sloped hillside, ranging from approximately 1,180 feet above mean sea level (amsl) along W Road/Stadium Way to approximately 1,240 feet amsl at the top of the hillside. Refer to Attachment B for representative photographs of the survey area taken during the field survey.

Vegetation Communities and Land Cover Types

A total of three (3) natural vegetation communities were observed and mapped within the boundaries of the survey area: California buckwheat scrub, fiddleneck – phacelia fields, and wild oats and annual brome grasslands. In addition, ornamental/landscaped and developed areas were mapped as other land cover types within the survey area. These vegetation community/land cover types are depicted on Figure 1, *Vegetation Communities and Land Cover Types*, in Attachment A, and presented in Table 2 below. Additionally, refer to Attachment C for a complete list of plant species observed within the survey area during the field survey. Each vegetation community/land cover type within the survey area, is discussed in further detail below.

Table 2: Vegetation Communities and Land Uses within the Project Site and Survey Area

Vegetation Communities and Other Land Uses	Acreage Total Within Project Site	Acreage Total Within Survey Area
California Buckwheat Scrub	0.32	0.61
Fiddleneck – Phacelia Fields	0.59	3.54
Wild Oats and Annual Brome Grasslands	0.00	0.22
Ornamental/Landscaped	0.17	3.39
Developed	0.03	6.74
TOTAL*	**1.11**	**14.5**

*Total may not equal to sum due to rounding.

California Buckwheat Scrub

Approximately 0.61 acre of California buckwheat scrub was mapped in the project site and the southwestern portion of the survey area. This community was dominated by California buckwheat (*Eriogonum fasciculatum*) with deerweed (*Acmispon glaber*) as a subdominant. In many cases the shrubs were growing in very close proximity to each other, limiting the opportunities for groundcover to become established. Where sufficient spaces between shrubs were present, groundcover was generally consistent with the fiddleneck – phacelia fields community described below and was dominated by Menzies' fiddleneck (*Amsinckia menziesii*), redstem filaree (*Erodium cicutarium*), and red brome (*Bromus rubens*).

Fiddleneck – Phacelia Fields

Approximately 3.54 acres of fiddleneck – phacelia fields were mapped in the survey area. This community primarily consisted of Menzies' fiddleneck, redstem filaree, red brome, ripgut brome (*Bromus diandrus*), and starthistle (*Centaurea* sp.). This community, although naturally occurring, showed signs of becoming overrun by non-native species if not controlled in some manner. If non-native species continue to proliferate in this community, it could result in a change from a community dominated by native Menzies' fiddleneck if the non-natives outcompete the fiddleneck.

Wild Oats and Annual Brome Grasslands

Approximately 0.22 acre of wild oats and annual brome grasslands was mapped in a small patch among ornamental landscaping northwest of the intersection of Valencia Boulevard and Tourney Road. This community was dominated by ripgut brome, red brome, and wild oats (*Avena sp.*).

Ornamental/Landscaped

Approximately 3.39 acres of ornamental/landscaped vegetation were mapped throughout the entire survey area, including the slopes on the east and west sides of the project site, landscaping along Parking Lot 8 at the College, and landscaping adjacent to existing development north of Valencia Boulevard. Vegetation within this community varies but some of the more dominant species that are planted within landscaped areas include rosemary (*Rosmarinus officinalis*), acacia (*Acacia* sp.), broom baccharis (*Baccharis sarothroides*), eucalyptus (*Eucalyptus* sp.), and Peruvian pepper (*Schinus molle*). Native coast live oaks (*Quercus agrifolia*) were also observed growing throughout many portions of this land cover type within the survey area.

Developed

Developed areas comprise approximately 6.74 acres of the survey area and consist of paved areas (e.g., the 76 gas station, Parking Lot 8 at the College, Valencia Boulevard) and areas that have been constructed upon or physically altered to a degree that natural soil substrates and native vegetation are no longer present.

Wildlife

Natural vegetation communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a general discussion of common wildlife species that were detected by Michael Baker during the field survey or that are expected to occur based on existing site conditions. This is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. A total of twenty-four (24) wildlife species were observed during the March 24, 2022 field survey. Twenty-two (22) of these wildlife species were birds, with one (1) reptile and one (1) mammal also detected. The most commonly-occurring species detected during the survey were rock pigeon (*Columba livia*), band-tailed pigeon (*Patagioenas fasciata*), house finch (*Haemorhous mexicanus*), lesser goldfinch (*Spinus psaltria*), white-crowned sparrow (*Zonotrichia leucophrys*), savannah sparrow (*Passerculus sandwichensis*), and California towhee (*Melozone crissalis*). Refer to Attachment C for a complete list of wildlife species observed within the project site during the field survey.

Due to a lack of suitable aquatic habitat or breeding habitat within the survey area, fish and amphibians would not be expected to occur. Reptiles that are acclimated to the urban/wild interface and edge habitats may be present including species such as western fence lizard (*Sceloporus occidentalis*) and alligator lizard (*Elgaria multicarinata*). Common mammalian species that may occur within the surrounding survey area include California ground squirrel (*Otospermophilus beecheyi*), fox squirrel (*Sciurus niger*), and racoon (*Procyon lotor*).

Nesting Birds

Nesting birds are protected pursuant to the federal Migratory Bird Treaty Act (MBTA) of 1918 and the California Fish and Game Code (CFGC)[2]. To maintain compliance with the MBTA and CFGC, clearance surveys are typically required prior to any ground disturbance or vegetation removal activities to avoid direct or indirect impacts to active bird nests and/or nesting birds. Consequently, if an active bird nest is destroyed or if project activities result in indirect impacts (e.g., nest abandonment, loss of reproductive effort) to nesting birds, it is considered "take" and is potentially punishable under the MBTA and CFGC. The survey area provides limited nesting habitat for most year-round and seasonal avian residents. However, no active nests or birds displaying overt nesting behavior were observed during the field survey.

Migratory Corridors and Linkages

Wildlife corridors and linkages are key features for wildlife movement between habitat patches. Wildlife corridors are generally defined as those areas that provide opportunities for individuals or local populations to conduct seasonal migrations, permanent dispersals, or daily commutes, while linkages generally refer to broader areas that provide movement opportunities for multiple keystone/focal species or allow for propagation of ecological processes (e.g., for movement of pollinators), often between areas of conserved land.

The project site is located at the northern end of an open space area managed by the College. Based on review of aerial and "street view" imagery (Google Inc., 2022), this open space area has consisted primarily of grasslands with scattered oaks in recent years. While a fire in 2016 burned this open space area, the vegetation composition has remained largely the same. Although additional open space areas are scattered throughout the municipal boundaries, there is little opportunity for connectivity between them due to extensive development and fragmentation of habitats that support wildlife movement, and as a result this open space area is relatively disconnected from other surrounding areas of open space in the City and is not

[2] Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the California Fish and Game Code or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act, as amended (16 U.S.C. § 703 *et seq.*).

likely to function as a wildlife movement corridor. Some localized wildlife movement may occur within the open space area itself, which spans from Valencia Boulevard to McBean Parkway.

State and Federal Jurisdictional Resources

There are three agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The U.S. Army Corps of Engineers (USACE) Regulatory Branch regulates discharge of dredged or fill material into "waters of the U.S." pursuant to Section 404 of the federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the Regional Water Quality Control Board (RWQCB) regulates discharges to surface waters pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act, and the CDFW regulates alterations to streambed and associated vegetation communities under Section 1600 *et seq*. of the CFGC. No potentially jurisdictional features were identified within the survey area and regulatory approvals/permits from the USACE, RWQCB, or CDFW are not anticipated to be required for this project.

Special-Status Biological Resources

The CNDDB (CDFW 2022a), CIRP (CNPS 2022), and IPaC (USFWS 2022a) were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles. The field survey was conducted to assess the conditions of the habitat(s) within the boundaries of the project site and survey area to determine if existing vegetation communities have the potential to provide suitable habitat(s) for special-status plant and wildlife species. Additionally, the potentials for special-status species to occur within the project site were determined based on the reported occurrence locations in the CNDDB and CIRP and the following criteria:

- **Present**: the species was observed or detected within the survey area during the field survey.
- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 1 mile of the survey area and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the survey area and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).
- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within 1 mile of the survey area and the survey area is within the normal expected range of this species. There is suitable habitat within the survey area, but the site is ecologically isolated from any local known extant populations or sightings.
- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the survey area, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the survey area.
- **Not Expected**: There are no occurrence records of the species occurring within 5 miles of the survey area, there is no suitable habitat within the survey area, and/or the survey area is outside of the normal expected range for the species.

The CNDDB, CIRP, and IPaC databases identified thirty-four (34) special-status plant species and forty-three (43) special-status wildlife species as occurring within the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles. In addition, eleven (11) special-status vegetation communities were identified by the CNDDB. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on specific habitat requirements, availability/quality of suitable habitat, and known distributions of species/populations. Special-status biological resources identified during the literature review are presented in Attachment D.

Special-Status Plants

A total of thirty-four (34) special-status plant species have been recorded in the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles by the CNDDB and CIRP, and by IPaC for the project region (refer to Attachment D). No special-status plant species were identified within the survey area during the March 2022 field survey. Although most of the project site is composed of natural habitats, as presented above the fiddleneck – phacelia fields community has a high percentage of non-native plants that may eventually outcompete the native Menzies' fiddleneck, reducing habitat quality on-site. However, at the time of the March 2022 survey the habitat was still intact and dominated by native vegetation.

Most of the special-status plant species identified during the literature review are known to occur within different habitats and/or different soils than those on-site. Of those that prefer the vegetation and soil types found on-site, slender mariposa lily (*Calochortus clavatus* var. *gracilis*; California Rare Plant Rank (CRPR) 1B.2) and San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*; CRPR 1B.1) have the highest likelihood of occurring. Based on records in the CNDDB and Calflora database (Calflora 2022), slender mariposa lily is the most commonly reported special-status plant species in the project's 5-mile search radius, was reported approximately 0.8 mile northwest of the survey area in 2018 (CDFW 2022a)and is known to occur in coastal scrub and valley and foothill grasslands. San Fernando Valley spineflower was reported as close as 0.7 mile northwest of the survey area in 2011 (CDFW 2022a) and is known to occur in coastal sage scrub habitat. These species were not observed by the biologist during the field survey, which was conducted during the typical blooming period for the region. Further, on-site habitat has a high proportion of non-native weeds and is relatively isolated from other natural habitats that may be suitable for these species. Rare plant surveys focusing particularly on slender mariposa lily and San Fernando Valley spineflower were conducted in May and June 2022 and were negative; the survey results are included in Attachment E. Based on the results of the field survey and a review of specific habitat preferences (including soil types), occurrence records, known distributions, and elevation ranges, Michael Baker determined that the remainder of the special-status plant species identified by the CNDDB, CIRP, and IPaC databases are not expected to occur within the project site.

Special-Status Wildlife

A total of forty-three (43) special-status wildlife species have been recorded in the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles by the CNDDB and by IPaC for the project region (refer to Attachment D). No special-status wildlife species were detected within the survey area during the March 2022 field survey. Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, Michael Baker determined that all special-status wildlife species identified by the CNDDB and IPaC databases either have a low potential or are not expected to occur within the project site. Because of its regional significance in southern California and the presence of potentially suitable coastal sage scrub vegetation in the survey area, coastal California gnatcatcher (*Polioptila californica californica*; CAGN; federally threatened species and California species of special concern) is discussed in more detail below.

Coastal California Gnatcatcher

CAGN is a federally threatened species with restricted habitat requirements, being an obligate resident of sage scrub habitats, particularly—but not exclusively—those that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It ranges from Ventura County south to San Diego County and northern Baja California and is less common in sage scrub with a high percentage of tall shrubs. CAGN is considered a short-distance disperser through contiguous, undisturbed habitat (USFWS 2010). However, juveniles are capable of dispersing long distances (up to 14 miles) across fragmented and highly disturbed sage scrub habitat (USFWS 2010). CAGN prefers habitat with more low-growing vegetation (< 3 feet high). CAGN breeds between mid-February and the end of August, with peak activity from mid-March to mid-May. Breeding pairs typically defend territories between 2 and 14 acres in size. Population declines are attributed to loss of sage scrub habitat due to development, as well as brown-headed cowbird (*Molothrus ater*) nest parasitism. Federally designated Critical Habitat for CAGN is not located within or near the survey area. The primary constituent elements essential to support the biological needs of foraging, reproducing, rearing of young, intra-specific communication, dispersal, genetic exchange, or sheltering for CAGN are:

1) Dynamic and successional sage scrub habitats and associated vegetation (Riversidean alluvial fan sage scrub, coastal sage-chaparral scrub, etc.) that provide space for individual and population growth, normal behavior, breeding, reproduction, nesting, dispersal and foraging; and
2) Non-sage scrub habitats such as chaparral, grassland, and riparian areas in proximity to sage scrub habitats that provide linkages to help with dispersal, foraging, and nesting (USFWS 2007).

CAGN is known to occur sporadically within the greater Santa Clarita area and almost always in natural, relatively undisturbed habitat away from development (Cooper et al. 2016, CDFW 2022a, eBird 2022). Historically this species was believed to have been likely extirpated along the San Gabriel Mountains foothills and in the Santa Clarita area, but focused surveys and incidental observations in the region over the years has now indicated that a small, inconsistent, and unreliable population occurs in the area, although most known records are from remote areas away from immediate development. The closest known extant occurrence to the survey area is approximately 3.7 miles to the east in an area of large patches of dense coastal sage scrub vegetation just west of Golden Valley Road (CDFW 2022a).

The survey area provides two small patches of suitable habitat for CAGN that are separated from each other by a distance of approximately 170 feet. These patches are isolated from any other suitable habitat in the project vicinity by extensive development, including residential neighborhoods, commercial lots, educational facilities, recreational facilities, and major thoroughfares such as Valencia Boulevard and I-5. Based on the typical size range of territories for this species, on-site habitat is not expected to be adequate to support a breeding pair, and potentially not even an unpaired bird. A walk through on-site coastal sage scrub (California buckwheat scrub) during the March 2022 survey specifically to incidentally look and listen for CAGN resulted in no detections of the species. When considered in the context of this species' regional status, the extremely limited size of on-site habitat, and the isolated nature of the site from other potentially suitable habitats due to surrounding development, on-site habitat for CAGN is classified by Michael Baker as marginal at best and of limited value to CAGN. This species is not expected to occur on-site.

Special-Status Vegetation Communities

Eleven (11) special-status vegetation communities have been reported in the USGS *Newhall*, *Mint Canyon*, *Oat Mountain*, *Simi Valley East*, and *Val Verde, California* 7.5-minute quadrangles by the CNDDB: California Walnut Woodland, Mainland Cherry Forest, Riversidian Alluvial Fan Sage Scrub, Southern California Threespine Stickleback Stream, Southern Coast Live Oak Riparian Forest, Southern Cottonwood Willow Riparian Forest, Southern Mixed Riparian Forest, Southern Riparian Scrub, Southern Sycamore Alder Riparian Woodland, Southern Willow Scrub, and Valley Oak Woodland. These special-status vegetation communities identified by the CNDDB were not observed in the survey area during the field survey. According to the latest draft of the *California Natural Communities List* (CDFW 2021; dated August 18, 2021), none of the on-site communities in the survey area are considered to be sensitive natural communities.

Critical Habitat

Under the definition used by the federal Endangered Species Act (FESA), designated "Critical Habitat" refers to specific areas within the geographical range of a species that were occupied at the time it was listed that contain the physical or biological features that are essential to the survival and eventual recovery of that species and that may require special management considerations or protection, regardless of whether the species is still extant in the area. Areas that were not known to be occupied at the time a species was listed can also be designated Critical Habitat if they contain one or more of the physical or biological features that are essential to that species' conservation and if the other areas that are occupied are inadequate to ensure the species' recovery. If a project may result in take or adverse modification to a species' designated Critical Habitat and the project has a federal nexus, the project proponent may be required to provide suitable mitigation. Projects with a federal nexus may include projects that occur on federal lands, require federal permits (e.g., CWA Section 404 permit), or receive any federal oversight or funding. If there is a federal nexus, then the federal agency that is responsible for providing funds or permits would be required to consult with the USFWS under the FESA. The survey area is not located within designated Critical Habitat for any federally listed species.

Local Policies and Ordinances

City of Santa Clarita Oak Tree Ordinance

Under Section 17.51.040, *Oak Tree Preservation*, of the City of Santa Clarita Municipal Code, no person shall cut, prune, remove, relocate, endanger, damage, or encroach into the protected zone of any oak tree on any public or private property within the City except in accordance with the conditions of a valid oak tree permit issued by the City. Should any oak trees require pruning, removal, or relocation, the College will be required to obtain an oak tree permit from the City of Santa Clarita, unless it renders the City's Oak Tree Ordinance inapplicable pursuant to Government Code Section 53094. Nevertheless, an oak tree study will be prepared under separate cover and the Project will incorporate oak trees into its landscape plan.

Conclusions and Recommendations

A total of three (3) natural vegetation communities were observed and mapped within the boundaries of the project site and 300-foot survey area during the March 2022 field survey: California buckwheat scrub, fiddleneck – phacelia fields, and wild oats and annual brome grasslands. In addition, ornamental/landscaped areas and developed areas were mapped as other land cover types. According to the CNDDB (CDFW

2022a) and *California Natural Communities List* (CDFW 2021), none of the on-site communities within the survey area are considered sensitive.

No special-status plant species were identified within the survey area during the March 2022 field survey. The native vegetation communities within the project site and surrounding survey area to the south contain a high proportion of non-native weed species. A portion of the contiguous open space within the survey area south of Valencia Boulevard burned circa 2016 and is still recovering. Based on the results of the field survey and a review of specific habitat preferences (including soil types), occurrence records, known distributions, and elevation ranges, Michael Baker determined that the site had a high potential to support slender mariposa lily (CRPR 1B.2) and San Fernando Valley spineflower (CRPR 1B.1). However, as described in Attachment E, focused rare plant surveys conducted in May and June 2022 were negative for these species or any other special-status plants.

No special-status wildlife species were detected within the survey area during the March 2022 field survey. Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, Michael Baker determined that all special-status wildlife species identified by the CNDDB and IPaC databases either have a low potential or are not expected to occur within the project site.

To maintain compliance with the MBTA and CFGC, it is recommended that **i**f project-related activities are to be initiated during the nesting season (January 1 to August 31), a pre-construction nesting bird clearance survey shall be conducted by a qualified biologist no more than three (3) days prior to the start of any vegetation removal or ground disturbing activities. The qualified biologist shall survey all suitable nesting habitat within the project impact area, and areas within a biologically defensible buffer zone surrounding the project impact area. If no active bird nests are detected during the clearance survey, project activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a "no-disturbance" buffer shall be established around the active nest. The size of the "no-disturbance" buffer shall be increased or decreased based on the judgement of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests to determine if project-related activities occurring outside the "no-disturbance" buffer are having any impact on nesting birds and if the no-disturbance buffer needs to increase to avoid impacts to an active nest. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, project activities within the "no-disturbance" buffer may occur following an additional survey by the qualified biologist to confirm that no previously-unknown bird nests are present in the restricted area.

Please do not hesitate to contact me at (949) 533-0918 or ryan.winkleman@mbakerintl.com should you have any questions or require further information.

Sincerely,

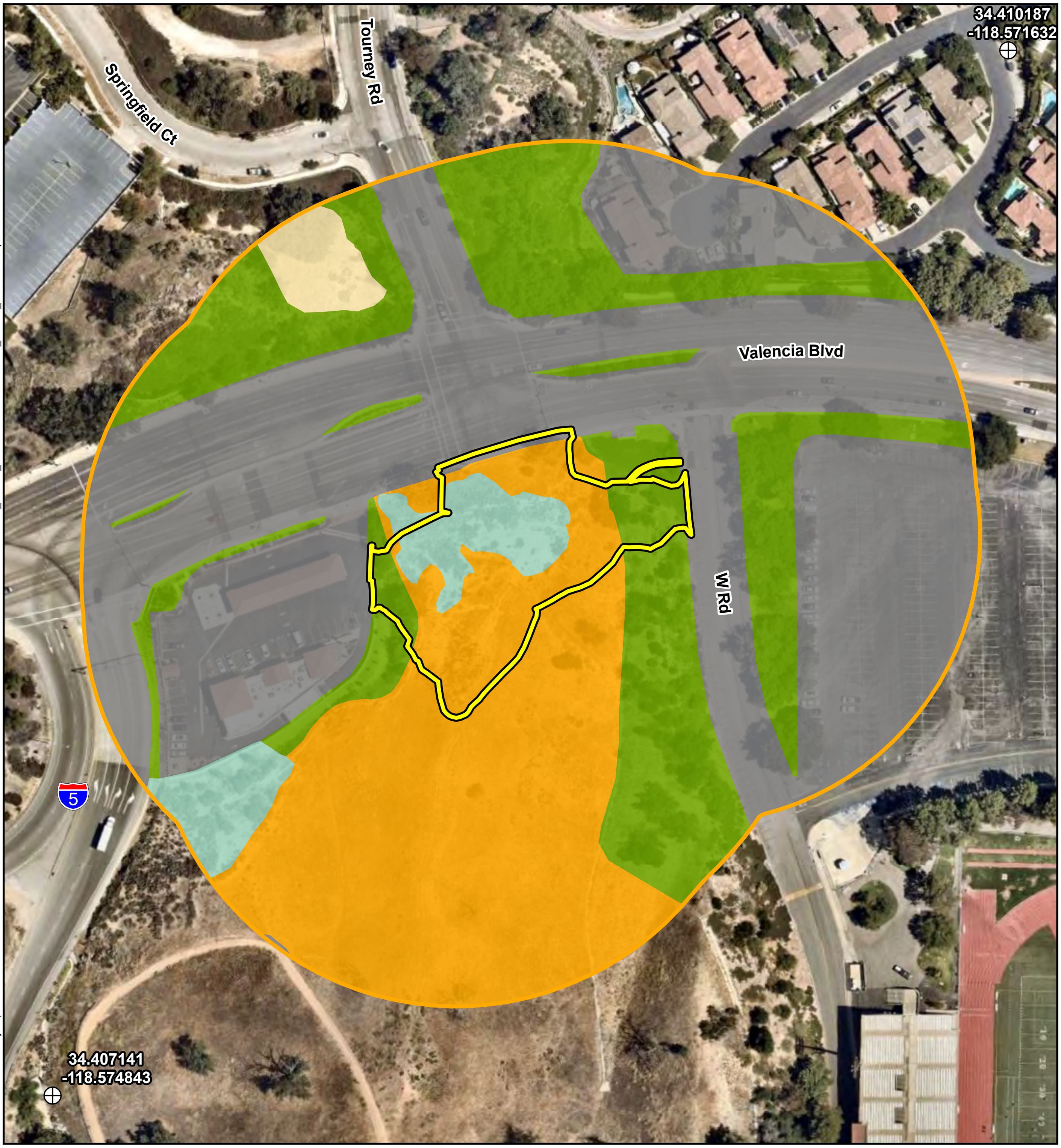
Ryan Winkleman
Senior Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. *Figure 1: Vegetation Communities and Land Cover Types*
B. *Site Photographs*
C. *Plant and Wildlife Species Observed List*
D. *Literature Review Results*
E. *Rare Plant Survey Report*
F. *References*

Attachment A

Figure 1: Vegetation Communities and Land Cover Types



Legend

- Project Site
- Survey Area (300-foot Buffer)
- Reference Point
- California Buckwheat Scrub (0.61 acre)
- Fiddleneck - Phacelia Fields (3.54 acres)
- Wild Oats and Annual Brome Grasslands (0.22 acre)
- Ornamental/Landscaped (3.39 acres)
- Developed (6.74 acres)

Michael Baker INTERNATIONAL

0 75 150 Feet

Source: Nearmap (06/2022)

NEW DRIVEWAY ON VALENCIA BOULEVARD AT TOURNEY ROAD
BIOLOGICAL RESOURCES ASSESSMENT

Vegetation Communities and Land Cover Types

Figure 1

Attachment B

Site Photographs

Photograph 1: Northwest-facing view of ornamental/landscaped vegetation on the eastern side of the project site.

Photograph 2: North-facing view of California buckwheat scrub within the project site, with the intersection of Valencia Boulevard and Tourney Road in the background.

Photograph 3: North-facing view of the intersection of Valencia Boulevard and Tourney Road.

Photograph 4: West-facing view of California buckwheat scrub on the slope above Valencia Boulevard. Although vegetation appears dense here, this on-site vegetation is only a small, relatively-isolated patch.

Photograph 5: Southwest-facing view of fiddleneck – phacelia fields from Valencia Boulevard.

Photograph 6: North/northeast-facing view of the border of California buckwheat scrub and fiddleneck – phacelia fields. This area showed signs of vehicle use, including the tire tracks in the foreground and bare ground visible in the background.

Photograph 7: South-facing view away from the project site at fiddleneck – phacelia fields.

Photograph 8: East-facing view of the ornamental/landscaped slope above the 76 gas station immediately west of the project site.

Attachment C

Plant and Wildlife Species Observed List

Table C-1: Plant and Wildlife Species Observed List

Scientific Name*	**Common Name**	**Cal-IPC Rating****	**Special-Status Rank**
Plants			
Acacia sp.*	acacia	Watch to Moderate	
Acmispon glaber	deerweed		
Amsinckia menziesii	Menzies' fiddleneck		
Artemisia californica	California sagebrush		
Avena sp.*	oats	Moderate	
Baccharis pilularis	coyote brush		
Baccharis sarothroides	broom baccharis		
*Brassica nigra**	black mustard	Moderate	
*Bromus diandrus**	ripgut brome	Moderate	
*Bromus rubens**	red brome	High	
*Bromus tectorum**	downy chess	High	
*Callistemon citrinus**	crimson bottlebrush		
*Carduus pycnocephalus**	Italian thistle	Moderate	
Centaurea sp.*	starthistle	Moderate to High	
Cercis occidentalis	western redbud		
*Cirsium vulgare**	bullthistle	Moderate	
Croton californicus	California croton		
Croton setiger	turkey mullein		
Cryptantha sp.	popcornflower		
Dipterostemon capitatus	blue dic		
Erigeron canadensis	horseweed		
Eriogonum fasciculatum	California buckwheat		
*Erodium cicutarium**	redstem filaree		
Eucalyptus sp.*	eucalyptus	Watch to Limited	
*Euphorbia maculata**	Spotted spurge		
Heterotheca grandiflora	telegraph weed		
*Hordeum murinum**	wall barley	Moderate	
Lupinus bicolor	bicolored lupine		
Lupinus sp.	lupine		
Mirabilis laevis	wishbone bush		
*Nerium oleander**	oleander		
*Nicotiana glauca**	tree tobacco	Moderate	
Pinus sp.	pine		
Pseudognaphalium californicum	California everlasting		
Quercus agrifolia	coast live oak		
Quercus lobata	valley oak		
*Rosmarinus officinalis**	rosemary		
Sambucus nigra	elderberry		
*Schinus molle**	Peruvian pepper	Limited	
*Sonchus asper**	spiny sowthistle		

Table C-1: Plant and Wildlife Species Observed List

*Scientific Name**	Common Name	Cal-IPC Rating**	Special-Status Rank
Symphyotrichum chilense	Pacific aster		
Birds			
Aphelocoma californica	California scrub-jay		
Baeolophus inornatus	oak titmouse		
Calypte anna	Anna's hummingbird		
Cathartes aura	turkey vulture		
*Columba livia**	rock pigeon		
Corthylio calendula	ruby-crowned kinglet		
Corvus brachyrhynchos	American crow		
Corvus corax	common raven		
Dryobates nuttallii	Nuttall's woodpecker		
Haemorhous mexicanus	house finch		
Junco hyemalis	dark-eyed junco		
Leiothlypis celata	orange-crowned warbler		
Melanerpes formicivorus	acorn woodpecker		
Melozone crissalis	California towhee		
Passerculus sandwichensis	savannah sparrow		
Patagioenas fasciata	band-tailed pigeon		
Psaltriparus minimus	bushtit		
Selasphorus sasin	Allen's hummingbird		
Setophaga coronata	yellow-rumped warbler		
Spinus lawrencei	Lawrence's goldfinch		
Spinus psaltria	lesser goldfinch		
Thryomanes bewickii	Bewick's wren		
Zonotrichia leucophrys	white-crowned sparrow		
Mammals			
Sylvilagus audubonii	desert cottontail		
Reptiles			
Uta stansburiana	side-blotched lizard		

* **Non-native species**

** **California Invasive Plant Council (Cal-IPC) Ratings**

High: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited: These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Watch These species have been assessed as posing a high risk of becoming invasive in the future in California.

Attachment D

Literature Review Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Newhall (3411845) OR Mint Canyon (3411844) OR Oat Mountain (3411835) OR Simi (3411837) OR Val Verde (3411846))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Anaxyrus californicus arroyo toad	AAABB01230	Endangered	None	G2G3	S2S3	SSC
Anniella spp. California legless lizard	ARACC01070	None	None	G3G4	S3S4	SSC
Antrozous pallidus pallid bat	AMACC10010	None	None	G4	S3	SSC
Arizona elegans occidentalis California glossy snake	ARADB01017	None	None	G5T2	S2	SSC
Artemisiospiza belli belli Bell's sage sparrow	ABPBX97021	None	None	G5T2T3	S3	WL
Aspidoscelis tigris stejnegeri coastal whiptail	ARACJ02143	None	None	G5T5	S3	SSC
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G2	S1S2	
Branchinecta lynchi vernal pool fairy shrimp	ICBRA03030	Threatened	None	G3	S3	
Buteo swainsoni Swainson's hawk	ABNKC19070	None	Threatened	G5	S3	
Catostomus santaanae Santa Ana sucker	AFCJC02190	Threatened	None	G1	S1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Corynorhinus townsendii Townsend's big-eared bat	AMACC08010	None	None	G4	S2	SSC
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Euderma maculatum spotted bat	AMACC07010	None	None	G4	S3	SSC
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Euphydryas editha quino quino checkerspot butterfly	IILEPK405L	Endangered	None	G5T1T2	S1S2	
Gasterosteus aculeatus williamsoni unarmored threespine stickleback	AFCPA03011	Endangered	Endangered	G5T1	S1	FP
Gila orcuttii arroyo chub	AFCJB13120	None	None	G2	S2	SSC
Helminthoglypta fontiphila Soledad shoulderband	IMGASC2250	None	None	G1	S1	
Helminthoglypta traskii pacoimensis Pacoima shoulderband	IMGASC2472	None	None	G1G2T1	S1	
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
Lanius ludovicianus loggerhead shrike	ABPBR01030	None	None	G4	S4	SSC
Lepus californicus bennettii San Diego black-tailed jackrabbit	AMAEB03051	None	None	G5T3T4	S3S4	
Macrotus californicus California leaf-nosed bat	AMACB01010	None	None	G3G4	S3	SSC
Neotoma lepida intermedia San Diego desert woodrat	AMAFF08041	None	None	G5T3T4	S3S4	SSC
Onychomys torridus ramona southern grasshopper mouse	AMAFF06022	None	None	G5T3	S3	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Streptocephalus wootteni Riverside fairy shrimp	ICBRA07010	Endangered	None	G1G2	S1S2	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Taricha torosa Coast Range newt	AAAAF02032	None	None	G4	S4	SSC
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Thamnophis hammondii two-striped gartersnake	ARADB36160	None	None	G4	S3S4	SSC
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 43

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Newhall (3411845) OR Mint Canyon (3411844) OR Oat Mountain (3411835) OR Simi (3411837) OR Val Verde (3411846))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Berberis nevinii Nevin's barberry	PDBER060A0	Endangered	Endangered	G1	S1	1B.1
Calochortus clavatus var. gracilis slender mariposa-lily	PMLIL0D096	None	None	G4T2T3	S2S3	1B.2
Calochortus palmeri var. palmeri Palmer's mariposa-lily	PMLIL0D122	None	None	G3T2	S2	1B.2
Calochortus plummerae Plummer's mariposa-lily	PMLIL0D150	None	None	G4	S4	4.2
Calystegia peirsonii Peirson's morning-glory	PDCON040A0	None	None	G4	S4	4.2
Chorizanthe parryi var. fernandina San Fernando Valley spineflower	PDPGN040J1	None	Endangered	G2T1	S1	1B.1
Chorizanthe parryi var. parryi Parry's spineflower	PDPGN040J2	None	None	G3T2	S2	1B.1
Deinandra minthornii Santa Susana tarplant	PDAST4R0J0	None	Rare	G2	S2	1B.2
Dodecahema leptoceras slender-horned spineflower	PDPGN0V010	Endangered	Endangered	G1	S1	1B.1
Dudleya parva Conejo dudleya	PDCRA04016	Threatened	None	G1	S1	1B.2
Harpagonella palmeri Palmer's grapplinghook	PDBOR0H010	None	None	G4	S3	4.2
Helianthus inexpectatus Newhall sunflower	PDAST4N250	None	None	G1	S1	1B.1
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1
Lupinus paynei Payne's bush lupine	PDFAB2B580	None	None	G1Q	S1	1B.1
Navarretia fossalis spreading navarretia	PDPLM0C080	Threatened	None	G2	S2	1B.1
Navarretia ojaiensis Ojai navarretia	PDPLM0C130	None	None	G2	S2	1B.1
Navarretia setiloba Piute Mountains navarretia	PDPLM0C0S0	None	None	G2	S2	1B.1
Opuntia basilaris var. brachyclada short-joint beavertail	PDCAC0D053	None	None	G5T3	S3	1B.2

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Pentachaeta lyonii Lyon's pentachaeta	PDAST6X060	Endangered	Endangered	G1	S1	1B.1
Pseudognaphalium leucocephalum white rabbit-tobacco	PDAST440C0	None	None	G4	S2	2B.2
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2

Record Count: 22

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Newhall (3411845) OR Mint Canyon (3411844) OR Oat Mountain (3411835) OR Simi (3411837) OR Val Verde (3411846))
 AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California Walnut Woodland California Walnut Woodland	CTT71210CA	None	None	G2	S2.1	
Mainland Cherry Forest Mainland Cherry Forest	CTT81820CA	None	None	G1	S1.1	
Riversidian Alluvial Fan Sage Scrub Riversidian Alluvial Fan Sage Scrub	CTT32720CA	None	None	G1	S1.1	
Southern California Threespine Stickleback Stream Southern California Threespine Stickleback Stream	CARE2320CA	None	None	GNR	SNR	
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Mixed Riparian Forest Southern Mixed Riparian Forest	CTT61340CA	None	None	G2	S2.1	
Southern Riparian Scrub Southern Riparian Scrub	CTT63300CA	None	None	G3	S3.2	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Southern Willow Scrub Southern Willow Scrub	CTT63320CA	None	None	G3	S2.1	
Valley Oak Woodland Valley Oak Woodland	CTT71130CA	None	None	G3	S2.1	

Record Count: 11

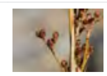
CALIFORNIA NATIVE PLANT SOCIETY

Search Results

28 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3411835:3411845:3411844:3411846:3411836]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Berberis nevinii	Nevin's barberry	Berberidaceae	perennial evergreen shrub	(Feb)Mar-Jun	FE	CE	G1	S1	1B.1	No Photo Available
Calochortus catalinae	Catalina mariposa lily	Liliaceae	perennial bulbiferous herb	(Feb)Mar-Jun	None	None	G3G4	S3S4	4.2	No Photo Available
Calochortus clavatus var. clavatus	club-haired mariposa lily	Liliaceae	perennial bulbiferous herb	(Mar)May-Jun	None	None	G4T3	S3	4.3	No Photo Available
Calochortus clavatus var. gracilis	slender mariposa-lily	Liliaceae	perennial bulbiferous herb	Mar-Jun(Nov)	None	None	G4T2T3	S2S3	1B.2	No Photo Available
Calochortus fimbriatus	late-flowered mariposa-lily	Liliaceae	perennial bulbiferous herb	Jun-Aug	None	None	G3	S3	1B.3	No Photo Available
Calochortus palmeri var. palmeri	Palmer's mariposa-lily	Liliaceae	perennial bulbiferous herb	Apr-Jul	None	None	G3T2	S2	1B.2	No Photo Available
Calochortus plummerae	Plummer's mariposa-lily	Liliaceae	perennial bulbiferous herb	May-Jul	None	None	G4	S4	4.2	No Photo Available
Calystegia peirsonii	Peirson's morning-glory	Convolvulaceae	perennial rhizomatous herb	Apr-Jun	None	None	G4	S4	4.2	No Photo Available
Cercocarpus betuloides var. blancheae	island mountain-mahogany	Rosaceae	perennial evergreen shrub	Feb-May	None	None	G5T4	S4	4.3	No Photo Available
Chorizanthe parryi var. fernandina	San Fernando Valley spineflower	Polygonaceae	annual herb	Apr-Jul	None	CE	G2T1	S1	1B.1	No Photo Available
Chorizanthe parryi var. parryi	Parry's spineflower	Polygonaceae	annual herb	Apr-Jun	None	None	G3T2	S2	1B.1	No Photo Available
Deinandra minthornii	Santa Susana tarplant	Asteraceae	perennial deciduous shrub	Jul-Nov	None	CR	G2	S2	1B.2	No Photo Available
Deinandra paniculata	paniculate tarplant	Asteraceae	annual herb	(Mar)Apr-Nov	None	None	G4	S4	4.2	No Photo Available

Delphinium parryi ssp. purpureum	Mt. Pinos larkspur	Ranunculaceae	perennial herb	May-Jun	None	None	G4T4	S4	4.3	No Photo Available
Dodecahema leptoceras	slender-horned spineflower	Polygonaceae	annual herb	Apr-Jun	FE	CE	G1	S1	1B.1	No Photo Available
Harpagonella palmeri	Palmer's grapplinghook	Boraginaceae	annual herb	Mar-May	None	None	G4	S3	4.2	 © 2015 Keir Morse
Helianthus inexpectatus	Newhall sunflower	Asteraceae	perennial rhizomatous herb	Aug-Oct	None	None	G1	S1	1B.1	 © 2012 Anuja Parikh and Nathan Gale
Juglans californica	Southern California black walnut	Juglandaceae	perennial deciduous tree	Mar-Aug	None	None	G4	S4	4.2	 © 2020 Zoya Akulova
Juncus acutus ssp. leopoldii	southwestern spiny rush	Juncaceae	perennial rhizomatous herb	(Mar)May-Jun	None	None	G5T5	S4	4.2	 © 2019 Belinda Lo
Lupinus paynei	Payne's bush lupine	Fabaceae	perennial shrub	Mar-Apr(May-Jul)	None	None	G1Q	S1	1B.1	No Photo Available
Navarretia fossalis	spreading navarretia	Polemoniaceae	annual herb	Apr-Jun	FT	None	G2	S2	1B.1	No Photo Available
Navarretia ojaiensis	Ojai navarretia	Polemoniaceae	annual herb	May-Jul	None	None	G2	S2	1B.1	No Photo Available
Navarretia setiloba	Piute Mountains navarretia	Polemoniaceae	annual herb	Apr-Jul	None	None	G2	S2	1B.1	No Photo Available
Opuntia basilaris var. brachyclada	short-joint beavertail	Cactaceae	perennial stem	Apr-Jun(Aug)	None	None	G5T3	S3	1B.2	No Photo Available
Orcuttia californica	California Orcutt grass	Poaceae	annual herb	Apr-Aug	FE	CE	G1	S1	1B.1	No Photo Available
Phacelia mohavensis	Mojave phacelia	Hydrophyllaceae	annual herb	Apr-Aug	None	None	G4Q	S4	4.3	No Photo Available
Pseudognaphalium leucocephalum	white rabbit-tobacco	Asteraceae	perennial herb	(Jul)Aug-Nov(Dec)	None	None	G4	S2	2B.2	No Photo

										Available
Senecio aphanactis	chaparral ragwort	Asteraceae	annual herb	Jan-Apr(May)	None	None	G3	S2	2B.2	No Photo Available

Showing 1 to 28 of 28 entries

Suggested Citation:
California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 6 April 2022].

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Los Angeles County, California

Local office

Ventura Fish And Wildlife Office

(805) 644-1766
(805) 644-3958

2493 Portola Road, Suite B
Ventura, CA 93003-7726

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Birds

NAME	STATUS
California Condor Gymnogyps californianus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8193	Endangered
Coastal California Gnatcatcher Polioptila californica californica Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo Vireo bellii pusillus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5945	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/6749	Endangered

Amphibians

NAME	STATUS
Arroyo (=arroyo Southwestern) Toad Anaxyrus californicus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/3762	Endangered
California Red-legged Frog Rana draytonii Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS

Unarmored Threespine Stickleback Gasterosteus aculeatus williamsoni | Endangered

Wherever found

There is **proposed** critical habitat for this species. The location of the critical habitat is not available.

https://ecos.fws.gov/ecp/species/7002

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Riverside Fairy Shrimp Streptocephalus woottoni Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8148	Endangered
Vernal Pool Fairy Shrimp Branchinecta lynchi Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
California Orcutt Grass Orcuttia californica Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4923	Endangered
Gambel's Watercress Rorippa gambellii Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4201	Endangered

Marsh Sandwort *Arenaria paludicola* — Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/2229

Nevin's Barberry *Berberis nevinii* — Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/8025

Slender-horned Spineflower *Dodecahema leptoceras* — Endangered

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/4007

Spreading Navarretia *Navarretia fossalis* — Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.
https://ecos.fws.gov/ecp/species/1334

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
California Thrasher Toxostoma redivivum This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jan 1 to Jul 31

Cassin's Finch Carpodacus cassinii — Breeds May 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9462

Common Yellowthroat Geothlypis trichas sinuosa — Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Carduelis lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Nuttall's Woodpecker Picoides nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ

"Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

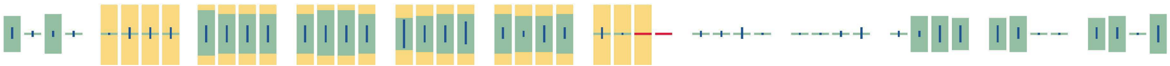
No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

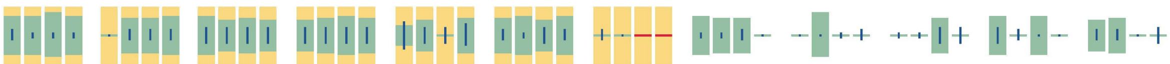
■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

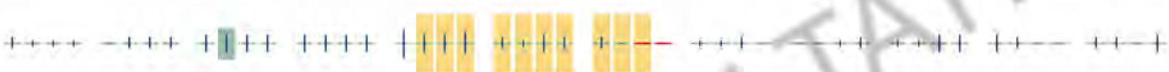
Allen's Hummingbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

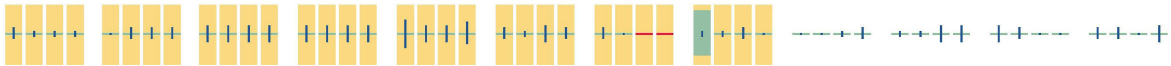


Cassin's Finch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

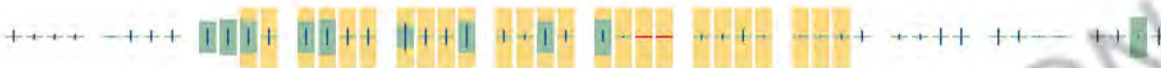


Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)

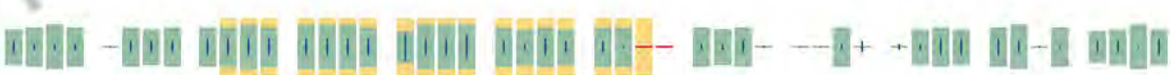


Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

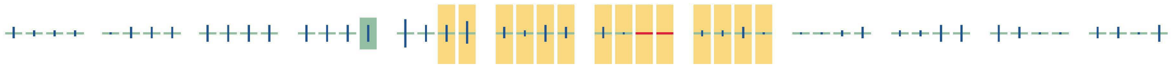


Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)

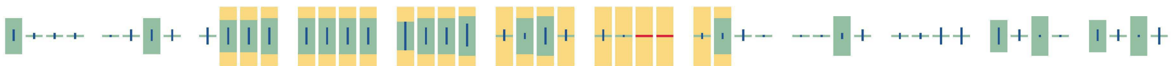
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment E

Rare Plant Survey Report

July 11, 2022 JN 188385

SANTA CLARITA COMMUNITY COLLEGE DISTRICT
Attn: *Jim Schrage*
Assistant Superintendent/VP, Facilities Planning, Operations & Construction, Facilities
26455 Rockwell Canyon Road
Santa Clarita, CA 91355

SUBJECT: Results of Rare Plant Surveys for the New Driveway on Valencia Road at Tourney Road Project – City of Santa Clarita, Los Angeles County, California

Dear Mr. Schrage:

Michael Baker International (Michael Baker) is pleased to submit this report to the Santa Clarita Community College District documenting the results of rare plant surveys conducted for the proposed New Driveway on Valencia Road at Tourney Road Project (project/project site) located in the City of Santa Clarita, Los Angeles County, California. Michael Baker's biologist conducted rare plant surveys during the 2022 blooming season to document the presence or absence of special-status[1] plant species that were determined to have a potential to occur within the project site and areas within a 150-foot buffer (survey area).

Project Location

The survey area is generally located south of and including portions of Valencia Boulevard, east of Interstate 5, west of Rockwell Canyon Road, and north of McBean Parkway in the City of Santa Clarita, Los Angeles County, California. The survey area is depicted in unsectioned areas of Township 4 North, Range 16 West and Township 4 North, Range 17 West, on the U.S. Geological Survey's (USGS) *Newhall, California* 7.5-minute quadrangle.

Project Description

The proposed project involves construction of the south leg of the existing T-intersection at Valencia Boulevard and Tourney Road. The new segment of Tourney Road would provide access to a new driveway that would connect to W Road on the east and a gas station/convenience store at 25048 Valencia Boulevard, on the west. Vehicles exiting the new leg of the intersection would have the options to drive north onto Tourney Road or make right or left turns onto Valencia Boulevard. Deceleration and acceleration lanes (right in and right out) would be provided at the intersection. A new traffic signal would be installed, and upgrades to the existing signals at the intersection would be made. ADA accessible crosswalks would be

1. As used in this report, "special-status" refers to plant species that are federal or State-listed, proposed, or candidates; plant species that have been designated a California Rare Plant Rank by the California Native Plant Society; and State/locally rare plant species.

provided on all four legs of the intersection. The project would require the closure of W Road at Valencia Boulevard. A raised sidewalk would be constructed across the existing road. The existing left turn pocket on westbound Valencia Boulevard to W Road would also be removed.

The elevation of the new driveway would be similar with the existing elevations of Valencia Boulevard, W Road, and 25048 Valencia Boulevard. The hillside south of the new driveway would be modified to accommodate a 2.5:1 slope, i.e., the hillside would be engineered to drop a foot for every 2.5 horizontal feet, and a retaining wall would not be required.

Methodology

Literature Review

Michael Baker conducted a literature review and records search for special-status plant species documented within the USGS *Newhall, California* 7.5-minute quadrangles as determined through a query of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CNDDB; CDFW 2022a) and the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CIRP; CNPS 2022). In addition, a Species List was generated from the U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation Project Planning Tool (IPaC) (USFWS 2022).

Current conservation status of species was verified through lists and resources provided by the CDFW, specifically the *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2022b) and the *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFW 2022c). In addition, Michael Baker reviewed previously prepared reports, survey results, and literature, as available, detailing the biological resources previously observed on or within the vicinity of the survey area to gain an understanding of existing site conditions, confirm previous species observations, and note the extent of any disturbances that have occurred within the survey area that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status species, as well as the following resources:

- *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009)
- *California Sensitive Natural Communities* (CDFW 2021)
- *Custom Soil Resource Report for Antelope Valley Area, California* (United States Department of Agriculture [USDA] 2022)
- Google Earth Pro Historical Aerial Imagery from 1994 to 2021 (Google, Inc. 2022)

In total, 21 special-status plant species have been recorded in the USGS *Newhall, California* 7.5-minute quadrangle (CDFW 2022a; CNPS 2022; USFWS 2022). The potentials for special-status species to occur within the survey area were determined based on known occurrence records and the following:

- **Present**: Species was observed or detected within the survey area during the field survey.
- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 1 mile of the survey area and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the survey area and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).

- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within 1 mile of the survey area and the site is within the normal expected range of this species. There is suitable habitat within the survey area, but the site is ecologically isolated from any local known extant populations or sightings.
- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the survey area, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the survey area.
- **Not Expected**: There are no occurrence records of the species within 5 miles of the survey area, there is no suitable habitat within the survey area, and/or the survey area is outside of the normal expected range for the species.

Michael Baker determined that slender mariposa lily (*Calochortus clavatus* var. *gracilis*, California Rare Plant Rank [CRPR] 1B.2) and San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina,* CRPR 1B.1) had a high potential to occur (refer to Table 1 below). All other special-status plant species were either determined to have a low potential or are not expected to occur within the survey area due to a lack of suitable habitat and/or review of occurrence records, known habit preferences and distribution, elevation ranges, and subsequent determination of potential for occurrence.

Table 1: Potentially Occurring Special-Status Plant Species

Scientific Name Common Name	**CRPR**	**Habitat Preferences and Distribution Affinities**	**Potential to Occur**
Calochortus clavatus* var. *gracilis slender mariposa lily	1B.2	Perennial herb (bulb). Habitats include chaparral, coastal scrub, and valley and foothill grassland. Found at elevations ranging from 1,050 to 3,280 feet amsl. Blooming period is March through June.	**High:** Coastal scrub and valley and foothill grassland habitats preferred by this species are present within the survey area. In addition, the nearest occurrence was documented in 2018, 0.8 mile northwest of the survey area.
Chorizanthe parryi* var. *fernandina San Fernando Valley spineflower	1B.1	Annual herb. Found in coastal scrub and valley and foothill grassland habitats. Found at elevations ranging from 490 to 4,005 feet amsl. Blooming period is April through July.	**High:** Coastal scrub and valley and foothill grassland habitats preferred by this species are present within the survey area. In addition, the nearest occurrence was documented in 2011, 0.7 mile northwest of the survey area.
Source: Michael Baker 2022			

Field Surveys

The 2022 rare plant surveys were conducted during the peak blooming periods for many plant species, but particularly for those that are known to be present or that have a moderate to high potential to occur within the survey area (refer to Table 1 above). All surveys were conducted in accordance with accepted survey protocols and guidelines (CDFW 2018; CNPS 2001) using systematic field techniques in all habitats of the survey area to ensure thorough coverage of potential impact areas, while traversing densely vegetated slopes where accessible and practical and using binoculars otherwise within other portions of the survey area. Refer to Table 2 below for a summary of the survey dates, timing, surveyors, and weather conditions.

Table 2: Survey Dates, Timing, Surveyors, and Weather Conditions

Date	Time (start / finish)	Surveyors*	Weather Conditions	
			Temperature (°F) (start / finish)	Wind Speed (mph) (start / finish)
May 4, 2022	0750 / 0920	Trina Ming	54 sunny / 80 sunny	6 – 7
June 2, 2022	0640 / 0749	Trina Ming	56 sunny / 63 sunny	1 – 2

The surveys were floristic in nature, meaning that all plants observed were identified to the lowest taxonomic level necessary to determine rarity or listing status. Plant nomenclature used in this report follows the *Jepson eFlora* (Jepson Flora Project 2022) and scientific names are provided immediately following common names of plant species (first reference only). If present, special-status plant populations were documented by counting the total number of individual occurrences and recording their locations with a GPS unit.

Existing Conditions

According to the *Custom Soil Resource Report for Antelope Valley Area, California* (USDA 2022), the survey area is underlain by the following soil units: Ojai-Zamora loams, 15 to 30 percent slopes (OzE) and Yolo loam, 2 to 9 percent slopes (YoC). Based on a review of Google Earth Pro aerial imagery from 1994 to 2021 (Google, Inc. 2022) and results from the field surveys, it was determined that the survey area consists of urban and corporate development along the north and west, a parking lot to the east, and open space to the south. The survey area is located at an elevation of approximately 1,180 to 2,142 feet above mean sea level.

Survey Results

A total of two (2) natural vegetation communities were observed and mapped within the boundaries of the surrounding survey area during the field surveys: California buckwheat scrub and fiddleneck – phacelia fields. Additionally, other land cover types mapped included ornamental/landscaped and developed areas. Table 2 below provides the acreages of each vegetation community/land use on-site.

Table 3: Vegetation Communities within the Survey Area

Vegetation Community	Acreage
California Buckwheat Scrub (*Eriogonum fasciculatum* Shrubland Alliance)	0.35
Fiddleneck – Phacelia Fields (*Amsinckia* [*menziesii, tessellata*] – *Phacelia* spp. Herbaceous Alliance)	1.98
Ornamental/Landscaped	1.25
Developed	2.67
TOTAL	**6.26**

Special-Status Vegetation Communities

No special-status vegetation communities were recorded within the survey area during the 2022 rare plant surveys as determined using the *California Sensitive Natural Communities* (CDFW 2021) list.

Special-Status Plant Species

No special-status plant species were observed within the survey area during the 2022 rare plant surveys. A total of 71 plant species were observed within the survey area during the 2022 rare plant surveys, each identified to the lowest taxonomic level necessary to determine rarity or listing status. Of those, 48 percent (34 species) are native; the other 37 species are non-native. Refer to Attachment A for a complete list of plant species observed during the 2022 rare plant surveys.

Conclusions and Recommendations

No special-status plants or special-status vegetation communities were detected onsite during the 2022 rare plant surveys. Therefore, no additional plant-related avoidance or mitigation is required prior to or during construction other than clearly fencing or marking the boundaries of construction to avoid impacting areas outside of the project site.

Please feel free to contact me at (949) 533-0918 or at ryan.winkleman@mbakerintl.com or Trina Ming at (949) 472-3495 or at trina.ming@mbakerintl.com with any questions you may have regarding the results and/or recommendations provided in this report.

Sincerely,

Ryan Winkleman
Senior Biologist
Natural Resources and Regulatory Permitting

Trina Ming
Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. *Plant Species Observed List*
B. *References*

Attachment A

Plant Species Observed List

Table A-1: Plant Species Observed List

Scientific Name*	**Common Name**	**Cal-IPC Rating****	**California Rare Plant Rank**
*Acacia cyclops**	coastal wattle		
Acmispon americanus	American bird's foot trefoil		
Acmispon glaber	deerweed		
Acmispon sp.	lotus		
Amsinckia sp.	fiddleneck		
Artemisia californica	California sagebrush		
Asclepias eriocarpa	woolypod milkweed		
Asclepias fascicularis	narrow leaf milkweed		
*Avena fatua**	wild oat		
Baccharis pilularis	coyote brush		
Baccharis salicifolia	mule fat		
Baccharis sarothroides	broom baccharis		
*Brassica nigra**	black mustard	Moderate	
*Bromus diandrus**	ripgut brome	Moderate	
*Bromus rubens**	red brome	High	
*Callistemon citrinus**	crimson bottlebrush		
Calochortus venustus	butterfly mariposa lily		
Cedrus sp.*	cedar		
*Centaurea melitensis**	tocalote	Moderate	
Cercis occidentalis	western redbud		
*Cirsium vulgare**	bull thistle	Moderate	
Clarkia purpurea	purple clarkia		
Corethrogyne filaginifolia	common sandaster		
*Coronilla varia**	purple crownvetch		
*Cotula australis**	Australian brass buttons		
Croton setiger	turkey-mullein		
Cryptantha intermedia	common cryptantha		
Cucurbita foetidissima	calabazilla		
Ericameria palmeri	Palmer goldenweed		
*Erigergon sumatrensis**	tropical horseweed		
Eriogonum fasciculatum	California buckwheat		
Eriogonum sp.	buckwheat		
*Erodium cicutarium**	coastal heron’s bill	Limited	
*Eucalyptus polyanthemos**	Silver dollar gum		
Eucrypta chrysanthemifolia var. *chrysanthemifolia*	common eucrypta		
Euphorbia albomarginata	rattlesnake sandmat		
*Festuca perennis**	Italian rye grass	Moderate	
Fraxinus sp.*	ash tree		
*Hesperaloe parviflora**	red yucca		
Heterotheca grandiflora	telegraph weed		

Table A-1: Plant Species Observed List

*Scientific Name**	Common Name	Cal-IPC Rating**	California Rare Plant Rank
*Hirschfeldia incana**	short podded mustard	Moderate	
*Lactuca serriola**	prickly lettuce		
Lagophylla ramosissima	common hareleaf		
*Lantana montevidensis**	trailing lantana		
Logfia filaginoides	California cottonrose		
Lupinus bicolor	miniature lupine		
Lupinus microcarpus	chick lupine		
Malacothrix saxatilis	cliff aster		
*Melilotus albus**	white sweet clover		
*Modiola caroliniana**	Carolina bristlemallow		
*Nicotiana glauca**	tree tobacco	Moderate	
*Oenothera rosea**	pink evening primrose		
*Olea europaea**	olive	Limited	
Pectocarya heterocarpa	sagebrush combseed		
*Plantago major**	common plantain		
Pseudognaphalium californicum	Ladies' tobacco		
Quercus agrifolia	coast live oak		
Quercus lobata	valley oak		
*Rhaphiolepis indica**	Indian hawthorne		
*Rosmarinus officinalis**	rosemary		
*Rumex crispus**	curly dock	Limited	
Sambucus nigra ssp. *caerulea*	blue elderberry		
*Schismus barbatus**	common mediterranean grass	Limited	
*Senna artemisioides**	silver senna		
*Schinus terebinthifolius**	Brazilian pepper tree	Moderate	
*Sonchus asper**	prickly sowthistle		
*Sonchus oleraceus**	common sow thistle		
Stipa ceruna	nodding needle grass		
Tamarix sp.*	salt cedar	High	
Trifoium sp.*	clover		
Typha sp.	cattail		

* Non-native species

** **California Invasive Plant Council (Cal-IPC) Ratings**

High — These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate — These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Attachment B

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Attachment D

Traffic Analysis

FOCUSED TRAFFIC ANALYSIS

FOR THE PROPOSED ACCESS ROAD

FROM VALENCIA BOULEVARD/TOURNEY ROAD INTERSECTION

TO W ROAD/STADIUM WAY

AT COLLEGE OF THE CANYONS

Prepared for

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MAY 2022
REVISED AUGUST 2022

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I.
INTRODUCTION AND STUDY METHODOLOGY

This report summarizes the results of a traffic analysis that was conducted for a proposed College of the Canyons access road that would be located at the northwest corner of the campus. A map showing the general location of the project is provided on Figure 1. The new access road would extend south from the existing intersection of Valencia Boulevard and Tourney Road and intersect with a new east-west access road that would run from the existing 76 gasoline station to W Road/Stadium Way on the College of the Canyons campus.

Access to the west side of the College of the Canyons campus is currently provided by W Road/Stadium Way, which intersects with Valencia Boulevard at a “T” intersection at the northwest corner of the college campus. The proposed project would eliminate this existing intersection and replace it by creating a south leg at the existing Valencia Boulevard/Tourney Road intersection, which is a signalized “T” intersection where Tourney Road is the north leg. A conceptual design drawing of the proposed access road is provided on Figure 2.

An analysis has been conducted to evaluate the traffic impacts of the proposed access road project. The methodology for the traffic study, in general, was to 1) establish the existing baseline traffic conditions at the two study area intersections; i.e., Valencia Boulevard at Tourney Road and Valencia Boulevard at W Road/Stadium Way, 2) project the future baseline traffic conditions for the target year of completion for the proposed project (year 2023), 3) estimate the levels of traffic that would be shifted to the new access road and attracted to the new road, and 4) conduct a comparative analysis of traffic conditions with and without the proposed project.

The objective of the traffic analysis is to determine if the proposed lane configuration for the proposed access road and intersections would accommodate the projected traffic volumes at an acceptable level of service. The analysis addresses the conditions at two intersections: the modified intersection of Valencia Boulevard and Tourney Road and the new intersection of the Tourney Road extension and the proposed east-west access road. The intersection of Valencia Boulevard and W Road/Stadium Way was not evaluated (other than taking traffic counts) because it would be eliminated as a result of the project.

The traffic analysis is based on an evaluation of the levels of service at the study area intersections. Level of service (LOS) is an industry standard by which the operating conditions of a roadway segment or an intersection are measured. LOS is defined on a scale of A through F with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS A is characterized as having free flowing traffic conditions with no restrictions on maneuvering or operation speeds, where traffic volumes and delays are low and travel speeds are high. LOS F is characterized as having forced flow with many stoppages, lengthy delays, and low operating speeds.

According to the City of Santa Clarita standards, LOS A through D represent acceptable conditions, while LOS E and F represent congested, over-capacity conditions. The levels of service at the study area intersections were determined by using the Highway Capacity Software.

The levels of service for the study area intersections were analyzed for the following scenarios: existing conditions, existing conditions plus the proposed project, future baseline conditions without the proposed project for the target year of 2023, and future conditions with the proposed project. The year 2023 was used for the future target year as that is anticipated to be the year of completion for the proposed project.

II.
EXISTING AND FUTURE TRAFFIC CONDITIONS

The roadway network in the project vicinity, the proposed access road features, the existing traffic volumes, the future traffic volumes, and the intersection levels of service are described below.

Roadway Network

The roadways in the study area include Valencia Boulevard, Tourney Road, and W Road/Stadium Way. The following paragraphs provide a brief description of these roads. In addition, Interstate 5 is located approximately 800 feet west of the proposed project site. The focused study area roadways and the existing lane configuration at the intersections are shown on Figure 3.

Valencia Boulevard

Valencia Boulevard is an east-west arterial highway that abuts the north side of the college campus. It is a divided highway with three through lanes in the eastbound direction and four through lanes in the westbound direction. It has an interchange with Interstate 5 west of the project site to provide access to and from the freeway. The speed limit on Valencia Boulevard is 50 miles per hour.

Tourney Road

Tourney Road is a two lane north-south street that extends north from its signalized intersection with Valencia Boulevard. It has a continuous two-way left turn lane and bicycle lanes on both sides of the street. The speed limit on Tourney Road is 40 miles per hour.

W Road/Stadium Way

W Road/Stadium Way is a two lane north-south street that runs along the west side of the college campus. It extends south from its unsignalized intersection with Valencia Boulevard and provides access to campus parking lots, the stadium area, and other athletics fields. There is no posted speed limit on W Road/Stadium Way.

Proposed Access Road Features

The proposed project would provide an extension of Tourney Road south of the existing signalized intersection of Valencia Boulevard and Tourney Road. This extension of Tourney Road would intersect with a new east-west access road that would run between the existing 76 station and W Road/Stadium Way on the college campus. The existing intersection of Valencia Road at W Road/Stadium Way would be eliminated.

As shown on Figure 2, the project would provide a new left turn pocket to accommodate westbound to southbound left turns onto the new access roadway at the Valencia Boulevard/Tourney Road intersection. The traffic signal would be modified to accommodate this left turn movement and the new south leg of the intersection. In addition, the southbound approach of Tourney Road would be re-striped to replace the existing left turn lane (the middle of the three lanes on this approach) with a combination through/left turn lane.

As shown on Figure 3, the Valencia Boulevard/Tourney Road intersection currently has five lanes on the eastbound approach (two left turn lanes and three through lanes), four lanes on the westbound approach (three through lanes and a combination through/right turn lane), and three lanes on the southbound approach (two left turn lanes and a right turn lane). The proposed lane configuration for the new intersection, as shown on Figure 4, would have six lanes on the eastbound approach (two left turn lanes, three through lanes, and a right turn lane), five lanes on the westbound approach (a left turn lane, three through lanes, and a combination through/right turn lane), three lanes on the southbound approach (a left turn lane, a combination through/left turn lane, and a right turn lane), and three lanes on the northbound approach (a left turn lane, a combination through/left turn lane, and a right turn lane).

The new intersection of the Tourney Road extension south of Valencia Boulevard and the new east-west access road would have stop signs on the east and west legs of the intersection and no stop sign for the southbound approach to the intersection. As currently proposed, the eastbound approach would have one lane (a combination through/left turn lane), the westbound approach would have one lane (a combination through/right turn lane), and the southbound approach would have two lanes (a left turn lane and a right turn lane).

Existing Traffic Volumes

Manual traffic counts were taken at the study area intersections in September 2021 during the morning and afternoon peak periods when college was in session. Figure 5 shows the existing peak hour traffic volumes and turning movements at each intersection. The traffic counts were taken from 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. and the highest one-hour period of traffic flow was determined for each intersection. The morning peak hour generally occurs between 7:00 and 8:00 a.m. and the afternoon peak period generally occurs between 5:00 and 6:00 p.m.

Projected Future Traffic Volumes

The 2023 baseline traffic volumes were estimated by multiplying the existing traffic volumes by a growth factor of 4.04 percent (two percent per year for two years, compounded annually). As the existing traffic counts were taken in the fall of 2021, the 2023 projections are two years into the future. The growth factor accounts for the traffic increases associated with general regional growth as well as development projects in the area. The projected 2023 traffic volumes without the project are shown on Figure 6.

Intersection Levels of Service

To quantify the existing and future baseline traffic conditions, the intersection of Valencia Boulevard and Tourney Road was analyzed to determine the operating conditions during the morning and afternoon peak hours. Based on the peak hour traffic volumes, the turning movement counts, and the existing number of lanes at the intersection, the average vehicle delay values (seconds of delay per vehicle) and corresponding levels of service (LOS) were determined by using the Highway Capacity Software.

The relationship between the average delay values and levels of service is shown in Table 1. The correlation is different for signalized intersections vs. unsignalized intersections that have stop signs.

TABLE 1 RELATIONSHIP BETWEEN DELAY VALUES & LEVELS OF SERVICE		
Level of Service	***Delay Value (seconds) Signalized Intersections***	***Delay Value (seconds) Unsignalized Intersections***
A	0.0 to 10.0	0.0 to 10.0
B	> 10.0 to 20.0	> 10.0 to 15.0
C	> 20.0 to 35.0	> 15.0 to 25.0
D	> 35.0 to 55.0	> 25.0 to 35.0
E	> 55.0 to 80.0	> 35.0 to 50.0
F	> 80.0	> 50.0

The existing and future baseline delay values and levels of service at the Valencia Boulevard/ Tourney Road intersection are shown in Table 2 for the morning and afternoon peak hours. As shown, the intersection currently operates with an average delay value of 9.1 seconds per vehicle during the AM peak hour, which equates to LOS A. During the PM peak hour, the intersection operates with an average delay value of 13.7 seconds, which equates to LOS B. For the future 2023 scenario, the delay values would increase slightly to 9.4 and 14.2 seconds per vehicle, respectively, and the levels of service would remain at LOS A and B. These LOS values represent acceptable traffic conditions according to the City of Santa Clarita criteria.

TABLE 2 EXISTING INTERSECTION LEVELS OF SERVICE	
Intersection/Scenario	***Delay Value (seconds/vehicle) & Level of Service***
Valencia Boulevard/Tourney Road – Existing Conditions	
AM Peak Hour	9.1 – A
PM Peak Hour	13.7 – B
Valencia Boulevard/Tourney Road – 2023 Without Project	
AM Peak Hour	9.4 – A
PM Peak Hour	14.2 – B

III.
TRAFFIC ANALYSIS

This section summarizes the analysis of the proposed project's impacts on study area traffic conditions. First is a discussion of the projected traffic volumes associated with the modified roadway network/access system. This is followed by a discussion of the City of Santa Clarita's standards of significance and a comparative analysis of the intersection levels of service along the new access road. One of the primary objectives of the traffic analysis was to determine if the proposed lane configurations at the two intersections along the new access road could adequately accommodate the volumes of traffic that are projected to travel through the intersections.

Projected Traffic Volumes

As the proposed project would result in the elimination of the Valencia Boulevard/W Road/Stadium Way intersection, the traffic that currently passes through that intersection while traveling to and from the College of the Canyons campus would shift to the new access road and intersections. Also, since the new intersection would provide the opportunity for motorists leaving the college campus to turn left (westbound) onto Valencia Boulevard and proceed directly north on Tourney Road (movements that are not currently possible at the existing W Road/Stadium Way intersection), the project would likely result in a diversion of traffic from the Rockwell Canyon Road/Valencia Boulevard intersection to the new intersection. Rockwell Canyon Road runs along the east side of the college campus while W Road/Stadium Way runs along the west side of the campus. Existing traffic counts indicate that 120 vehicles turn left from northbound Rockwell Canyon Road during the AM peak hour and 110 vehicles turn left during the PM peak hour. For the analysis, it was assumed that approximately 50 percent of this left-turning traffic would divert to the new intersection, which is most likely an over-estimation. This assumption results in 60 vehicles per hour being diverted to the new intersection during each peak period and it was assumed that 40 vehicles would turn left onto Valencia Boulevard and that 20 vehicles would travel north on Tourney Road.

In addition, the new access road would create a new travel route to the 76 gasoline station/Circle K for motorists traveling southbound on Tourney Road and westbound on Valencia Boulevard. The *Trip Generation Manual* indicates that a convenience store/gas station with 10 vehicle fueling positions generates 270 vehicle trips during the AM peak hour (135 inbound and 135 outbound) and 228 trips during the PM peak hour (114 inbound and 114 outbound). For the analysis, it was assumed that approximately 50 percent of these values would be attracted to the new intersection, which equates to 70 inbound and 70 outbound vehicles during the AM peak hour and 60 inbound and 60 outbound vehicles during the PM peak hour (rounded). The inbound movements were assigned to the westbound left turn and southbound through directions while the outbound movements were assigned to the northbound left turn and northbound through directions. These are movements that can't be made at the 76 station's existing driveway.

The volumes of traffic that would use the new access road were projected based on the above assumptions regarding shifted traffic from the existing W Road/Stadium Way intersection, diverted traffic from the Rockwell Canyon Road intersection, and new traffic generated by the 76 station. The projected volumes of new and shifted traffic that would travel through the study area intersections are shown on Figure 7 for the AM and PM peak hours.

The traffic volumes associated with the shifted traffic patterns and the additional 76 station traffic attracted to the proposed access road were then added to the existing and future baseline traffic volumes to quantify the traffic conditions with the proposed project. The existing plus project traffic volumes are shown on Figure 8 and the year 2023 traffic volumes with the project are shown on Figure 9.

Standards of Significance

The significance criteria for the City of Santa Clarita indicate that an intersection would be significantly impacted if a project would result in a change in the level of service from LOS D or better to an unacceptable LOS E or F. It also states that an increase of four or more seconds of delay at an intersection that operates at LOS D or an increase of two or more seconds of delay at an intersection that operates at LOS E or F would constitute a significant impact.

Intersection Level of Service Analysis

A traffic analysis was conducted to quantify the delay values and levels of service at the study area intersections and to determine if the proposed lane configurations at the intersections could adequately accommodate the projected traffic volumes. Four scenarios were evaluated for the two intersections: existing conditions, existing plus project conditions, 2023 without the project, and 2023 with the project.

The results of the level of service analysis are shown in Table 3 for the existing conditions scenario as the baseline. Table 3 shows the before and after delay values and the levels of service that would occur at each study area intersection for each scenario. Also shown are the increases in the delay values that would occur as a result of the proposed project. The last column in Table 3 indicates if the intersections would be significantly impacted by the proposed project.

TABLE 3
INTERSECTION LEVELS OF SERVICE - EXISTING CONDITIONS BASELINE SCENARIO

Intersection	Delay Value & Level of Service		Increase In Delay Value	Significant Impact
	Existing Conditions	Existing plus Project		
SIGNALIZED INTERSECTION				
Valencia Blvd/Tourney Road				
AM Peak Hour	9.1 – A	17.4 – B	8.3	No
PM Peak Hour	13.7 – B	26.4 – C	12.7	No
UNSIGNALIZED INTERSECTION				
Tourney Road Extension/New Access Road				
AM Peak Hour	N/A	12.6 – B	12.6	No
PM Peak Hour	N/A	12.6 – B	12.6	No

The intersection of Valencia Boulevard and Tourney Road, for example, would operate with an average delay value of 9.1 seconds per vehicle and LOS A during the AM peak hour for the existing conditions scenario and with an average delay value of 17.4 seconds and LOS B for the existing plus project scenario, which represents an increase in average delay of 8.3 seconds per vehicle. This impact would be less than significant according to the criteria outlined above because the intersection would continue to operate at an acceptable level of service (LOS B).

Table 3 indicates that neither of the study area intersections would be significantly impacted by the project because both intersections would operate at an acceptable LOS A, B, and C. The project would not, therefore, result in a significant impact and the proposed lane configurations could readily accommodate the projected traffic volumes at the two intersections. It was assumed for the level of service analysis that the traffic signal at the Valencia Boulevard/Tourney Road intersection would have split phasing for the north and south approaches of the intersection.

The results of the level of service analysis are shown in Table 4 for the 2023 baseline scenario. Table 4 indicates that neither of the study area intersections would be significantly impacted by the project because both intersections would operate at an acceptable LOS A, B, and C. The project would not, therefore, result in a significant impact and the proposed lane configurations could readily accommodate the projected traffic volumes at the two intersections.

TABLE 4
INTERSECTION LEVELS OF SERVICE - YEAR 2023 BASELINE SCENARIO

	Delay Value & Level of Service			
Intersection	***2023 Without Project***	***2023 With Project***	***Increase In Delay Value***	***Significant Impact***
SIGNALIZED INTERSECTION				
Valencia Blvd/Tourney Road				
AM Peak Hour	9.4 – A	17.7 – B	8.3	No
PM Peak Hour	14.2 – B	27.0 – C	12.8	No
UNSIGNALIZED INTERSECTION				
Tourney Road Extension/New Access Road				
AM Peak Hour	N/A	12.6 – B	12.6	No
PM Peak Hour	N/A	12.6 – B	12.6	No

Tables 3 and 4 indicate that the proposed project would not have a significant impact at any of the study area intersections during the morning or afternoon peak hour based on the significance criteria presented previously because the intersections would continue to operate at acceptable LOS A, B, and C for all scenarios. As there would be no significant impacts, no capacity-related mitigation measures would be required. The proposed design of the new roadway and intersections could readily accommodate the projected traffic volumes.

IV.
SUMMARY OF IMPACTS AND CONCLUSIONS

The key findings of the traffic impact analysis are presented below.

- The proposed project is the construction of a new access road at the northwest corner of the College of the Canyons campus that would provide a link between the signalized Valencia Boulevard/Tourney Road intersection and the existing W Road/Stadium Way, which runs along the west side of the college campus.
- The existing intersection of Valencia Boulevard and W Road/Stadium Way would be eliminated.
- The proposed project would improve access to the campus as well as the existing 76 station at the west end of the access road because the improved intersection of Valencia Boulevard at Tourney Road could accommodate turning movements from all directions of travel.
- A level of service analysis of the two intersections along the new access road indicates that the project would not result in a significant impact and that the proposed lane configuration could readily accommodate the projected traffic volumes as the intersection levels of service would be at an acceptable LOS A, B, and C.

Google Maps College of the Canyons

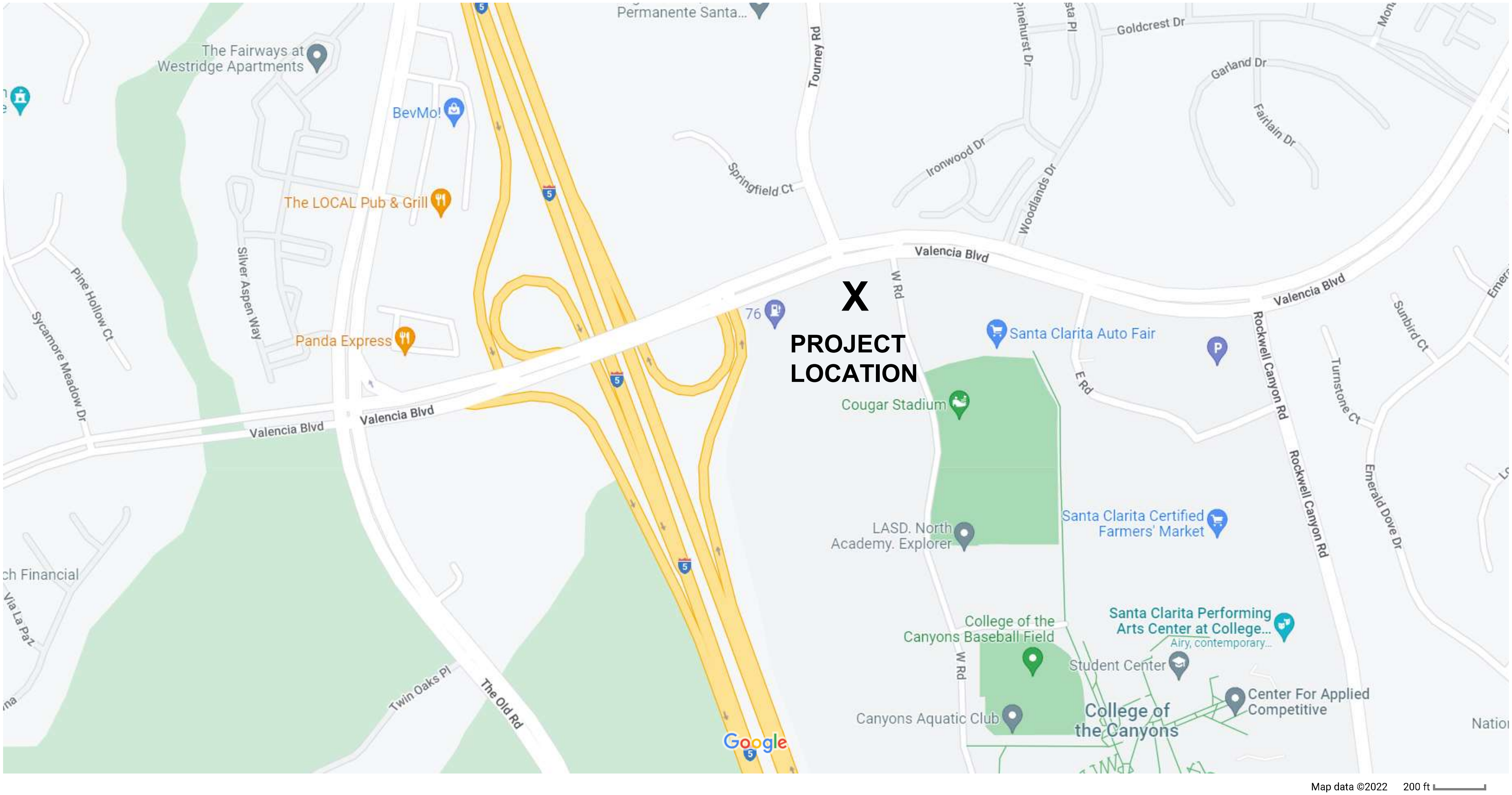

FIGURE 1
LOCATION MAP

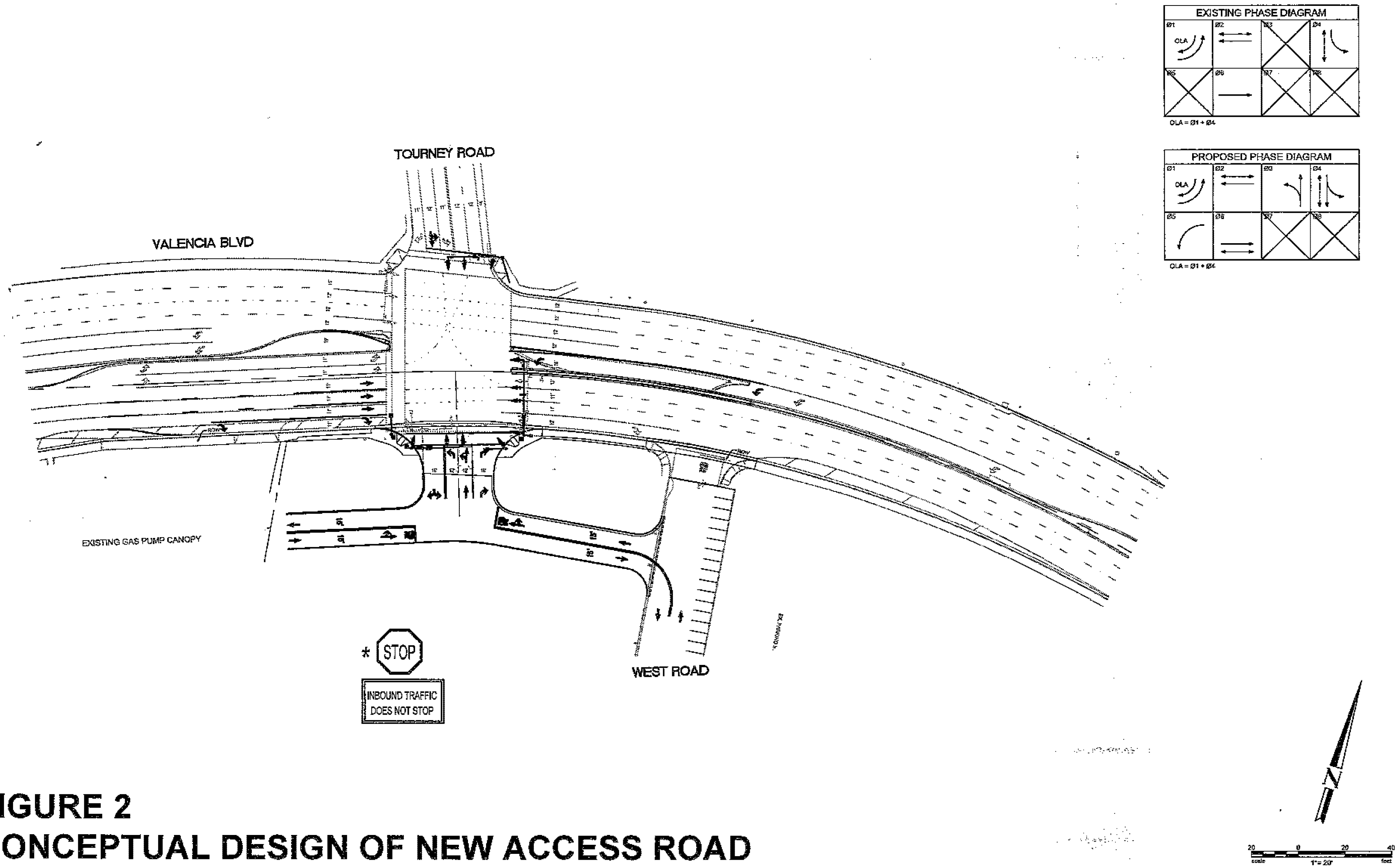

FIGURE 2
CONCEPTUAL DESIGN OF NEW ACCESS ROAD

PLANS PREPARED FOR:
SANTA CLARITA COMMUNITY COLLEGE DISTRICT
26455 ROCKWELL CANYON ROAD
SANTA CLARITA, CA 91355

DAVID EVANS AND ASSOCIATES INC.
145 S. SPRING STREET, SUITE 120
LOS ANGELES, CA 90012
Phone: 213.785.7887

PREPARED UNDER THE SUPERVISION OF:
ROBERT A. KILPATRICK, R.C.E. 42386 DATE

CITY OF SANTA CLARITA
CONCEPTUAL GEOMETRIC PLAN
TRAFFIC SIGNAL PLAN
VALENCIA BLVD AND TOURNEY ROAD

SCALE: 1"=20'
DATE: 5/10/2022
JOB NO. 3547
SHEET: 1 OF 1

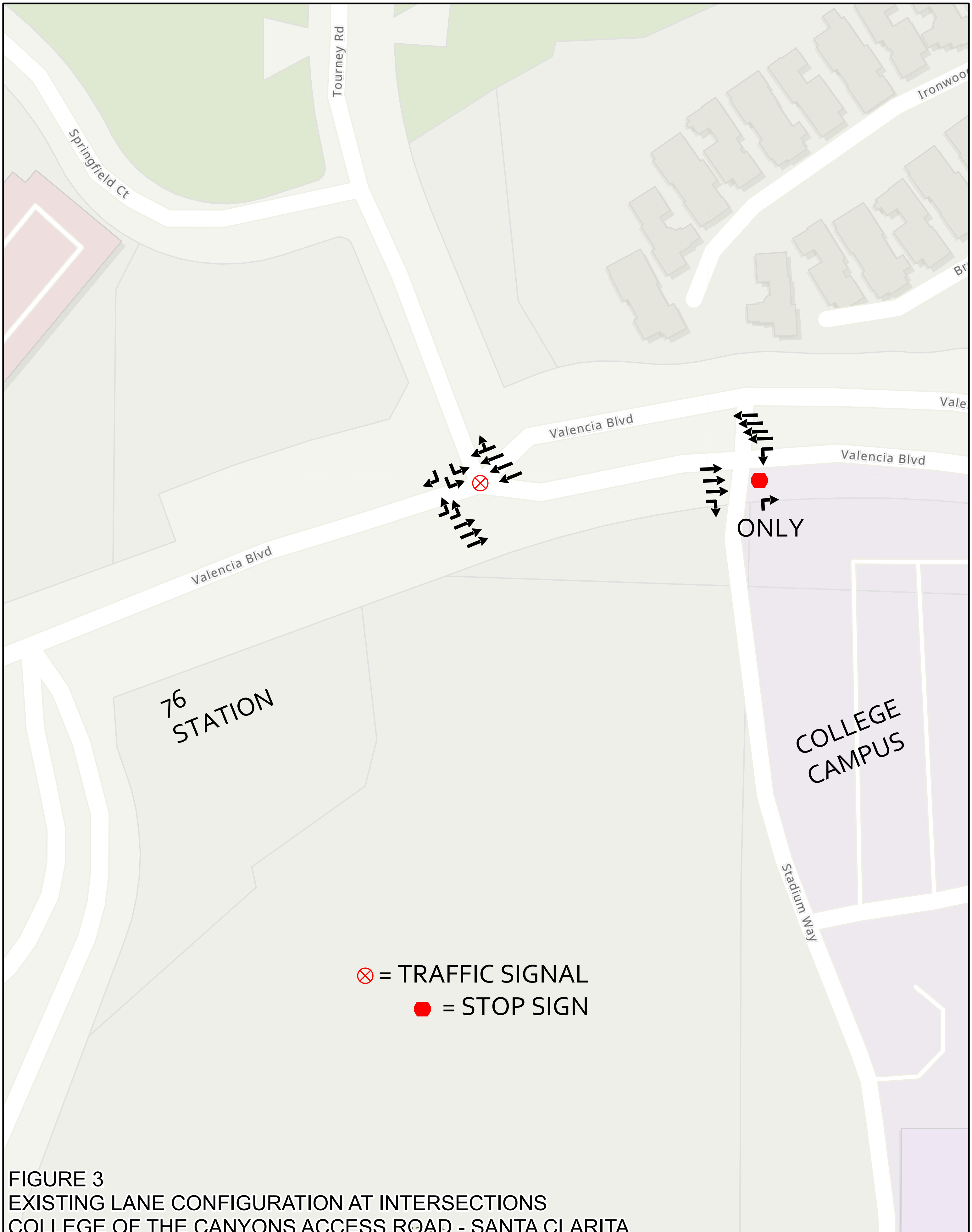

FIGURE 3
EXISTING LANE CONFIGURATION AT INTERSECTIONS
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

FIGURE 4
PROPOSED LANE CONFIGURATION AT INTERSECTIONS
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

FIGURE 5
EXISTING TRAFFIC VOLUMES
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

FIGURE 6
2023 TRAFFIC VOLUMES WITHOUT PROJECT
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

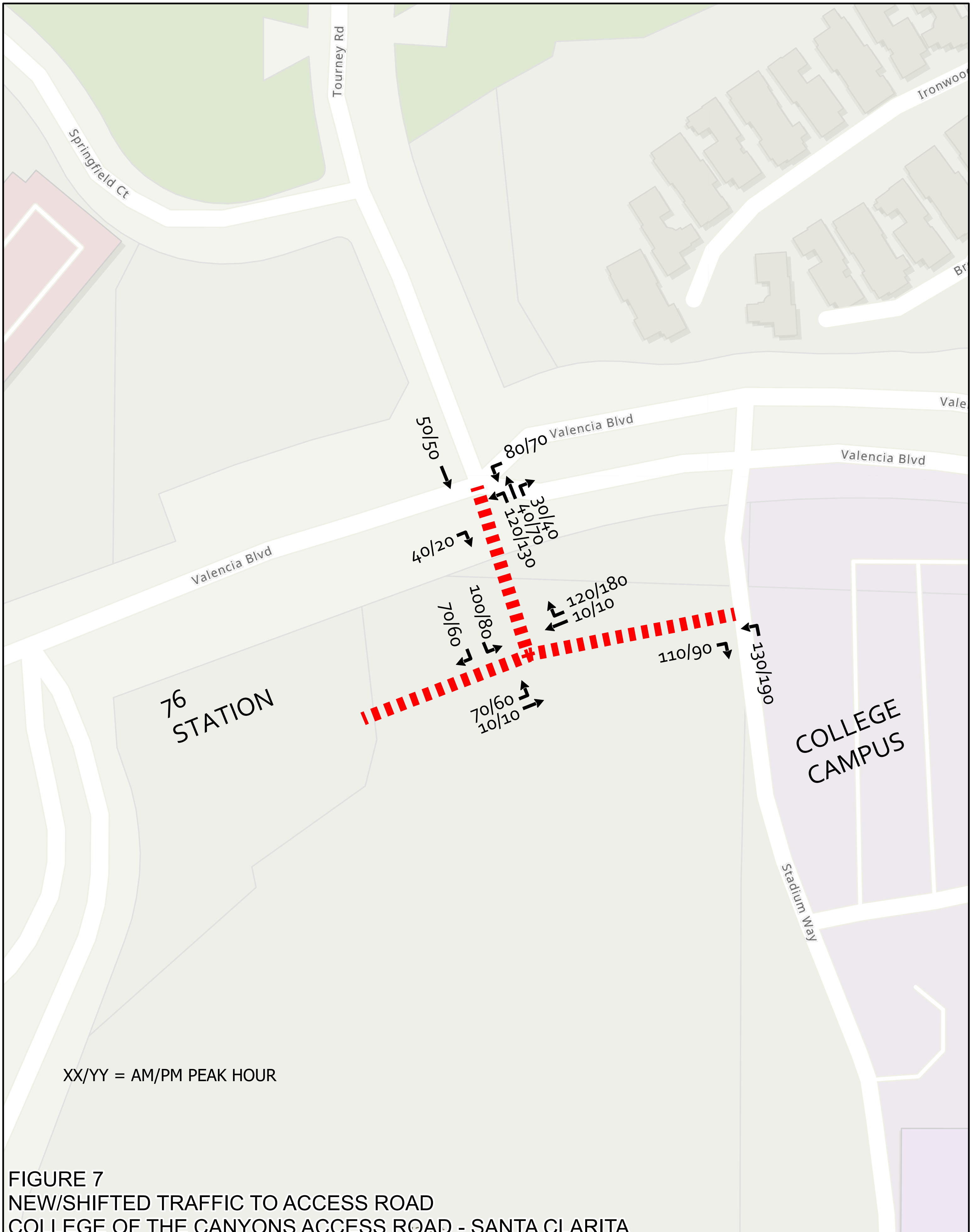

FIGURE 7
NEW/SHIFTED TRAFFIC TO ACCESS ROAD
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

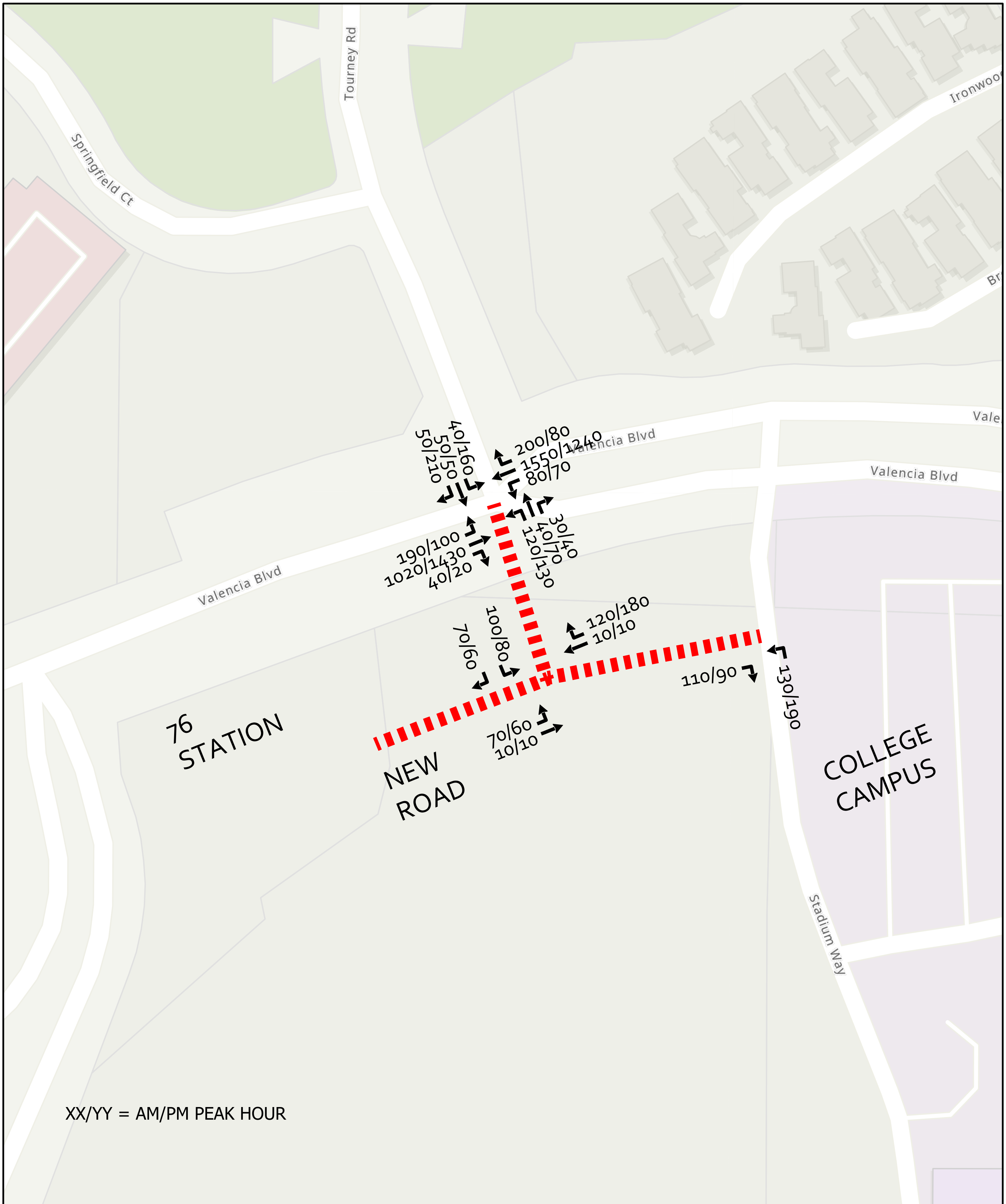

FIGURE 8
EXISTING PLUS PROJECT TRAFFIC VOLUMES
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

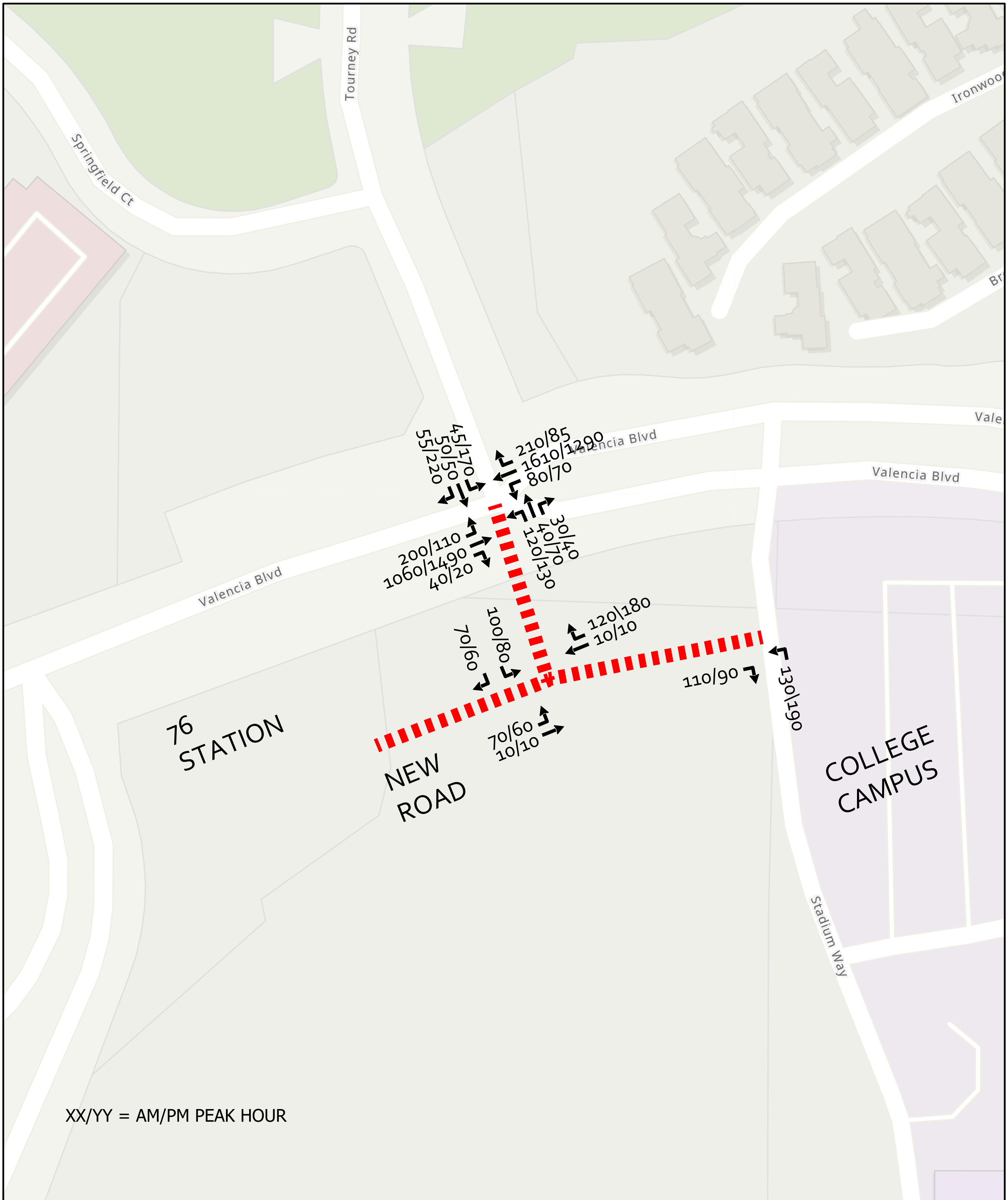

FIGURE 9
2023 TRAFFIC VOLUMES WITH PROJECT
COLLEGE OF THE CANYONS ACCESS ROAD - SANTA CLARITA

Attachment E

Noise Analysis

July 2022

Barbara Heyman
Michael Baker International
9755 Clairemont Mesa Blvd, Suite 100
San Diego, CA 92124-1333

Subject: Santa Clarita Community College District Driveway Project – Noise Impact Memorandum

PURPOSE

This memorandum documents the results of a Noise Impact Assessment completed for the Santa Clarita Community College District Driveway Project (Project). This assessment was prepared as a comparison of predicted Project noise levels to noise standards promulgated by the City of Santa Clarita General Plan Noise Element and Municipal Code. The purpose of this report is to estimate Project-generated noise levels and to determine the level of impact the Project would have on the environment.

PROJECT DESCRIPTION

The Proposed Project involves improvements to the T-intersection located at Valencia Boulevard and Tourney Road in Santa Clarita, California. Specifically, the Project proposes the construction of a 4th leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station located at the southeast corner of the Valencia Boulevard/Interstate 5 offramp. Additionally, a new traffic signal will be installed along with minor improvements to the center median of Valencia Boulevard. The total ground disturbance necessary to complete the proposed access driveway is 1.08 acres (47,081 square feet). The Project Site is zoned Public/Institutional (PI) by the City of Santa Clarita Zoning Code.

Surrounding land uses include a couple of office buildings to the northwest, Tourney Road to the north, a residential neighborhood to the northeast, a parking lot serving College of the Canyons to the east, vacant land to the south and the existing gasoline station to the west. Interstate 5 traverses the Project vicinity in a generally north-south direction to the west of the gasoline station.

NOISE ANALYSIS

Fundamentals of Sound and Environmental Noise

Addition of Decibels

The decibel (dB) scale is logarithmic, not linear; therefore, sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Under the dB scale, three sources of equal loudness together would produce an increase of 5 dB.

Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB (dBA) for each doubling of distance from a stationary or point source (FHWA 2017). Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dBA for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Federal Highway Administration [FHWA] 2017). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction of 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the “line of sight” between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the line of sight between the source and the receiver.

The manner in which older structures in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (California Department of

Transportation [Caltrans] 2002). The exterior-to-interior reduction of newer structures is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. [HMMH] 2006).

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL (Community Noise Equivalent Level) are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA "weighting" added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
- **Community Noise Equivalent Level (CNEL)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. and a 10-dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60- to 70-dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA), or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA noise levels, the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Vibration Fundamentals

Ground vibration can be measured several ways to quantify the amplitude of vibration produced. This can be through peak particle velocity or root mean square velocity. These velocity measurements measure maximum particle at one point or the average of the squared amplitude of the signal, respectively. Vibration impacts on people can be described as the level of annoyance and can vary depending on an individual's sensitivity. Generally, low-level vibrations may cause window rattling but do not pose any threats to the integrity of buildings or structures.

Existing Noise Environment

The City of Santa Clarita, which encompasses the Project Site, is impacted by various noise sources. It is subject to typical urban noise such as noise generated by traffic, heavy machinery, and day-to-day outdoor activities as well as noise generated from the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) that generate stationary source noise. Mobile sources of noise, especially cars and trucks, are the most common source of noise in the community. The noise surveys conducted in 2011 for the City's General Plan concluded that the ambient noise environment in Santa Clarita is largely influenced by roadway noise. The Project Site is located in the immediate proximity of Valencia Boulevard and Interstate 5. The City's General Plan identifies the Project Site within an area that experiences 65 dBA CNEL predominately as a result of vehicular traffic on these two roadways.

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest noise-sensitive land uses to the Project Site are residences located to the northeast, across Valencia Boulevard. The nearest residence is accessed from Ironwood Drive and is positioned approximately 165 feet (50 meters) from the Project Site.

Regulatory Setting

Federal

National Institute of Occupational Safety and Health

A division of the U.S. Department of Health and Human Services, the National Institute for Occupational Safety and Health (NIOSH) has established a construction-related noise level threshold as identified in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998. NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. The intention of these thresholds is to protect people from hearing losses resulting from occupational noise exposure.

Local

City of Santa Clarita General Plan Noise Element

The Noise Element of the General Plan provides policy direction for minimizing noise impacts in the community and for coordinating with surrounding jurisdictions and other entities regarding noise control. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noise, noise considerations will influence the general distribution, location, and intensity of future land use. The result is that effective land use planning and mitigation can alleviate the majority of noise problems.

The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating certain land uses at locations within the city that would negatively affect noise sensitive land uses. Uses such as schools, hospitals, childcare, senior care, congregate care, churches, and all types of residential use should be located outside of any area anticipated to exceed acceptable noise levels as defined by the Noise and Land Use Compatibility Guidelines or should be protected from noise through sound attenuation measures such as site and architectural design and sound walls. The City of Santa Clarita has adopted this concept as a basis for planning decisions based on noise considerations.

The Noise Element also contains objectives and policies that must be used to guide decisions concerning land uses that are common sources of excessive noise levels. The following relevant and applicable goals and policies from the City's Noise Element have been identified for the Project.

Objective N 1.1: Protect the health and safety of the residents of the Santa Clarita Valley by the elimination, mitigation, and prevention of significant existing and future noise levels.

- **Policy N 1.1.1**: Use the Noise and Land Use Compatibility Guidelines contained on Exhibit N-8 [of the General Plan Noise Element], which are consistent with State guidelines, as a policy basis for decisions on land use and development proposals related to noise.
- **Policy N 1.1.2**: Continue to implement the adopted Noise Ordinance and other applicable code provisions, consistent with state and federal standards, which establish noise impact thresholds for

noise abatement and attenuation, in order to reduce potential health hazards associated with high noise levels.

- **Policy N 3.1.3**: Through enforcement of the applicable Noise Ordinance, protect residential neighborhoods from noise generated by machinery or activities that produce significant discernable noise exceeding recommended levels for residential uses.
- **Policy N 3.1.4**: Require that those responsible for construction activities develop techniques to mitigate or minimize the noise impacts on residences, and adopt standards that regulate noise from construction activities that occur in or near residential neighborhoods.

City of Santa Clarita Municipal Code

The City of Santa Clarita's regulations with respect to noise are included in Chapter 11.44, *Noise Limits*. Applicable to the Proposed Project, Chapter 11.44.080 *Special Noise Sources—Construction and Building*, states that no person shall engage in any construction work which requires a building permit from the City on sites within three hundred (300) feet of a residentially zoned property except between the hours of seven a.m. to seven p.m., Monday through Friday, and eight a.m. to six p.m. on Saturday. Further, no work shall be performed on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day and Labor Day.

Standards of Significance

For purposes of this analysis, City of Santa Clarita noise standards were used for evaluation of Project-related noise impacts. As previously stated, Chapter 11.44 of the City of Santa Clarita Municipal Codes states that that no person shall engage in any construction work which requires a building permit from the City on sites within 300 feet of a residentially zoned property except between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturday. Further, no work shall be performed on the following public holidays: New Year's Day, Independence Day, Thanksgiving, Christmas, Memorial Day and Labor Day. In order to evaluate the potential health-related effects (physical damage to the ear and mental damage from lack of sleep or focus) from construction noise, construction equipment noise levels are calculated and compared against the construction-related noise level threshold established in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998 by NIOSH, described above.

Methodology

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. In order to estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, predicted construction noise levels were calculated utilizing the FHWA's Roadway Construction Model (2006). Operational noise levels are addressed qualitatively. Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from California Department of Transportation (Caltrans) guidelines set forth above. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby structures.

Noise Impact Discussion

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The significance criteria promulgated by the City's General Plan and Municipal Code may be relied upon to make impact determinations.

Would the Project Result in the Generation of a Substantial Temporary or Permanent Increase in Ambient Noise Levels in the Vicinity of the Project in Excess of Standards Established in the Local General Plan or Noise Ordinance, or Applicable Standards of other Agencies?

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise sensitive and may warrant unique measures for protection from intruding noise. The nearest noise-sensitive land use to the Project Site is a residential neighborhood located to the northeast, across Valencia Boulevard. The nearest residence in this neighborhood is accessed from Ironwood Drive and is positioned approximately 145 feet (44 meters) from the Project Site.

Onsite Construction Noise Impacts

Construction noise associated with the Proposed Project would be temporary and would vary depending on the specific nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., site preparation, excavation, paving). Noise generated by construction equipment, including earth movers, pile drivers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive land uses in the vicinity of the construction site.

As previously described, the City of Santa Clarita Municipal Code states that that no person shall engage in any construction work which requires a building permit from the City on sites within 300 feet of a residentially zoned property except between the hours of 7:00 a.m. to 7:00 p.m., Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturday. The Project would be required to comply with this Municipal Code requirement.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptors and in order to evaluate the potential health-related effects (physical damage to the ear) from construction noise, the construction equipment noise levels were calculated using the Roadway Noise Construction Model and compared against the construction-related noise level threshold established in the Criteria for a Recommended Standard: Occupational Noise Exposure prepared in 1998 by NIOSH. A division of the U.S. Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors.

The anticipated short-term construction noise levels generated for the necessary equipment is presented in Table 1.

Table 1. Construction Average (dBA) Noise Levels at Nearest Residential Receptors

Equipment	Estimated Exterior Construction Noise Level at Existing Residences (dBA)	Construction Noise Standards (dBA L_{eq})	Exceeds Standards?
Site Preparation/Grubbing	72.4 dBA	*85*	**No**
Grading/Excavation	79.0 dBA	*85*	**No**
Drainage/Utilities	78.7 dBA	*85*	**No**
Paving	75.7 dBA	*85*	**No**

Source: Construction noise levels were calculated by ECORP Consulting using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Attachment A for Model Data Outputs.

Notes: Construction equipment used during construction derived from the Roadway Construction Emissions Model (RCEM). RCEM contains default construction equipment and usage parameters for typical roadway construction projects. The nearest residence is located approximately 145 feet from the Project Site.

L_{eq} = The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.

As shown in Table 1, Project onsite construction activities would not exceed the NIOSH threshold of 85 dBA L_{eq} at the nearest noise-sensitive receptors.

Offsite Construction Traffic Noise Impacts

Construction associated with the Project would result in additional traffic (e.g., worker commutes and material hauling) on adjacent roadways over the period that construction occurs. According to the RCEM, which is used to predict the number of on-road Project construction-related trips, construction would not instigate more than 108 trips in a single day (up to 34 construction worker commute trips and up to 74 haul truck trips). According to the Caltrans *Technical Noise Supplement to the Traffic Noise Analysis Protocol* (2013), doubling of traffic on a roadway is required to result in an increase of 3 dB (outside of the laboratory, a 3-dBA change is considered a just-perceivable difference). While Project construction workers would instigate their trip to the Project Site from differing locations, the majority of all construction worker traffic trips would access the Project Site from Valencia Boulevard via Interstate 5. The Santa Clarita General Plan classifies Valencia Boulevard as a Major Highway that can accommodate approximately 54,000 vehicles per day. Similarly, per Caltrans traffic counts the segment of Interstate 5 traversing the Project Site to the west currently accommodates an average daily traffic count of 170,000 vehicles (Caltrans 2021). Thus, Project construction would not result in a doubling of traffic, and therefore its contribution to existing traffic noise would not be perceptible. Additionally, it is noted that construction is temporary, and construction-related trips would cease upon completion of construction.

Operational Noise Impacts

The Project proposes improvements to the T-intersection located at Valencia Boulevard and Tourney Road in Santa Clarita, California. Specifically, the Project proposes the construction of a 4^{th} leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station located at the southeast corner of the Valencia Boulevard/Interstate 5 offramp. There would be no increase in student enrollment at College of the Canyons as a result of the Project and the Proposed Project itself would not generate automobile trips, a source of noise, but would instead accommodate more efficient vehicular access to the college and existing gas station. Currently, vehicles accessing College of the Canyons from Valencia Boulevard rely on W Road, directly adjacent to Project Site's eastern boundary, and vehicles currently accessing the existing gas station use an existing driveway off Valencia Boulevard directly adjacent to the Project Site's western boundary. Therefore, since the College of the Canyons and the existing gas station are currently able to be accessed from Valencia Boulevard, the improved access on Valencia Boulevard provided by the Proposed Project would not substantially reroute local traffic patterns in a manner that increases traffic noise. The Project's contribution to existing traffic noise would not be perceptible.

Would the Project Result the Generation of Excessive Groundborne Vibration or Groundborne Noise Levels?

Construction Vibration Impacts

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the Proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project Site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is not anticipated that pile drivers would be necessary during Project construction. Vibration decreases rapidly with distance and it is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in Table 2.

Table 2. Typical Construction Equipment Vibration Levels	
Equipment Type	**Peak Particle Velocity at 25 Feet (inches per second)**
Vibratory Roller	0.21
Hoe Ram (Rock Breaker)	0.089
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: FTA 2018

The City of Santa Clarita does not regulate vibrations associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020) recommended standard of 0.2 inch per second peak particle velocity (PPV) with respect to the prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. Consistent with FTA recommendations for calculating construction vibration, construction vibration was measured from the center of the Project Site (FTA 2018). The nearest structures to the construction site are gasoline dispensers and associated canopy approximately 135 feet south of the proposed improvements to the center median of Valencia Boulevard

Based on the representative vibration levels presented for various construction equipment types in Table 2 and the construction vibration assessment methodology published by the FTA (2018), it is possible to estimate the potential Project construction vibration levels. The FTA provides the following equation:

$$[PPVequip = PPVref \times (25/D)^{1.5}]$$

Table 3 presents the expected Project related vibration levels at a distance of 135 feet.

Table 3. Project Construction Vibration Levels at 135 Feet							
Receiver PPV Levels (in/sec)[1]					Peak Vibration	Threshold	Exceed Threshold
Vibratory Roller	Large Bulldozer, Caisson Drilling, & Hoe Ram	Loaded Trucks	Jack-hammer	Small Bulldozer			
0.0167	0.0070	0.0060	0.0027	0.0002	**0.0167**	*0.02*	**No**

[1]Based on the Vibration Source Levels of Construction Equipment included on Table 2 (FTA 2018).

As shown, groundborne vibrations attenuate rapidly from the source due to geometric spreading and material damping. Geometric spreading occurs because the energy is radiated from the source and spreads over an increasingly large distance while material damping is a property of the friction loss which occurs during the passage of a vibration wave. Vibration as a result of construction activities would not exceed 0.2 PPV at the nearest structure. Thus, Project construction would not exceed the recommended threshold.

Operational Vibration Impacts

Project operations would not include the use of any stationary equipment that would result in excessive groundborne vibration levels. Therefore, the Project would result in no groundborne vibration impacts during operations.

Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise Levels?

The Project Site is located approximately 15.8 miles west of the Agua Dulce Airport. The airport is privately owned but is open to the public. No night operations are allowed at the airport. According to the City of Santa Clarita General Plan Noise Element, the noise contour of the airport barely extends past the ends of the runway and does not impact any residences. Aircraft noise does not significantly impact the City of Santa Clarita and the Proposed Project would not expose people visiting or working on the Project Site to excess airport noise levels.

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ATTACHMENT A

Federal Highway Administration Highway Roadway Construction Noise Model – Project Construction Noise

Roadway Construction Noise Model (RCNM),Version 1.1

Report date:	9/21/2022
Case Description:	Santa Clarita CCD Driveway Project -Site Preparation\Grubbing

Description	**Affected Land Use**
Santa Clarita CCD Driveway Project - Site Preparation\Grubb	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Tractor	No	40	84		145
Excavator	No	40		80.7	145

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Tractor		74.8	70.8
Excavator		71.5	67.5
	Total	74.8	**72.4**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/21/2022
Case Description: Santa Clarita CCD Driveway- Grading\Excavation

Description	**Affected Land Use**
Grading\Excavation	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Tractor	No	40	84		145
Excavator	No	40		80.7	145
Excavator	No	40		80.7	145
Excavator	No	40		80.7	145
Grader	No	40	85		145
Roller	No	20		80	145
Roller	No	20		80	145
Front End Loader	No	40		79.1	145
Scraper	No	40		83.6	145
Scraper	No	40		83.6	145
Backhoe	No	40		77.6	145
Backhoe	No	40		77.6	145

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Tractor		74.8	70.8
Excavator		71.5	67.5
Excavator		71.5	67.5
Excavator		71.5	67.5
Grader		75.8	71.8
Roller		70.8	63.8
Roller		70.8	63.8
Front End Loader		69.9	65.9
Scraper		74.3	70.4
Scraper		74.3	70.4
Backhoe		68.3	64.3
Backhoe		68.3	64.3
	Total	75.8	**79**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/21/2022
Case Description: Santa Clarita CCD Driveway -Drainage\Utilities

Description	**Affected Land Use**
Drainage\Utilities	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Compressor (air)	No	40		77.7	145
Generator	No	50		80.6	145
Grader	No	40	85		145
Compactor (ground)	No	20		83.2	145
Pumps	No	50		80.9	145
Gradall	No	40		83.4	145
Scraper	No	40		83.6	145
Scraper	No	40		83.6	145
Backhoe	No	40		77.6	145
Backhoe	No	40		77.6	145

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Compressor (air)		68.4	64.4
Generator		71.4	68.4
Grader		75.8	71.8
Compactor (ground)		74	67
Pumps		71.7	68.7
Gradall		74.2	70.2
Scraper		74.3	70.4
Scraper		74.3	70.4
Backhoe		68.3	64.3
Backhoe		68.3	64.3
	Total	75.8	**78.7**

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/21/2022
Case Description: Santa Clarita CCD Driveway - Paving

Description	**Affected Land Use**
Paving	Residential

Description	**Impact Device**	**Usage(%)**	**Equipment Spec Lmax (dBA)**	**Actual Lmax (dBA)**	**Receptor Distance (feet)**
Paver	No	50		77.2	145
Pavement Scarafier	No	20		89.5	145
Roller	No	20		80	145
Roller	No	20		80	145
Roller	No	20		80	145
Backhoe	No	40		77.6	145
Backhoe	No	40		77.6	145

Calculated (dBA)

Equipment		***Lmax**	**Leq**
Paver		68	65
Pavement Scarafier		80.3	73.3
Roller		70.8	63.8
Roller		70.8	63.8
Roller		70.8	63.8
Backhoe		68.3	64.3
Backhoe		68.3	64.3
	Total	80.3	**75.7**

*Calculated Lmax is the Loudest value.

Attachment F

Air Quality Analysis

July 2022

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Subject: Santa Clarita Community College District Driveway Project – Emissions Memorandum

PURPOSE

This memorandum documents the results of an Air Quality and Greenhouse Gas (GHG) Emissions Impact Assessment completed for the Santa Clarita Community College District Driveway Project (Project). This assessment was prepared using methodologies and assumptions recommended in the rules and regulations of the South Coast Air Quality Management District (SCAQMD). Regional and local existing conditions are presented, along with pertinent emissions standards and regulations. The purpose of this assessment is to estimate Project-generated criteria air pollutants and GHG emissions attributable to the Project and to determine the level of impact the Project would have on the environment.

PROJECT DESCRIPTION

The Proposed Project involves improvements to the T-intersection located at Valencia Boulevard and Tourney Road in Santa Clarita, California. Specifically, the Project proposes the construction of a 4th leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station located at the southeast corner of the Valencia Boulevard/Interstate 5 offramp. The total ground disturbance necessary to complete the proposed access driveway is 1.08 acres (47,081 square feet). The Project Site is zoned Public/Institutional (PI) by the City of Santa Clarita Zoning Code.

Surrounding land uses include a couple of office buildings to the northwest, Tourney Road to the north, a residential neighborhood to the northeast, a parking lot serving College of the Canyons to the east, vacant land to the south and the existing gasoline station to the west. Interstate 5 traverses the Project vicinity in a generally north-south direction to the west of the gasoline station.

AIR QUALITY ANALYSIS

Environmental Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the South Coast Air Basin (SoCAB), which encompasses the Project site, pursuant to the regulatory authority of the SCAQMD.

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project Area.

South Coast Air Basin

The California Air Resources Board (CARB) divides the state into air basins that share similar meteorological and topographical features. The Project Site lies in the SoCAB, which includes the non-desert portions of Los Angeles, Riverside, and San Bernardino counties and all of Orange County. The air basin is on a coastal plain with connecting broad valleys and low hills and is bounded by the Pacific Ocean on the southwest, with high mountains forming the remainder of the perimeter (SCAQMD 1993).

Temperature and Precipitation

The air basin is part of a semi-permanent high-pressure zone in the eastern Pacific. As a result, the climate is mild, tempered by cool sea breezes. This usually mild weather pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. The annual average temperature varies little throughout the 6,645-square-mile SoCAB, ranging from the low 60s to the high 80s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas (SCAQMD 1993).

In conjunction with the two characteristic wind patterns that affect the rate and orientation of horizontal pollutant transport, two similarly distinct types of temperature inversions control the vertical depth through which pollutants are mixed. These inversions are the marine/subsidence inversion and the radiation inversion. The height of the base of the inversion at any given time is known as the “mixing height.” The combination of winds and inversions is a critical determinant leading to highly degraded air quality in the summer and generally good air quality in the winter in Los Angeles County (SCAQMD 1993).

Criteria Air Pollutants

Both the U.S. Environmental Protection Agency (USEPA) and the CARB have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are O_3 (precursor emissions include nitrogen oxide (NOx) and reactive organic gases (ROG)), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. The Los Angeles portion of the SoCAB is designated as a nonattainment area for the federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$ (CARB 2019). The Project region is also a nonattainment area for the federal lead standard. This is a result of operations at the Ports of Los Angeles and Long Beach coupled with a few specific industrial processes that occur in the region, such as battery recycling. The Project would not be source of lead.

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Additionally, diesel engines emit a complex mixture of air pollutants composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children (whose lungs are still developing) and the elderly (who may have other serious health problems). Overall, diesel engine emissions are responsible for the majority of California’s known cancer risk from outdoor air pollutants. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

The nearest sensitive receptor to the Project Site is a residential neighborhood to the northeast, across Valencia Boulevard from the Project. The nearest residence in this neighborhood is accessed from Ironwood Drive and is positioned approximately 165 feet (50 meters) from the Project Site.

Regulatory Setting

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish the National Ambient Air Quality Standards (NAAQS), with states retaining the option to adopt more stringent standards or to include other specific pollutants.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those "sensitive receptors" most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The USEPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation.

State

California Clean Air Act

The California Clean Air Act (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California's State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register. The *2016 Air Quality Management Plan* (2016 AQMP) is the SIP for the SoCAB. The 2016 AQMP is a regional blueprint for achieving air quality standards and healthful air in the SoCAB and those portions of the Salton Sea Air Basin that are under SCAQMD's jurisdiction. The 2016 AQMP represents a new approach, focusing on available, proven, and cost-effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities promoting reductions in GHGs and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The most effective way to reduce air pollution impacts is to reduce emissions from mobile sources. The AQMP relies on a regional and multi-level partnership of governmental agencies at the federal, state, regional, and local level. These agencies (USEPA, CARB, local governments, Southern California Association of Governments [SCAG] and the SCAQMD) are the primary agencies that implement the AQMP programs. The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including SCAG's latest Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. The 2016 AQMP includes integrated strategies and measures to meet the NAAQS.

Currently, the 2022 AQMP is being prepared. The 2022 AQMP will represent a comprehensive analysis of emissions, meteorology, regional air quality modeling, regional growth projections, and the impact of existing and proposed control measures.

Local

South Coast Air Quality Management District

The SCAQMD is the air pollution control agency for Orange County and the urban portions of Los Angeles, Riverside, and San Bernardino counties, including the Project site. The agency's primary responsibility is ensuring that the NAAQS and CAAQS are attained and maintained in the SoCAB. The SCAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other activities. All projects are subject to SCAQMD rules and regulations in effect at the time of construction.

The following is a list of noteworthy SCAQMD rules that are required of construction activities associated with the Proposed Project:

- **Rule 402 (Nuisance)** – This rule prohibits the discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property. This rule does not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

- **Rule 403 (Fugitive Dust)** – This rule requires fugitive dust sources to implement best available control measures for all sources, and all forms of visible PM are prohibited from crossing any property line. This rule is intended to reduce PM_{10} emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. PM_{10} suppression techniques are summarized below.

  a) Portions of a construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized.
  b) All onsite roads will be paved as soon as feasible or watered periodically or chemically stabilized.
  c) All material transported offsite will be either sufficiently watered or securely covered to prevent excessive amounts of dust.
  d) The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized at all times.
  e) Where vehicles leave a construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the workday to remove soil tracked onto the paved surface.

- **Rule 1113 (Architectural Coatings)** – This rule requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce ROG emissions from the use of these coatings, primarily by placing limits on the ROG content of various coating categories.

Standards of Significance

The impact analysis provided below is based on the California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The significance criteria established by the applicable air quality management or air pollution control district (SCAQMD) may be relied upon to make impact determinations. According to the SCAQMD, an air quality impact is considered significant if the Proposed Project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The SCAQMD has established thresholds of significance for air quality for construction and operational activities of land use development projects such as that proposed, as shown in Table 1.

Table 1. South Coast Air Quality Management District Regional Significance Thresholds – Pounds per Day

Air Pollutant	Construction Activities	Operations
Reactive Organic Gas	75	55
Carbon Monoxide	550	550
Nitrogen Oxide	100	55
Sulfur Oxide	150	150
Coarse Particulate Matter	150	150
Fine Particulate Matter	55	55

Source: SCAQMD 1993 ($PM_{2.5}$ threshold adopted June 1, 2007)

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulatively considerable.

Localized Significance Thresholds

In addition to regional significance thresholds, the SCAQMD developed localized significance thresholds (LSTs) for emissions of NO_2, CO, PM_{10}, and $PM_{2.5}$ generated at new development sites (offsite mobile source emissions are not included in the LST analysis protocol). LSTs represent the maximum emissions that can be generated at a site without expecting to cause or substantially contribute to an exceedance of the most stringent national or state ambient air quality standards. LSTs are based on the ambient concentrations of that pollutant within the specific source receptor area (SRA), as demarcated by the SCAQMD, and the distance to the nearest sensitive receptor. LST analysis for construction is applicable for all projects that disturb five acres or less on a single day. The Proposed Project is located within SCAQMD SRA 13 (Santa Clarita Valley). Table 2 shows the LSTs for a one-acre project site in SRA 13 with sensitive receptors located within 50 meters of the Project site. As previously described, the Project Site is 1.08 acre and the nearest sensitive receptors are existing residences located approximately 165 feet (50 meters) distant.

Table 2. Local Significance Thresholds at or within 50 Meters of a Sensitive Receptor in SRA 13				
Project Size	Pollutant (Pounds per day Construction/Operations)			
	NO_2	CO	PM_{10}	$PM_{2.5}$
1 Acre	115 / 115	879 / 879	12 / 3	4 / 1

Source: SCAQMD 2009

Methodology

Air quality impacts were assessed in accordance with methodologies recommended by the SCAQMD. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. Project air pollutant emissions were calculated predominately using CalEEMod model defaults for Los Angeles County. Operational emissions are addressed qualitatively.

Air Quality Impact Discussion

Would the Project Conflict with or Obstruct Implementation of the Applicable Air Quality Plan?

As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a SIP that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the CCAA requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the NAAQS and CAAQS. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the Project Site is located within the SoCAB, which is under the jurisdiction of the SCAQMD. The SCAQMD is required, pursuant to the federal CAA, to reduce emissions of criteria pollutants for which the SoCAB is in nonattainment. In order to reduce such emissions, the SCAQMD drafted the 2016 AQMP. The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, CARB, SCAG, and the USEPA. The plan's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2020 RTP/SCS, updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. (SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans.) The Project is subject to the SCAQMD's AQMP.

According to the SCAQMD, in order to determine consistency with SCAQMD's air quality planning two main criteria must be addressed.

Criterion 1:

With respect to the first criterion, SCAQMD methodologies require that an air quality analysis for a project include forecasts of project emissions in relation to contributing to air quality violations and delay of attainment.

a) *Would the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new air quality violations?*

As shown in Tables 3 and 4 below, the Proposed Project would result in emissions that would be below the SCAQMD regional and localized thresholds during construction. Once constructed, the Project would not generate emissions. Therefore, the Proposed Project would not result in an increase in the frequency or severity of existing air quality violations and would not have the potential to cause or affect a violation of the ambient air quality standards.

b) *Would the project delay timely attainment of air quality standards or the interim emissions reductions specified in the AQMP?*

As shown in Table 3, the Proposed Project would be below the SCAQMD regional thresholds for construction. Once constructed, the Project would not generate emissions. Since the Project would result in less than significant regional emission impacts, it would not delay the timely attainment of air quality standards or AQMP emissions reductions.

Criterion 2:

With respect to the second criterion for determining consistency with SCAQMD and SCAG air quality policies, it is important to recognize that air quality planning within the SoCAB focuses on attainment of ambient air quality standards at the earliest feasible date. Projections for achieving air quality goals are based on assumptions regarding population, housing, and growth trends. Thus, the SCAQMD's second criterion for determining Project consistency focuses on whether or not the Proposed Project exceeds the assumptions utilized in preparing the forecasts presented its air quality planning documents. Determining whether or not a project exceeds the assumptions reflected in the 2016 AQMP involves the evaluation of the three criteria outlined below. The following discussion provides an analysis of each of these criteria.

a) *Would the project be consistent with the population, housing, and employment growth projections utilized in the preparation of the 2016 AQMP?*

A project is consistent with regional air quality planning efforts in part if it is consistent with the population, housing, and employment assumptions that were used in the development of the SCAQMD air quality plans. Generally, three sources of data form the basis for the projections of air pollutant emissions in Santa Clarita. Specifically, SCAG's *Growth Management* Chapter of the Regional Comprehensive Plan and Guide (RCPG) provides regional population forecasts for the region and SCAG's *2020 RTP/SCS* provides socioeconomic forecast projections of regional population growth. The Santa Clarita General Plan is referenced by SCAG in order to assist forecasting future growth in the City.

The Project proposes to construct a 4th leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station. It does not involve the development of new housing or employment centers. As such, the Project would not be contributing to an increase in population, housing or employment growth. Therefore, the Project would not conflict with the land use assumptions or exceed the population or job growth projections used by SCAQMD to develop the 2016 AQMP.

b) Would the project implement all feasible air quality mitigation measures?

In order to further reduce emissions, the Project would be required to comply with emission reduction measures promulgated by the SCAQMD, such as SCAQMD Rules 402, 403, and 1113. SCAQMD Rule 402 prohibits the discharge, from any source whatsoever, in such quantities of air contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or that endanger the comfort, repose, health, or safety of any such persons or the public, or that cause, or have a natural tendency to cause, injury or damage to business or property. SCAQMD Rule 403 requires fugitive dust sources to implement Best Available Control Measures for all sources, and all forms of visible PM are prohibited from crossing any property line. SCAQMD Rule 403 is intended to reduce PM10 emissions from any transportation, handling, construction, or storage activity that has the potential to generate fugitive dust. SCAQMD Rule 1113 requires manufacturers, distributors, and end-users of architectural and industrial maintenance coatings to reduce ROG emissions from the use of these coatings, primarily by placing limits on the ROG content of various coating categories. As such, the Proposed Project meets this consistency criterion.

c) Would the project be consistent with the land use planning strategies set forth by SCAQMD air quality planning efforts?

The AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The Proposed Project would not conflict with the land use designation and development density presented in the City's General Plan and therefore, would not exceed the population or job growth projections used by the SCAQMD to develop the AQMP.

In conclusion, the determination of AQMP consistency is primarily concerned with the long-term influence of a project on air quality. The Proposed Project would not result in a long-term impact on the region's ability to meet state and federal air quality standards. The Proposed Project's long-term influence would also be consistent with the goals and policies of the SCAQMD's 2016 AQMP.

Would the Project Result in a Cumulative Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Non-Attainment Under an Applicable Federal or State Ambient Air Quality Standard?

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

A portion of the Proposed Project's air quality impacts are attributable to construction activities. The majority of the long-term air quality impacts will be due to the operation of motor vehicles traveling to and from the site. For purposes of impact assessment, air quality impacts have been separated into construction impacts and operational impacts.

Regional Construction Significance Analysis

Construction-generated emissions are temporary and short-term but have the potential to represent a significant air quality impact. Three basic sources of short-term emissions will be generated through construction of the Proposed Project: operation of the construction vehicles (i.e., graders, scrapers, haul trucks), the creation of fugitive dust during clearing and grading, and the use of asphalt or other oil-based substances during paving activities. Construction activities such as grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive PM emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation. Construction activities would be subject to SCAQMD Rule 403, which requires taking reasonable precautions to prevent the emissions of fugitive dust, such as using water or chemicals, where possible, for control of dust during the clearing of land and other construction activities.

Construction-generated emissions associated the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Attachment A for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in Table 3. Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance.

Table 3. Construction-Related Emissions (Regional Significance Analysis)						
Construction Year	**Maximum Pollutants (pounds per day)**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Construction – Year One	4.58	57.37	40.29	0.12	4.33	2.23
SCAQMD Potentially Significant Impact Threshold	*75*	*100*	*550*	*150*	*150*	*55*
Exceed SCAQMD Regional Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

Notes: Emissions taken of the season, summer or winter, with the highest outputs. Emission reduction/credits for construction emissions are applied based on the required implementation of SCAQMD Rule 403. The specific Rule 403 measures applied in CalEEMod include the following: sweeping/cleaning adjacent roadway access areas daily; washing equipment tires before leaving the construction site; water exposed surfaces three times daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied.

As shown in Table 3, emissions generated during Project construction would not exceed the SCAQMD's regional thresholds of significance. Therefore, criteria pollutant emissions generated during Project construction would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard, and no health effects from Project criteria pollutants would occur.

Localized Construction Significance Analysis

As previously stated, the nearest sensitive receptor to the Project Site is a residence to the northeast across Valencia Boulevard, accessed from Ironwood Drive and is positioned approximately 165 feet (50 meters) from the Project Site. In order to identify localized, air toxic-related impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts associated with Project-specific level proposed projects.

For this Project, the appropriate SRA for the localized significance thresholds is the Santa Clarita Valley, SRA 13. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. As previously described, the SCAQMD has produced lookup tables for projects that disturb one, two and five acres. The Project Site is 1.08 acre. Thus, the LST threshold value for a one-acre site was employed from the LST lookup tables.

LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. The nearest sensitive receptor to the Project Site is located approximately 165 feet (50 meters) distant. Therefore, LSTs for receptors located at 50 meters were utilized in this analysis. The SCAQMD's methodology clearly states that "offsite mobile emissions from a project should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "onsite" emissions outputs were considered. Table 4 presents the results of localized emissions. The LSTs reflect a maximum disturbance of the entire Project site daily during site preparation activities and grading activities at 50 meters or less from sensitive receptors.

Table 4. Construction-Related Emissions (Localized Significance Analysis)

Activity	Pollutant (pounds per day)			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Site Preparation/Grubbing	8.13	5.88	0.55	0.30
Grading/Excavation	44.32	36.08	3.09	1.81
Drainage/Utilities	34.83	29.56	1.44	1.36
Paving	11.55	14.36	0.61	0.56
SCAQMD Localized Significance Threshold (1.0 acre of disturbance)	*115*	*879*	*12*	*4*
Exceed SCAQMD Localized Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

Notes: Emission reduction/credits for construction emissions are applied based on the required implementation of SCAQMD Rule 403. The specific Rule 403 measures applied in CalEEMod include the following: sweeping/cleaning adjacent roadway access areas daily; washing equipment tires before leaving the construction site; water exposed surfaces three times daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied.

Table 4 shows that the emissions of these pollutants on the peak day of construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would not occur concerning LSTs during construction activities. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative. The SCAQMD Environmental Justice Enhancement Initiative program seeks to ensure that everyone has the right to equal protection from air pollution. The Environmental Justice Program is divided into three categories, with the LST protocol promulgated under Category I: *Further-Reduced Health Risk.* Thus, the fact that onsite Project construction emissions would be generated at rates below the LSTs for NO_x, CO, PM_{10}, and $PM_{2.5}$ demonstrates that the Project would not adversely impact vicinity receptors.

Regional Operational Significance Analysis

The Project is proposing improvements to the T-intersection located at Valencia Boulevard and Tourney Road in Santa Clarita. Specifically, the Project proposes the construction of a 4th leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station located at the southeast corner of the Valencia Boulevard/Interstate 5 offramp. There would be no increase in student enrollment at College of the Canyons as a result of the Project and the Proposed Project itself would not generate automobile trips, a source of air pollutant emissions, but would instead accommodate more efficient vehicular access to the college and existing gas station. The Project would not include the provision of any new permanent stationary source of criteria air pollutant emissions. Thus, the Project, by its nature, would not generate quantifiable criteria emissions from Project operations.

Localized Operational Significance Analysis

According to the SCAQMD localized significance threshold methodology, LSTs would apply to the operations of a project only if the project includes stationary sources or attracts substantial amounts of heavy-duty trucks that may spend long periods queuing and idling at the site (e.g., warehouse or transfer facilities). The Proposed Project does not include such uses. Therefore, in the case of the Proposed Project, the operational LST protocol is not applied.

Would the Project Expose Sensitive Receptors to Substantial Pollutant Concentrations?

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest sensitive receptor to the Project Site is a residence to the northeast across Valencia Boulevard, accessed from Ironwood Drive and is positioned approximately 165 feet (50 meters) from the Project Site.

Construction Generated Air Contaminants

Construction-related activities would result in temporary, short-term proposed Project-generated emissions of diesel particulate matter (DPM), ROG, NOx, CO, and PM_{10} from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. The portion of the SoCAB which encompasses the Project Area is designated as a nonattainment area for federal O_3 and $PM_{2.5}$ standards and is also a nonattainment area for the state standards for O_3, PM_{10}, and $PM_{2.5}$ (CARB 2019). Thus, existing O_3, PM_{10}, and $PM_{2.5}$ levels in the SoCAB are at unhealthy levels during certain periods. However, as shown in Table 3 and Table 4, the Project would not exceed the SCAQMD regional or localized significance thresholds for emissions.

The health effects associated with O_3 are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O_3 precursor emissions (ROG or NOx) in excess of the SCAQMD thresholds, the Project is not anticipated to substantially contribute to regional O_3 concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve construction activities that would result in CO emissions in excess of the SCAQMD thresholds. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

Particulate matter (PM_{10} and $PM_{2.5}$) contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Particulate matter exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction activity, DPM is the primary TAC of concern. PM_{10} exhaust is considered a surrogate for DPM as all diesel exhaust is considered to be DPM. As with O_3 and NOx, the Project would not generate emissions of PM_{10} or $PM_{2.5}$ that would exceed the SCAQMD's thresholds. Accordingly, the Project's PM_{10} and $PM_{2.5}$ emissions are not expected to cause any increase in related regional health effects for these pollutants.

Furthermore, the Project has been evaluated against the SCAQMD's LSTs for construction. As previously stated, LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative and can be used to assist lead agencies in analyzing localized impacts associated with Project-specific level of proposed projects. The SCAQMD Environmental Justice Enhancement Initiative program seeks to ensure that everyone has the right to equal protection from air pollution. The Environmental Justice Program is divided into three categories, with the LST protocol promulgated under Category I: *Further-Reduced Health Risk*. As shown in Table 4, the emissions of pollutants on the peak day of construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Thus, the fact that onsite Project construction emissions would be generated at rates below the LSTs for NO_x, CO, PM_{10}, and $PM_{2.5}$ demonstrates that the Project would not adversely impact nearby sensitive receptors.

In summary, Project construction would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Operational Air Contaminants

Operation of the Proposed Project would not result in the development of any substantial sources of air toxics. There are no stationary sources associated with the operations of the Project; nor would the Project attract mobile sources that spend long periods queuing and idling at the site. Thus, by its very nature, the Project would not be a source of TAC concentrations post-construction.

Carbon Monoxide Hot Spots

It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when idling at intersections. Concentrations of CO are a direct function of the number of vehicles, length of delay, and traffic flow conditions. Under certain meteorological conditions, CO concentrations close to congested intersections that experience high levels of traffic and elevated background concentrations may reach unhealthy levels, affecting nearby sensitive receptors. Given the high traffic volume potential, areas of high CO concentrations, or "hot spots," are typically associated with intersections that are projected to operate at unacceptable levels of service during the peak commute hours. It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. However, transport of this criteria pollutant is extremely limited, and CO disperses rapidly with distance from the source under normal meteorological conditions. Furthermore, vehicle emissions standards have become increasingly more stringent in the last 20 years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentration in the SoCAB is designated as in attainment. Detailed modeling of Project-specific CO "hot spots" is not necessary and thus this potential impact is addressed qualitatively.

A CO "hot spot" would occur if an exceedance of the state one-hour standard of 20 parts per million (ppm) or the eight-hour standard of 9 ppm were to occur. The analysis prepared for CO attainment in the South Coast Air Quality Management District's (SCAQMD's) *1992 Federal Attainment Plan for Carbon Monoxide* in Los Angeles County and a Modeling and Attainment Demonstration prepared by the SCAQMD as part of the 2003 AQMP can be used to demonstrate the potential for CO exceedances of these standards. The SCAQMD is the air pollution control officer for much of southern California. The SCAQMD conducted a CO hot spot analysis as part of the 1992 CO Federal Attainment Plan at four busy intersections in Los Angeles County during the peak morning and afternoon time periods. The intersections evaluated included Long Beach Boulevard and Imperial Highway (Lynwood), Wilshire Boulevard and Veteran Avenue (Westwood), Sunset Boulevard and Highland Avenue (Hollywood), and La Cienega Boulevard and Century Boulevard (Inglewood). The busiest intersection evaluated was at Wilshire Boulevard and Veteran Avenue, which has a traffic volume of approximately 100,000 vehicles per day. Despite this level of traffic, the CO analysis concluded that there was no violation of CO standards (SCAQMD 1992). In order to establish a more accurate record of baseline CO concentrations affecting the Los Angeles, a CO "hot spot" analysis was conducted in 2003 at the same four busy intersections in Los Angeles at the peak morning and afternoon time periods. This "hot spot" analysis did not predict any violation of CO standards. The highest one-hour concentration was measured at 4.6 ppm at Wilshire Boulevard and Veteran Avenue and the highest eight-hour concentration was measured at 8.4 ppm at Long Beach Boulevard and Imperial Highway. Thus, there was no violation of CO standards.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD), the air pollution control officer for the San Francisco Bay Area, concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact.

There would be no increase in student enrollment at College of the Canyons as a result of the Project and the Proposed Project itself would not generate automobile trips but would instead accommodate more efficient vehicular access to the college and existing gas station. Thus, the Proposed Project would not generate traffic volumes at any intersection of more than 100,000 vehicles per day (or 44,000 vehicles per day) and there is no likelihood of the Project traffic exceeding CO values.

Would the Project Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People?

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, construction odors would not adversely affect a substantial number of people to odor emissions.

According to the SCAQMD, land uses commonly considered to be potential sources of obnoxious odorous emissions include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The Proposed Project does not include any uses identified by the SCAQMD as being associated with odors.

GREENHOUSE GAS EMISSIONS ANALYSIS

Environmental Setting

Greenhouse gas (GHG) emissions are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH_4 traps over 25 times more heat per molecule than CO_2, and N_2O absorbs 298 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO_2 is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO_2 emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO_2 emissions remains stored in the atmosphere.

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; it is sufficient to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

In 2021, CARB released the 2021 edition of the California GHG inventory covering calendar year 2019 emissions. In 2019, California emitted 418.2 million gross metric tons of CO_2e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2019, accounting for approximately 40 percent of total GHG emissions in the State. When emissions from extracting, refining and moving transportation fuels in California are included, transportation is responsible for over 50 percent of statewide emissions in 2019. Continuing the downward trend from 2018, transportation emissions decreased 3.5 million metric tons of CO_2e in 2019, only being outpaced by electricity, which reduced emissions by 4.3 million metric tons of CO_2e in 2019. Emissions from the electricity sector account for 14 percent of the inventory and have shown a substantial decrease in 2019 due to increases in renewables. California's industrial sector accounts for the second largest source of the State's GHG emissions in 2019, accounting for 21 percent (CARB 2021).

Regulatory Setting

State

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlined measures to meet the 2020 GHG reduction goals. California exceeded the target of reducing GHG emissions to 1990 levels by the year 2017.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2017 Scoping Plan Update, addresses the 2030 target established by Senate Bill (SB) 32 as discussed below and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the State, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include § 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030.

Local

South Coast Air Quality Management District

To provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, SCAQMD staff is convening an ongoing GHG CEQA Significance Threshold Working Group.

Members of the working group include government agencies implementing CEQA and representatives from various stakeholder groups that provide input to SCAQMD staff on developing the significance thresholds. On October 8, 2008, the SCAQMD released the Draft AQMD Staff CEQA GHG Significance Thresholds. These thresholds have not been finalized and continue to be developed through the working group.

On September 28, 2010, SCAQMD Working Group Meeting #15 provided further guidance, including an interim screening level numeric "bright-line" threshold of 3,000 metric tons of CO_2e annually and an efficiency-based threshold of 4.8 metric tons of CO_2e per service population (defined as the people that work and/or congregate on the Project site) per year in 2020 and 3.0 metric tons of CO_2e per service population per year in 2035. The SCAQMD has not announced when staff is expecting to present a finalized version of these thresholds to the governing board

Southern California Association of Governments

On September 3, 2020, the SCAG Regional Council adopted the *2020-2045* Regional Transportation Plan/ Sustainable Communities Strategy (2020 RTP/SCS). The 2020 RTP/SCS charts a course for closely integrating land use and transportation – so that the region can grow smartly and sustainably. The 2020 RTP/SCS identifies that land use strategies that focus on new housing and job growth in areas with a variety of destinations and mobility options would support and complement the proposed transportation network. The overarching strategy in 2020 RTP/SCS is to provide for a plan that allows the southern California region to grow in more compact communities in transit priority areas and priority growth areas; provide neighborhoods with efficient and plentiful public transit; establish abundant and safe opportunities to walk, bike, and pursue other forms of active transportation; and preserve more of the region's remaining natural lands and farmlands. The 2020 RTP/SCS contains transportation projects to help more efficiently distribute population, housing, and employment growth as well as projected development that promotes active transport and reduces GHG emissions.

The 2020 RTP/SCS was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The 2020 RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental and public health goals. The SCAG region must achieve specific federal air quality standards and is required by state law to lower regional GHG emissions. Specifically, the region has been tasked by CARB to achieve a 19 percent per capita reduction by the end of 2035.

Standards of Significance

The State of California does not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines Section 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 CCR 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.
2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that "[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence" (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA's requirements for cumulative impact analysis (see CEQA Guidelines Section 15130). As a note, the CEQA Guidelines were amended in response to Senate Bill 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines Section 15064(h)(3), a project's incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a "water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions." Put another way, CEQA Guidelines Section 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The local air quality agency regulating the SoCAB is the SCAQMD, the regional air pollution control officer for the basin. As previously stated, to provide guidance to local lead agencies on determining significance for GHG emissions in CEQA documents, SCAQMD staff convened a GHG CEQA Significance Threshold Working Group. The Working Group was formed to assist the SCAQMD's efforts to develop a GHG significance threshold and is composed of a wide variety of stakeholders including the State Office of Planning and Research (OPR), CARB, the Attorney General's Office, a variety of city and county planning departments in the Basin, various utilities such as sanitation and power companies throughout the Basin, industry groups, and environmental and professional organizations. The numeric bright line and efficiency-based thresholds described above were developed to be consistent with CEQA requirements for developing significance thresholds, are supported by substantial evidence, and provide guidance to CEQA practitioners and lead agencies with regard to determining whether GHG emissions from a proposed project are significant.

In *Center for Biological Diversity v. Department of Fish and Wildlife* (2015) 62 Cal. 4th 2014, 213, 221, 227, following its review of various potential GHG thresholds proposed in an academic study [Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203], the California Supreme Court identified the use of numeric bright-line thresholds as a potential pathway for compliance with CEQA GHG requirements. The study found numeric bright line thresholds designed to determine when small projects were so small as to not cause a cumulatively considerable impact on global climate change was consistent with CEQA. Specifically, Public Resources Code section 21003(f) provides it is a policy of the State that "[a]ll persons and public agencies involved in the environmental review process be responsible for carrying out the process in the most efficient, expeditious manner in order to conserve the available financial, governmental, physical and social resources with the objective that those resources may be better applied toward the mitigation of actual significant effects on the environment." The Supreme Court-reviewed study noted, "[s]ubjecting the smallest projects to the full panoply of CEQA requirements, even though the public benefit would be minimal, would not be consistent with implementing the statute in the most efficient, expeditious manner. Nor would it be consistent with applying lead agencies' scarce resources toward mitigating actual significant climate change impacts." (Crockett, *Addressing the Significance of Greenhouse Gas Emissions: California's Search for Regulatory Certainty in an Uncertain World* (July 2011), 4 Golden Gate U. Envtl. L. J. 203, 221, 227.)

The significance of the Project's GHG emissions is evaluated consistent with CEQA Guidelines Section 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. The City of Santa Clarita and/or Santa Clarita Community College District may set a project-specific threshold based on the context of each particular project, including using the SCAQMD Working Group expert recommendation. This standard is appropriate for this Project because it is in the same air quality basin that the experts analyzed. For the Proposed Project, the SCAQMD's 3,000 metric tons of CO_2e per year threshold is used as the significance threshold in addition to the qualitative thresholds of significance set forth below from Section VII of CEQA Guidelines Appendix G.

The 3,000 metric tons of CO_2e per year threshold represents a 90 percent capture rate (i.e., this threshold captures projects that represent approximately 90 percent of GHG emissions from new sources). The 3,000 metric tons of CO_2e per year value is typically used in defining small projects within this air basin that are considered less than significant because it represents less than one percent of future 2050 statewide GHG emissions target and the lead agency can provide more efficient implementation of CEQA by focusing its scarce resources on the top 90 percent. This threshold is correlated to the 90 percent capture rate for land use projects within the air basin. Land use projects above the 3,000 metric tons of CO_2e per year level would fall within the percentage of largest projects that are worth mitigating without wasting scarce financial, governmental, physical and social resources (Crockett 2011). As noted in the academic study, the fact that small projects below a numeric bright line threshold are not subject to CEQA-based mitigation, does not mean such small projects do not help the state achieve its climate change goals because even small projects participate in or comply with non-CEQA-based GHG reduction programs, such constructing development in accordance with statewide GHG-reducing energy efficiency building standards, called Cal Green or Title 24 energy-efficiency building standards (Crockett 2011).

Methodology

GHG emissions-related impacts were assessed in accordance with methodologies recommended by the SCAQMD. Where GHG emission quantification was required, emissions were modeled using CalEEMod, version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and operations from a variety of land use projects. Project construction generated GHG emissions were calculated using CalEEMod model defaults for Los Angeles County. Operational GHG emissions are discussed qualitatively.

Greenhouse Gas Emissions Impact Discussion

Would the Project Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment?

Construction-Generated Greenhouse Gas Emissions

A potent source of GHG emissions associated with the Proposed Project would be combustion of fossil fuels during construction activities. Construction-related activities that would generate GHG emissions include worker commute trips, haul trucks carrying supplies and materials to and from the Project site, and off-road construction equipment (e.g., dozers, loaders, excavators). Table 5 illustrates the specific construction generated GHG emissions that would result from construction of the Project. Once construction is complete, the generation of these GHG emissions would cease.

Table 5. Construction-Related Greenhouse Gas Emissions	
Emission Source	**CO_2e (Metric Tons/ Year)**
Construction – Year One	214
SCAQMD Potentially Significant Impact Threshold	*3,000*
Exceed SCAQMD Regional Threshold?	**No**

Source: CalEEMod version 2020.4.0. Refer to Attachment B for Model Data Outputs.

As shown in Table 5, Project construction would result in the generation of approximately 214 metric tons of CO_2e over the course of construction, which is below the significance threshold of 3,000 metric tons of CO_2e. Once construction is complete, the generation of these GHG emissions would cease.

Operational-Generated Greenhouse Gas Emissions

The Project is proposing improvements to the T-intersection located at Valencia Boulevard and Tourney Road in Santa Clarita. Specifically, the Project proposes the construction of a 4th leg at the Valencia Boulevard/Tourney Road Intersection that would serve as an access driveway to both the College of the Canyons and an existing gasoline station located at the southeast corner of the Valencia Boulevard/Interstate 5 offramp. There would be no increase in student enrollment at College of the Canyons as a result of the Project and the Proposed Project itself would not generate automobile trips, a potent source of GHG emissions, but would instead accommodate more efficient vehicular access to the college and existing gas station. The Project would not include the provision of new permanent stationary sources of GHG emissions. Thus, the Project, by its nature, would not generate quantifiable GHG emissions from Project operations.

Would the Project Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases?

As previously described, the State of California promulgates several mandates and goals to reduce statewide GHG emissions, including the goals to reduce statewide GHG emissions to 40 percent below 1990 levels by the year 2030 (SB 32) and 80 percent below 1990 levels by 2050 (EO S-03-05). The SCAQMD supports state policies to reduce levels of GHG emissions through its significance thresholds, and the Proposed Project would comply with the SCAQMD's numeric, bright-line GHG threshold of 3,000 metric tons of CO_2e per year, which was developed in consideration of statewide GHG reduction goals. Furthermore, the Project would not include new permanent sources of GHG emissions and would not generate new or unplanned permanent GHG emissions. Therefore, the Project would not interfere with the state's goals of reducing GHG emissions 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050, as established in SB 32 and EO S-03-05.

Furthermore, the Proposed Project would comply with the State Building Code provisions designed to reduce GHG emissions during construction. During construction, the Project would utilize equipment in compliance with CARB requirements. Mobile sources during construction would be subject to the requirements of California Assembly Bill 1493 (Pavley Standards), the Advanced Clean Cars Program, and the Low Carbon Fuel Standard Regulation. Additionally, the Project would be designed and constructed consistent with California Title 24 and CALGreen (2019). These regulations require projects to comply with specific standards related to energy efficiency construction practices.

For these reasons, the Project would not conflict with any applicable plan, policy or regulation related to the reduction in GHG emissions.

REFERENCES

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SCAQMD. 2009. Localized Significance Threshold Appendix C – Mass Rate LST Look-Up Tables. Revised October 21, 2009. http://www.aqmd.gov/ceqa/handbook/LST/LST.html.

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ATTACHMENT A

Daily Criteria Air Pollutant Emissions Modeling Output

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Santa Clarita Community College District Driveway Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.08	Acre	1.08	47,044.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Length of Construction per College of the Canyons: Valencia Boulevard Grading Plan (2022). Construction phasing sourced from Roadway Construction Emissions Model v. 9.9 (SMAQMD 2018)

Off-road Equipment - Project equipment sourced from Roadway Construction Emissions Model v. 9.9

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Fugitive Dust Reductions

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	18.00
tblConstructionPhase	NumDays	10.00	7.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	4.00	16.00
tblConstructionPhase	PhaseEndDate	8/22/2022	11/2/2022
tblConstructionPhase	PhaseEndDate	6/12/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	8/16/2022	10/7/2022
tblConstructionPhase	PhaseStartDate	8/17/2022	10/8/2022
tblConstructionPhase	PhaseStartDate	5/30/2023	11/25/2022
tblConstructionPhase	PhaseStartDate	8/13/2022	10/1/2022
tblGrading	MaterialExported	0.00	10,680.00
tblGrading	MaterialExported	0.00	2,967.00
tblGrading	MaterialExported	0.00	9,493.00
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.5890	56.8623	40.2928	0.1276	4.9157	1.9190	6.8347	0.8074	1.7700	2.5775	0.0000	12,938.1139	12,938.1139	2.7078	0.8094	13,246.9986
Maximum	**4.5890**	**56.8623**	**40.2928**	**0.1276**	**4.9157**	**1.9190**	**6.8347**	**0.8074**	**1.7700**	**2.5775**	**0.0000**	**12,938.1139**	**12,938.1139**	**2.7078**	**0.8094**	**13,246.9986**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.5890	56.8623	40.2928	0.1276	2.4135	1.9190	4.3325	0.4639	1.7700	2.2340	0.0000	12,938.1139	12,938.1139	2.7078	0.8094	13,246.9986
Maximum	**4.5890**	**56.8623**	**40.2928**	**0.1276**	**2.4135**	**1.9190**	**4.3325**	**0.4639**	**1.7700**	**2.2340**	**0.0000**	**12,938.1139**	**12,938.1139**	**2.7078**	**0.8094**	**13,246.9986**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.90**	**0.00**	**36.61**	**42.54**	**0.00**	**13.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.0000**	**2.5000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.0000**	**2.5000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Land Grubbing	Site Preparation	10/1/2022	10/7/2022	5	5	
2	Grading/Excavation	Grading	10/8/2022	11/2/2022	5	18	
3	Paving	Paving	11/25/2022	12/5/2022	5	7	
4	Drainage/Utilities	Grading	11/3/2022	11/24/2022	5	16	

Acres of Grading (Site Preparation Phase): 2.5

Acres of Grading (Grading Phase): 54

Acres of Paving: 1.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drainage/Utilities	Graders	1	8.00	187	0.41
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Drainage/Utilities	Rubber Tired Dozers	0	8.00	247	0.40
Drainage/Utilities	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Site Preparation/Land Grubbing	Crawler Tractors	1	8.00	212	0.43
Site Preparation/Land Grubbing	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	1	8.00	187	0.41

Site Preparation/Land Grubbing	Graders		0	8.00	187	0.41
Paving	Pavers		1	6.00	130	0.42
Paving	Paving Equipment		1	8.00	132	0.36
Paving	Rollers		3	7.00	80	0.38
Site Preparation/Land Grubbing	Signal Boards		1	8.00	6	0.82
Grading/Excavation	Rubber Tired Dozers		0	8.00	247	0.40
Site Preparation/Land Grubbing	Rubber Tired Dozers		0	7.00	247	0.40
Grading/Excavation	Crawler Tractors		1	8.00	212	0.43
Grading/Excavation	Excavators		3	8.00	158	0.38
Grading/Excavation	Tractors/Loaders/Backhoes		2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes		2	8.00	97	0.37
Site Preparation/Land Grubbing	Tractors/Loaders/Backhoes		0	8.00	97	0.37
Grading/Excavation	Rollers		2	8.00	80	0.38
Grading/Excavation	Rubber Tired Loaders		1	8.00	203	0.36
Grading/Excavation	Scrapers		2	8.00	367	0.48
Grading/Excavation	Signal Boards		1	8.00	6	0.82
Paving	Signal Boards		1	8.00	6	0.82
Drainage/Utilities	Air Compressors		1	6.00	78	0.48
Drainage/Utilities	Generator Sets		1	6.00	84	0.74
Drainage/Utilities	Plate Compactors		1	8.00	8	0.43
Drainage/Utilities	Pumps		1	8.00	84	0.74
Drainage/Utilities	Rough Terrain Forklifts		1	8.00	100	0.40
Drainage/Utilities	Scrapers		2	8.00	367	0.48
Drainage/Utilities	Signal Boards		1	8.00	6	0.82

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Drainage/Utilities	11	28.00	0.00	1,187.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Land Grubbing	3	8.00	0.00	371.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	13	33.00	0.00	1,335.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation/Land Grubbing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5974	0.0000	0.5974	0.0674	0.0000	0.0674			0.0000			0.0000
Off-Road	0.7513	8.1364	5.8808	0.0137		0.3264	0.3264		0.3014	0.3014		1,308.7431	1,308.7431	0.4124		1,319.0542
Total	**0.7513**	**8.1364**	**5.8808**	**0.0137**	**0.5974**	**0.3264**	**0.9238**	**0.0674**	**0.3014**	**0.3688**		**1,308.7431**	**1,308.7431**	**0.4124**		**1,319.0542**

3.2 Site Preparation/Land Grubbing - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3457	12.4618	2.9056	0.0461	1.2988	0.0926	1.3914	0.3561	0.0886	0.4447		5,051.3549	5,051.3549	0.2683	0.8015	5,296.8982
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.3734**	**12.4820**	**3.2205**	**0.0469**	**1.3882**	**0.0932**	**1.4814**	**0.3798**	**0.0891**	**0.4689**		**5,134.0303**	**5,134.0303**	**0.2706**	**0.8035**	**5,380.2264**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2330	0.0000	0.2330	0.0263	0.0000	0.0263			0.0000			0.0000
Off-Road	0.7513	8.1364	5.8808	0.0137		0.3264	0.3264		0.3014	0.3014	0.0000	1,308.7431	1,308.7431	0.4124		1,319.0542
Total	**0.7513**	**8.1364**	**5.8808**	**0.0137**	**0.2330**	**0.3264**	**0.5594**	**0.0263**	**0.3014**	**0.3277**	**0.0000**	**1,308.7431**	**1,308.7431**	**0.4124**		**1,319.0542**

3.2 Site Preparation/Land Grubbing - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3457	12.4618	2.9056	0.0461	0.9064	0.0926	0.9990	0.2598	0.0886	0.3483		5,051.3549	5,051.3549	0.2683	0.8015	5,296.8982
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0277	0.0202	0.3149	8.2000e-004	0.0583	5.7000e-004	0.0589	0.0161	5.3000e-004	0.0166		82.6754	82.6754	2.2500e-003	2.0000e-003	83.3282
Total	**0.3734**	**12.4820**	**3.2205**	**0.0469**	**0.9647**	**0.0932**	**1.0579**	**0.2759**	**0.0891**	**0.3650**		**5,134.0303**	**5,134.0303**	**0.2706**	**0.8035**	**5,380.2264**

3.3 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2486	0.0000	3.2486	0.3537	0.0000	0.3537			0.0000			0.0000
Off-Road	4.1293	44.3228	36.0897	0.0781		1.8241	1.8241		1.6793	1.6793		7,547.9925	7,547.9925	2.4303		7,608.7511
Total	**4.1293**	**44.3228**	**36.0897**	**0.0781**	**3.2486**	**1.8241**	**5.0727**	**0.3537**	**1.6793**	**2.0330**		**7,547.9925**	**7,547.9925**	**2.4303**		**7,608.7511**

3.3 Grading/Excavation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3455	12.4562	2.9043	0.0461	1.2982	0.0925	1.3907	0.3559	0.0885	0.4445		5,049.0857	5,049.0857	0.2682	0.8011	5,294.5186
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1142	0.0834	1.2988	3.3700e-003	0.3689	2.3600e-003	0.3712	0.0978	2.1700e-003	0.1000		341.0358	341.0358	9.2900e-003	8.2600e-003	343.7289
Total	**0.4597**	**12.5396**	**4.2031**	**0.0495**	**1.6671**	**0.0949**	**1.7620**	**0.4537**	**0.0907**	**0.5445**		**5,390.1215**	**5,390.1215**	**0.2775**	**0.8094**	**5,638.2475**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2670	0.0000	1.2670	0.1379	0.0000	0.1379			0.0000			0.0000
Off-Road	4.1293	44.3228	36.0897	0.0781		1.8241	1.8241		1.6793	1.6793	0.0000	7,547.9925	7,547.9925	2.4303		7,608.7511
Total	**4.1293**	**44.3228**	**36.0897**	**0.0781**	**1.2670**	**1.8241**	**3.0911**	**0.1379**	**1.6793**	**1.8173**	**0.0000**	**7,547.9925**	**7,547.9925**	**2.4303**		**7,608.7511**

3.3 Grading/Excavation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3455	12.4562	2.9043	0.0461	0.9060	0.0925	0.9985	0.2597	0.0885	0.3482		5,049.0857	5,049.0857	0.2682	0.8011	5,294.5186
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1142	0.0834	1.2988	3.3700e-003	0.2406	2.3600e-003	0.2430	0.0663	2.1700e-003	0.0685		341.0358	341.0358	9.2900e-003	8.2600e-003	343.7289
Total	**0.4597**	**12.5396**	**4.2031**	**0.0495**	**1.1466**	**0.0949**	**1.2415**	**0.3260**	**0.0907**	**0.4167**		**5,390.1215**	**5,390.1215**	**0.2775**	**0.8094**	**5,638.2475**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1567	11.5530	14.3692	0.0214		0.6149	0.6149		0.5668	0.5668		2,054.7259	2,054.7259	0.6537		2,071.0687
Paving	0.4042					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5609**	**11.5530**	**14.3692**	**0.0214**		**0.6149**	**0.6149**		**0.5668**	**0.5668**		**2,054.7259**	**2,054.7259**	**0.6537**		**2,071.0687**

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0692**	**0.0505**	**0.7872**	**2.0400e-003**	**0.2236**	**1.4300e-003**	**0.2250**	**0.0593**	**1.3200e-003**	**0.0606**		**206.6884**	**206.6884**	**5.6300e-003**	**5.0000e-003**	**208.3205**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1567	11.5530	14.3692	0.0214		0.6149	0.6149		0.5668	0.5668	0.0000	2,054.7259	2,054.7259	0.6537		2,071.0687
Paving	0.4042					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5609**	**11.5530**	**14.3692**	**0.0214**		**0.6149**	**0.6149**		**0.5668**	**0.5668**	**0.0000**	**2,054.7259**	**2,054.7259**	**0.6537**		**2,071.0687**

3.4 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0692	0.0505	0.7872	2.0400e-003	0.1458	1.4300e-003	0.1472	0.0402	1.3200e-003	0.0415		206.6884	206.6884	5.6300e-003	5.0000e-003	208.3205
Total	**0.0692**	**0.0505**	**0.7872**	**2.0400e-003**	**0.1458**	**1.4300e-003**	**0.1472**	**0.0402**	**1.3200e-003**	**0.0415**		**206.6884**	**206.6884**	**5.6300e-003**	**5.0000e-003**	**208.3205**

3.5 Drainage/Utilities - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.7184	0.0000	2.7184	0.2964	0.0000	0.2964			0.0000			0.0000
Off-Road	3.3637	34.8383	29.5672	0.0617		1.4499	1.4499		1.3636	1.3636		5,914.7127	5,914.7127	1.5232		5,952.7927
Total	**3.3637**	**34.8383**	**29.5672**	**0.0617**	**2.7184**	**1.4499**	**4.1682**	**0.2964**	**1.3636**	**1.6600**		**5,914.7127**	**5,914.7127**	**1.5232**		**5,952.7927**

3.5 Drainage/Utilities - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3456	12.4597	2.9051	0.0461	1.2986	0.0926	1.3911	0.3560	0.0886	0.4446		5,050.5040	5,050.5040	0.2683	0.8013	5,296.0059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0969	0.0707	1.1020	2.8600e-003	0.3130	2.0000e-003	0.3150	0.0830	1.8400e-003	0.0849		289.3637	289.3637	7.8800e-003	7.0100e-003	291.6487
Total	**0.4425**	**12.5304**	**4.0072**	**0.0490**	**1.6115**	**0.0946**	**1.7061**	**0.4390**	**0.0904**	**0.5294**		**5,339.8677**	**5,339.8677**	**0.2761**	**0.8083**	**5,587.6546**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0602	0.0000	1.0602	0.1156	0.0000	0.1156			0.0000			0.0000
Off-Road	3.3637	34.8383	29.5672	0.0617		1.4499	1.4499		1.3636	1.3636	0.0000	5,914.7127	5,914.7127	1.5232		5,952.7927
Total	**3.3637**	**34.8383**	**29.5672**	**0.0617**	**1.0602**	**1.4499**	**2.5100**	**0.1156**	**1.3636**	**1.4792**	**0.0000**	**5,914.7127**	**5,914.7127**	**1.5232**		**5,952.7927**

3.5 Drainage/Utilities - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3456	12.4597	2.9051	0.0461	0.9062	0.0926	0.9988	0.2597	0.0886	0.3483		5,050.5040	5,050.5040	0.2683	0.8013	5,296.0059
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0969	0.0707	1.1020	2.8600e-003	0.2041	2.0000e-003	0.2061	0.0563	1.8400e-003	0.0581		289.3637	289.3637	7.8800e-003	7.0100e-003	291.6487
Total	**0.4425**	**12.5304**	**4.0072**	**0.0490**	**1.1104**	**0.0946**	**1.2049**	**0.3160**	**0.0904**	**0.4064**		**5,339.8677**	**5,339.8677**	**0.2761**	**0.8083**	**5,587.6546**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Unmitigated	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.5800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0167					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**		**2.5000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.5800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0167					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**		**2.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Santa Clarita Community College District Driveway Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.08	Acre	1.08	47,044.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Length of Construction per College of the Canyons: Valencia Boulevard Grading Plan (2022). Construction phasing sourced from Roadway Construction Emissions Model v. 9.9 (SMAQMD 2018)

Off-road Equipment - Project equipment sourced from Roadway Construction Emissions Model v. 9.9

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Fugitive Dust Reductions

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	18.00
tblConstructionPhase	NumDays	10.00	7.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	4.00	16.00
tblConstructionPhase	PhaseEndDate	8/22/2022	11/2/2022
tblConstructionPhase	PhaseEndDate	6/12/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	8/16/2022	10/7/2022
tblConstructionPhase	PhaseStartDate	8/17/2022	10/8/2022
tblConstructionPhase	PhaseStartDate	5/30/2023	11/25/2022
tblConstructionPhase	PhaseStartDate	8/13/2022	10/1/2022
tblGrading	MaterialExported	0.00	10,680.00
tblGrading	MaterialExported	0.00	2,967.00
tblGrading	MaterialExported	0.00	9,493.00
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.5888	57.3766	40.2377	0.1275	4.9157	1.9192	6.8349	0.8074	1.7702	2.5777	0.0000	12,921.5633	12,921.5633	2.7075	0.8102	13,230.6861
Maximum	**4.5888**	**57.3766**	**40.2377**	**0.1275**	**4.9157**	**1.9192**	**6.8349**	**0.8074**	**1.7702**	**2.5777**	**0.0000**	**12,921.5633**	**12,921.5633**	**2.7075**	**0.8102**	**13,230.6861**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	4.5888	57.3766	40.2377	0.1275	2.4135	1.9192	4.3327	0.4639	1.7702	2.2341	0.0000	12,921.5633	12,921.5633	2.7075	0.8102	13,230.6861
Maximum	**4.5888**	**57.3766**	**40.2377**	**0.1275**	**2.4135**	**1.9192**	**4.3327**	**0.4639**	**1.7702**	**2.2341**	**0.0000**	**12,921.5633**	**12,921.5633**	**2.7075**	**0.8102**	**13,230.6861**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.90**	**0.00**	**36.61**	**42.54**	**0.00**	**13.33**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.0000**	**2.5000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**	**0.0000**	**2.5000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Land Grubbing	Site Preparation	10/1/2022	10/7/2022	5	5	
2	Grading/Excavation	Grading	10/8/2022	11/2/2022	5	18	
3	Paving	Paving	11/25/2022	12/5/2022	5	7	
4	Drainage/Utilities	Grading	11/3/2022	11/24/2022	5	16	

Acres of Grading (Site Preparation Phase): 2.5

Acres of Grading (Grading Phase): 54

Acres of Paving: 1.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drainage/Utilities	Graders	1	8.00	187	0.41
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Drainage/Utilities	Rubber Tired Dozers	0	8.00	247	0.40
Drainage/Utilities	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Site Preparation/Land Grubbing	Crawler Tractors	1	8.00	212	0.43
Site Preparation/Land Grubbing	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	1	8.00	187	0.41

Site Preparation/Land Grubbing	Graders		0	8.00	187	0.41
Paving	Pavers		1	6.00	130	0.42
Paving	Paving Equipment		1	8.00	132	0.36
Paving	Rollers		3	7.00	80	0.38
Site Preparation/Land Grubbing	Signal Boards		1	8.00	6	0.82
Grading/Excavation	Rubber Tired Dozers		0	8.00	247	0.40
Site Preparation/Land Grubbing	Rubber Tired Dozers		0	7.00	247	0.40
Grading/Excavation	Crawler Tractors		1	8.00	212	0.43
Grading/Excavation	Excavators		3	8.00	158	0.38
Grading/Excavation	Tractors/Loaders/Backhoes		2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes		2	8.00	97	0.37
Site Preparation/Land Grubbing	Tractors/Loaders/Backhoes		0	8.00	97	0.37
Grading/Excavation	Rollers		2	8.00	80	0.38
Grading/Excavation	Rubber Tired Loaders		1	8.00	203	0.36
Grading/Excavation	Scrapers		2	8.00	367	0.48
Grading/Excavation	Signal Boards		1	8.00	6	0.82
Paving	Signal Boards		1	8.00	6	0.82
Drainage/Utilities	Air Compressors		1	6.00	78	0.48
Drainage/Utilities	Generator Sets		1	6.00	84	0.74
Drainage/Utilities	Plate Compactors		1	8.00	8	0.43
Drainage/Utilities	Pumps		1	8.00	84	0.74
Drainage/Utilities	Rough Terrain Forklifts		1	8.00	100	0.40
Drainage/Utilities	Scrapers		2	8.00	367	0.48
Drainage/Utilities	Signal Boards		1	8.00	6	0.82

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Drainage/Utilities	11	28.00	0.00	1,187.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Land Grubbing	3	8.00	0.00	371.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	13	33.00	0.00	1,335.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation/Land Grubbing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5974	0.0000	0.5974	0.0674	0.0000	0.0674			0.0000			0.0000
Off-Road	0.7513	8.1364	5.8808	0.0137		0.3264	0.3264		0.3014	0.3014		1,308.7431	1,308.7431	0.4124		1,319.0542
Total	**0.7513**	**8.1364**	**5.8808**	**0.0137**	**0.5974**	**0.3264**	**0.9238**	**0.0674**	**0.3014**	**0.3688**		**1,308.7431**	**1,308.7431**	**0.4124**		**1,319.0542**

3.2 Site Preparation/Land Grubbing - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3374	12.9675	2.9568	0.0461	1.2988	0.0928	1.3916	0.3561	0.0888	0.4449		5,052.8357	5,052.8357	0.2679	0.8017	5,298.4458
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0894	5.7000e-004	0.0900	0.0237	5.3000e-004	0.0242		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.3670**	**12.9899**	**3.2459**	**0.0469**	**1.3882**	**0.0934**	**1.4815**	**0.3798**	**0.0893**	**0.4691**		**5,131.1400**	**5,131.1400**	**0.2701**	**0.8039**	**5,377.4444**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2330	0.0000	0.2330	0.0263	0.0000	0.0263			0.0000			0.0000
Off-Road	0.7513	8.1364	5.8808	0.0137		0.3264	0.3264		0.3014	0.3014	0.0000	1,308.7431	1,308.7431	0.4124		1,319.0542
Total	**0.7513**	**8.1364**	**5.8808**	**0.0137**	**0.2330**	**0.3264**	**0.5594**	**0.0263**	**0.3014**	**0.3277**	**0.0000**	**1,308.7431**	**1,308.7431**	**0.4124**		**1,319.0542**

3.2 Site Preparation/Land Grubbing - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3374	12.9675	2.9568	0.0461	0.9064	0.0928	0.9992	0.2598	0.0888	0.3485		5,052.8357	5,052.8357	0.2679	0.8017	5,298.4458
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0296	0.0223	0.2891	7.7000e-004	0.0583	5.7000e-004	0.0589	0.0161	5.3000e-004	0.0166		78.3043	78.3043	2.2800e-003	2.1400e-003	78.9987
Total	**0.3670**	**12.9899**	**3.2459**	**0.0469**	**0.9647**	**0.0934**	**1.0581**	**0.2759**	**0.0893**	**0.3651**		**5,131.1400**	**5,131.1400**	**0.2701**	**0.8039**	**5,377.4444**

3.3 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.2486	0.0000	3.2486	0.3537	0.0000	0.3537			0.0000			0.0000
Off-Road	4.1293	44.3228	36.0897	0.0781		1.8241	1.8241		1.6793	1.6793		7,547.9925	7,547.9925	2.4303		7,608.7511
Total	**4.1293**	**44.3228**	**36.0897**	**0.0781**	**3.2486**	**1.8241**	**5.0727**	**0.3537**	**1.6793**	**2.0330**		**7,547.9925**	**7,547.9925**	**2.4303**		**7,608.7511**

3.3 Grading/Excavation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3372	12.9617	2.9554	0.0461	1.2982	0.0927	1.3909	0.3559	0.0887	0.4447		5,050.5658	5,050.5658	0.2677	0.8014	5,296.0655
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1222	0.0921	1.1925	3.2000e-003	0.3689	2.3600e-003	0.3712	0.0978	2.1700e-003	0.1000		323.0050	323.0050	9.4000e-003	8.8200e-003	325.8695
Total	**0.4595**	**13.0538**	**4.1480**	**0.0493**	**1.6671**	**0.0951**	**1.7621**	**0.4537**	**0.0909**	**0.5447**		**5,373.5708**	**5,373.5708**	**0.2771**	**0.8102**	**5,621.9351**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2670	0.0000	1.2670	0.1379	0.0000	0.1379			0.0000			0.0000
Off-Road	4.1293	44.3228	36.0897	0.0781		1.8241	1.8241		1.6793	1.6793	0.0000	7,547.9925	7,547.9925	2.4303		7,608.7511
Total	**4.1293**	**44.3228**	**36.0897**	**0.0781**	**1.2670**	**1.8241**	**3.0911**	**0.1379**	**1.6793**	**1.8173**	**0.0000**	**7,547.9925**	**7,547.9925**	**2.4303**		**7,608.7511**

3.3 Grading/Excavation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3372	12.9617	2.9554	0.0461	0.9060	0.0927	0.9987	0.2597	0.0887	0.3484		5,050.5658	5,050.5658	0.2677	0.8014	5,296.0655
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1222	0.0921	1.1925	3.2000e-003	0.2406	2.3600e-003	0.2430	0.0663	2.1700e-003	0.0685		323.0050	323.0050	9.4000e-003	8.8200e-003	325.8695
Total	**0.4595**	**13.0538**	**4.1480**	**0.0493**	**1.1466**	**0.0951**	**1.2417**	**0.3260**	**0.0909**	**0.4169**		**5,373.5708**	**5,373.5708**	**0.2771**	**0.8102**	**5,621.9351**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1567	11.5530	14.3692	0.0214		0.6149	0.6149		0.5668	0.5668		2,054.7259	2,054.7259	0.6537		2,071.0687
Paving	0.4042					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5609**	**11.5530**	**14.3692**	**0.0214**		**0.6149**	**0.6149**		**0.5668**	**0.5668**		**2,054.7259**	**2,054.7259**	**0.6537**		**2,071.0687**

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.2236	1.4300e-003	0.2250	0.0593	1.3200e-003	0.0606		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0741**	**0.0558**	**0.7227**	**1.9400e-003**	**0.2236**	**1.4300e-003**	**0.2250**	**0.0593**	**1.3200e-003**	**0.0606**		**195.7606**	**195.7606**	**5.7000e-003**	**5.3500e-003**	**197.4967**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1567	11.5530	14.3692	0.0214		0.6149	0.6149		0.5668	0.5668	0.0000	2,054.7259	2,054.7259	0.6537		2,071.0687
Paving	0.4042					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.5609**	**11.5530**	**14.3692**	**0.0214**		**0.6149**	**0.6149**		**0.5668**	**0.5668**	**0.0000**	**2,054.7259**	**2,054.7259**	**0.6537**		**2,071.0687**

3.4 Paving - 2022

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0741	0.0558	0.7227	1.9400e-003	0.1458	1.4300e-003	0.1472	0.0402	1.3200e-003	0.0415		195.7606	195.7606	5.7000e-003	5.3500e-003	197.4967
Total	**0.0741**	**0.0558**	**0.7227**	**1.9400e-003**	**0.1458**	**1.4300e-003**	**0.1472**	**0.0402**	**1.3200e-003**	**0.0415**		**195.7606**	**195.7606**	**5.7000e-003**	**5.3500e-003**	**197.4967**

3.5 Drainage/Utilities - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					2.7184	0.0000	2.7184	0.2964	0.0000	0.2964			0.0000			0.0000
Off-Road	3.3637	34.8383	29.5672	0.0617		1.4499	1.4499		1.3636	1.3636		5,914.7127	5,914.7127	1.5232		5,952.7927
Total	**3.3637**	**34.8383**	**29.5672**	**0.0617**	**2.7184**	**1.4499**	**4.1682**	**0.2964**	**1.3636**	**1.6600**		**5,914.7127**	**5,914.7127**	**1.5232**		**5,952.7927**

3.5 Drainage/Utilities - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3373	12.9653	2.9563	0.0461	1.2986	0.0928	1.3913	0.3560	0.0888	0.4448		5,051.984 5	5,051.984 5	0.2678	0.8016	5,297.553 2
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1037	0.0782	1.0118	2.7100e-003	0.3130	2.0000e-003	0.3150	0.0830	1.8400e-003	0.0849		274.0649	274.0649	7.9800e-003	7.4900e-003	276.4954
Total	**0.4410**	**13.0435**	**3.9681**	**0.0488**	**1.6115**	**0.0948**	**1.7063**	**0.4390**	**0.0906**	**0.5296**		**5,326.049 4**	**5,326.049 4**	**0.2758**	**0.8091**	**5,574.048 5**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.0602	0.0000	1.0602	0.1156	0.0000	0.1156			0.0000			0.0000
Off-Road	3.3637	34.8383	29.5672	0.0617		1.4499	1.4499		1.3636	1.3636	0.0000	5,914.712 7	5,914.712 7	1.5232		5,952.792 7
Total	**3.3637**	**34.8383**	**29.5672**	**0.0617**	**1.0602**	**1.4499**	**2.5100**	**0.1156**	**1.3636**	**1.4792**	**0.0000**	**5,914.712 7**	**5,914.712 7**	**1.5232**		**5,952.792 7**

3.5 Drainage/Utilities - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3373	12.9653	2.9563	0.0461	0.9062	0.0928	0.9990	0.2597	0.0888	0.3485		5,051.9845	5,051.9845	0.2678	0.8016	5,297.5532
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.1037	0.0782	1.0118	2.7100e-003	0.2041	2.0000e-003	0.2061	0.0563	1.8400e-003	0.0581		274.0649	274.0649	7.9800e-003	7.4900e-003	276.4954
Total	**0.4410**	**13.0435**	**3.9681**	**0.0488**	**1.1104**	**0.0948**	**1.2051**	**0.3160**	**0.0906**	**0.4066**		**5,326.0494**	**5,326.0494**	**0.2758**	**0.8091**	**5,574.0485**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Unmitigated	0.0203	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.5800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0167					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**		**2.5000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	3.5800e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0167					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.4000e-004	2.4000e-004	0.0000		2.5000e-004
Total	**0.0203**	**0.0000**	**1.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.4000e-004**	**2.4000e-004**	**0.0000**		**2.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ATTACHMENT B

Greenhouse Gas Emissions Modeling Output

Santa Clarita Community College District Driveway Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	1.08	Acre	1.08	47,044.80	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2024
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Length of Construction per College of the Canyons: Valencia Boulevard Grading Plan (2022). Construction phasing sourced from Roadway Construction Emissions Model v. 9.9 (SMAQMD 2018)

Off-road Equipment - Project equipment sourced from Roadway Construction Emissions Model v. 9.9

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Off-road Equipment - Ibid

Grading -

Construction Off-road Equipment Mitigation - SCAQMD Rule 403 Fugitive Dust Reductions

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	18.00
tblConstructionPhase	NumDays	10.00	7.00
tblConstructionPhase	NumDays	2.00	5.00
tblConstructionPhase	NumDays	4.00	16.00
tblConstructionPhase	PhaseEndDate	8/22/2022	11/2/2022
tblConstructionPhase	PhaseEndDate	6/12/2023	12/5/2022
tblConstructionPhase	PhaseEndDate	8/16/2022	10/7/2022
tblConstructionPhase	PhaseStartDate	8/17/2022	10/8/2022
tblConstructionPhase	PhaseStartDate	5/30/2023	11/25/2022
tblConstructionPhase	PhaseStartDate	8/13/2022	10/1/2022
tblGrading	MaterialExported	0.00	10,680.00
tblGrading	MaterialExported	0.00	2,967.00
tblGrading	MaterialExported	0.00	9,493.00
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rollers

tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentType		Air Compressors
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Signal Boards
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0802	0.9960	0.7060	2.2700e-003	0.0841	0.0328	0.1169	0.0143	0.0305	0.0449	0.0000	208.8968	208.8968	0.0388	0.0143	214.1364
Maximum	**0.0802**	**0.9960**	**0.7060**	**2.2700e-003**	**0.0841**	**0.0328**	**0.1169**	**0.0143**	**0.0305**	**0.0449**	**0.0000**	**208.8968**	**208.8968**	**0.0388**	**0.0143**	**214.1364**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0802	0.9960	0.7060	2.2700e-003	0.0423	0.0328	0.0751	8.4400e-003	0.0305	0.0390	0.0000	208.8966	208.8966	0.0388	0.0143	214.1363
Maximum	**0.0802**	**0.9960**	**0.7060**	**2.2700e-003**	**0.0423**	**0.0328**	**0.0751**	**8.4400e-003**	**0.0305**	**0.0390**	**0.0000**	**208.8966**	**208.8966**	**0.0388**	**0.0143**	**214.1363**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.74**	**0.00**	**35.77**	**41.14**	**0.00**	**13.15**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	**Start Date**	**End Date**	**Maximum Unmitigated ROG + NOX (tons/quarter)**	**Maximum Mitigated ROG + NOX (tons/quarter)**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.7000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.7000e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.7000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.7000e-003**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation/Land Grubbing	Site Preparation	10/1/2022	10/7/2022	5	5	
2	Grading/Excavation	Grading	10/8/2022	11/2/2022	5	18	
3	Paving	Paving	11/25/2022	12/5/2022	5	7	

4	Drainage/Utilities	Grading	11/3/2022	11/24/2022	5	16	

Acres of Grading (Site Preparation Phase): 2.5

Acres of Grading (Grading Phase): 54

Acres of Paving: 1.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Drainage/Utilities	Graders	1	8.00	187	0.41
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Drainage/Utilities	Rubber Tired Dozers	0	8.00	247	0.40
Drainage/Utilities	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Site Preparation/Land Grubbing	Crawler Tractors	1	8.00	212	0.43
Site Preparation/Land Grubbing	Excavators	1	8.00	158	0.38
Grading/Excavation	Graders	1	8.00	187	0.41
Site Preparation/Land Grubbing	Graders	0	8.00	187	0.41
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	3	7.00	80	0.38
Site Preparation/Land Grubbing	Signal Boards	1	8.00	6	0.82
Grading/Excavation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation/Land Grubbing	Rubber Tired Dozers	0	7.00	247	0.40
Grading/Excavation	Crawler Tractors	1	8.00	212	0.43
Grading/Excavation	Excavators	3	8.00	158	0.38
Grading/Excavation	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation/Land Grubbing	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Grading/Excavation	Rollers	2	8.00	80	0.38
Grading/Excavation	Rubber Tired Loaders	1	8.00	203	0.36
Grading/Excavation	Scrapers	2	8.00	367	0.48
Grading/Excavation	Signal Boards	1	8.00	6	0.82
Paving	Signal Boards	1	8.00	6	0.82
Drainage/Utilities	Air Compressors	1	6.00	78	0.48
Drainage/Utilities	Generator Sets	1	6.00	84	0.74
Drainage/Utilities	Plate Compactors	1	8.00	8	0.43
Drainage/Utilities	Pumps	1	8.00	84	0.74
Drainage/Utilities	Rough Terrain Forklifts	1	8.00	100	0.40
Drainage/Utilities	Scrapers	2	8.00	367	0.48
Drainage/Utilities	Signal Boards	1	8.00	6	0.82

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Drainage/Utilities	11	28.00	0.00	1,187.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation/Land Grubbing	3	8.00	0.00	371.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading/Excavation	13	33.00	0.00	1,335.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation/Land Grubbing - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.4900e-003	0.0000	1.4900e-003	1.7000e-004	0.0000	1.7000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0203	0.0147	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.9682	2.9682	9.4000e-004	0.0000	2.9916
Total	**1.8800e-003**	**0.0203**	**0.0147**	**3.0000e-005**	**1.4900e-003**	**8.2000e-004**	**2.3100e-003**	**1.7000e-004**	**7.5000e-004**	**9.2000e-004**	**0.0000**	**2.9682**	**2.9682**	**9.4000e-004**	**0.0000**	**2.9916**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6000e-004	0.0328	7.3200e-003	1.2000e-004	3.1900e-003	2.3000e-004	3.4200e-003	8.8000e-004	2.2000e-004	1.1000e-003	0.0000	11.4577	11.4577	6.1000e-004	1.8200e-003	12.0147
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	6.0000e-005	7.4000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1803	0.1803	1.0000e-005	0.0000	0.1819
Total	**9.3000e-004**	**0.0329**	**8.0600e-003**	**1.2000e-004**	**3.4100e-003**	**2.3000e-004**	**3.6400e-003**	**9.4000e-004**	**2.2000e-004**	**1.1600e-003**	**0.0000**	**11.6379**	**11.6379**	**6.2000e-004**	**1.8200e-003**	**12.1965**

3.2 Site Preparation/Land Grubbing - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-004	0.0000	5.8000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8800e-003	0.0203	0.0147	3.0000e-005		8.2000e-004	8.2000e-004		7.5000e-004	7.5000e-004	0.0000	2.9682	2.9682	9.4000e-004	0.0000	2.9916
Total	**1.8800e-003**	**0.0203**	**0.0147**	**3.0000e-005**	**5.8000e-004**	**8.2000e-004**	**1.4000e-003**	**7.0000e-005**	**7.5000e-004**	**8.2000e-004**	**0.0000**	**2.9682**	**2.9682**	**9.4000e-004**	**0.0000**	**2.9916**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	8.6000e-004	0.0328	7.3200e-003	1.2000e-004	2.2300e-003	2.3000e-004	2.4600e-003	6.4000e-004	2.2000e-004	8.6000e-004	0.0000	11.4577	11.4577	6.1000e-004	1.8200e-003	12.0147
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	6.0000e-005	7.4000e-004	0.0000	1.4000e-004	0.0000	1.4000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1803	0.1803	1.0000e-005	0.0000	0.1819
Total	**9.3000e-004**	**0.0329**	**8.0600e-003**	**1.2000e-004**	**2.3700e-003**	**2.3000e-004**	**2.6000e-003**	**6.8000e-004**	**2.2000e-004**	**9.0000e-004**	**0.0000**	**11.6379**	**11.6379**	**6.2000e-004**	**1.8200e-003**	**12.1965**

3.3 Grading/Excavation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0292	0.0000	0.0292	3.1800e-003	0.0000	3.1800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0372	0.3989	0.3248	7.0000e-004		0.0164	0.0164		0.0151	0.0151	0.0000	61.6268	61.6268	0.0198	0.0000	62.1229
Total	**0.0372**	**0.3989**	**0.3248**	**7.0000e-004**	**0.0292**	**0.0164**	**0.0457**	**3.1800e-003**	**0.0151**	**0.0183**	**0.0000**	**61.6268**	**61.6268**	**0.0198**	**0.0000**	**62.1229**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0800e-003	0.1181	0.0263	4.1000e-004	0.0115	8.3000e-004	0.0123	3.1500e-003	8.0000e-004	3.9500e-003	0.0000	41.2291	41.2291	2.1900e-003	6.5400e-003	43.2333
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0200e-003	8.5000e-004	0.0110	3.0000e-005	3.2500e-003	2.0000e-005	3.2800e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.6767	2.6767	8.0000e-005	7.0000e-005	2.7004
Total	**4.1000e-003**	**0.1189**	**0.0373**	**4.4000e-004**	**0.0147**	**8.5000e-004**	**0.0156**	**4.0100e-003**	**8.2000e-004**	**4.8300e-003**	**0.0000**	**43.9058**	**43.9058**	**2.2700e-003**	**6.6100e-003**	**45.9337**

3.3 Grading/Excavation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0114	0.0000	0.0114	1.2400e-003	0.0000	1.2400e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0372	0.3989	0.3248	7.0000e-004		0.0164	0.0164		0.0151	0.0151	0.0000	61.6267	61.6267	0.0198	0.0000	62.1228
Total	**0.0372**	**0.3989**	**0.3248**	**7.0000e-004**	**0.0114**	**0.0164**	**0.0278**	**1.2400e-003**	**0.0151**	**0.0164**	**0.0000**	**61.6267**	**61.6267**	**0.0198**	**0.0000**	**62.1228**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0800e-003	0.1181	0.0263	4.1000e-004	8.0300e-003	8.3000e-004	8.8700e-003	2.3100e-003	8.0000e-004	3.1100e-003	0.0000	41.2291	41.2291	2.1900e-003	6.5400e-003	43.2333
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0200e-003	8.5000e-004	0.0110	3.0000e-005	2.1300e-003	2.0000e-005	2.1500e-003	5.9000e-004	2.0000e-005	6.1000e-004	0.0000	2.6767	2.6767	8.0000e-005	7.0000e-005	2.7004
Total	**4.1000e-003**	**0.1189**	**0.0373**	**4.4000e-004**	**0.0102**	**8.5000e-004**	**0.0110**	**2.9000e-003**	**8.2000e-004**	**3.7200e-003**	**0.0000**	**43.9058**	**43.9058**	**2.2700e-003**	**6.6100e-003**	**45.9337**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0500e-003	0.0404	0.0503	7.0000e-005		2.1500e-003	2.1500e-003		1.9800e-003	1.9800e-003	0.0000	6.5241	6.5241	2.0800e-003	0.0000	6.5760
Paving	1.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.4600e-003**	**0.0404**	**0.0503**	**7.0000e-005**		**2.1500e-003**	**2.1500e-003**		**1.9800e-003**	**1.9800e-003**	**0.0000**	**6.5241**	**6.5241**	**2.0800e-003**	**0.0000**	**6.5760**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	2.0000e-004	2.6000e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.7000e-004	2.0000e-004	0.0000	2.1000e-004	0.0000	0.6309	0.6309	2.0000e-005	2.0000e-005	0.6365
Total	**2.4000e-004**	**2.0000e-004**	**2.6000e-003**	**1.0000e-005**	**7.7000e-004**	**1.0000e-005**	**7.7000e-004**	**2.0000e-004**	**0.0000**	**2.1000e-004**	**0.0000**	**0.6309**	**0.6309**	**2.0000e-005**	**2.0000e-005**	**0.6365**

3.4 Paving - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	4.0500e-003	0.0404	0.0503	7.0000e-005		2.1500e-003	2.1500e-003		1.9800e-003	1.9800e-003	0.0000	6.5241	6.5241	2.0800e-003	0.0000	6.5759
Paving	1.4100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.4600e-003**	**0.0404**	**0.0503**	**7.0000e-005**		**2.1500e-003**	**2.1500e-003**		**1.9800e-003**	**1.9800e-003**	**0.0000**	**6.5241**	**6.5241**	**2.0800e-003**	**0.0000**	**6.5759**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	2.0000e-004	2.6000e-003	1.0000e-005	5.0000e-004	1.0000e-005	5.1000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.6309	0.6309	2.0000e-005	2.0000e-005	0.6365
Total	**2.4000e-004**	**2.0000e-004**	**2.6000e-003**	**1.0000e-005**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.6309**	**0.6309**	**2.0000e-005**	**2.0000e-005**	**0.6365**

3.5 Drainage/Utilities - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0218	0.0000	0.0218	2.3700e-003	0.0000	2.3700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0269	0.2787	0.2365	4.9000e-004		0.0116	0.0116		0.0109	0.0109	0.0000	42.9259	42.9259	0.0111	0.0000	43.2023
Total	**0.0269**	**0.2787**	**0.2365**	**4.9000e-004**	**0.0218**	**0.0116**	**0.0334**	**2.3700e-003**	**0.0109**	**0.0133**	**0.0000**	**42.9259**	**42.9259**	**0.0111**	**0.0000**	**43.2023**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7400e-003	0.1050	0.0234	3.7000e-004	0.0102	7.4000e-004	0.0110	2.8000e-003	7.1000e-004	3.5100e-003	0.0000	36.6584	36.6584	1.9500e-003	5.8200e-003	38.4404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.4000e-004	8.3000e-003	2.0000e-005	2.4500e-003	2.0000e-005	2.4700e-003	6.5000e-004	1.0000e-005	6.7000e-004	0.0000	2.0188	2.0188	6.0000e-005	6.0000e-005	2.0367
Total	**3.5100e-003**	**0.1056**	**0.0317**	**3.9000e-004**	**0.0127**	**7.6000e-004**	**0.0134**	**3.4500e-003**	**7.2000e-004**	**4.1800e-003**	**0.0000**	**38.6772**	**38.6772**	**2.0100e-003**	**5.8800e-003**	**40.4771**

3.5 Drainage/Utilities - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.4800e-003	0.0000	8.4800e-003	9.2000e-004	0.0000	9.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0269	0.2787	0.2365	4.9000e-004		0.0116	0.0116		0.0109	0.0109	0.0000	42.9259	42.9259	0.0111	0.0000	43.2022
Total	**0.0269**	**0.2787**	**0.2365**	**4.9000e-004**	**8.4800e-003**	**0.0116**	**0.0201**	**9.2000e-004**	**0.0109**	**0.0118**	**0.0000**	**42.9259**	**42.9259**	**0.0111**	**0.0000**	**43.2022**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.7400e-003	0.1050	0.0234	3.7000e-004	7.1400e-003	7.4000e-004	7.8800e-003	2.0500e-003	7.1000e-004	2.7600e-003	0.0000	36.6584	36.6584	1.9500e-003	5.8200e-003	38.4404
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.7000e-004	6.4000e-004	8.3000e-003	2.0000e-005	1.6000e-003	2.0000e-005	1.6200e-003	4.4000e-004	1.0000e-005	4.6000e-004	0.0000	2.0188	2.0188	6.0000e-005	6.0000e-005	2.0367
Total	**3.5100e-003**	**0.1056**	**0.0317**	**3.9000e-004**	**8.7400e-003**	**7.6000e-004**	**9.5000e-003**	**2.4900e-003**	**7.2000e-004**	**3.2200e-003**	**0.0000**	**38.6772**	**38.6772**	**2.0100e-003**	**5.8800e-003**	**40.4771**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.542464	0.063735	0.188241	0.126899	0.023249	0.006239	0.010717	0.008079	0.000923	0.000604	0.024795	0.000702	0.003352

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.7000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005
Unmitigated	3.7000e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005
Total	**3.6900e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.0400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0000	3.0000e-005
Total	**3.6900e-003**	**0.0000**	**1.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0000**	**3.0000e-005**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment G

Erosion Control Plan and

Hydrology Report

GRA22-00000

STORMWATER POLLUTION PREVENTION PLAN(SWPPP)
GENERAL NOTES:

1. In case of emergency, call Jim Schrage at 661-362-3222.
2. A standby crew for emergency work shall be available at all times during the rainy season (OCT 1 to APR 15). Necessary materials shall be available on-site and stockpiled at convenient locations to facilitate rapid construction of emergency devices when rain is imminent.
3. Erosion control devices shown on this plan may be removed when approved by the building official if the grading operation has progressed to the point where they are no longer required.
4. Graded areas adjacent to fill slopes located at the site perimeter must drain away from the top of the slope at the conclusion of each working day. all loose soils and debris that may create a potential hazard to off-site property shall be stabilized or removed from the site on a daily basis.
5. All silt and debris shall be removed from all devices within 24 hours after each rainstorm and be disposed of properly.
6. A guard shall be posted on the site whenever the depth of water in any device exceeds two feet. The device shall be drained or pumped dry within 24 hours after each rainstorm. pumping and draining of all basins and drainage devices must comply with the appropriate best management practices for dewatering operations.
7. The placement of additional devices to reduce erosion drainage and contain pollutants within the site is left to the discretion of the field engineer. Additional devices as needed shall be installed to retain sediments and other pollutants on site.
8. Desilting basins may not be removed or made inoperable between november 1 and november 15 of the following year without the approval of the building official.
9. Stormwater pollution and erosion control devices are to be modified as needed as the project progresses. The design and placement of these devices is the responsibility of the field engineer. Plans representing changes must be submitted for approval if requested by building official.
10. Every effort should be made to eliminate the discharge of non-stormwater from the project sites at all times.
11. Eroded sediments and other pollutants must be retained on-site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses, or wind.
12. Stockpiles of earth and other construction related materials must be protected from being transported from the site by forces of wind or water.
13. Fuels, oils, solvents, and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. spills must be cleaned up immediately and disposed of in proper manner. Spills may not be washed into the drainage system.
14. Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on-site until they can be disposed of as solid waste.
15. Developer/contractors are responsible to inspect all erosion control devices and bmp's are installed properly before and after 0.25 inches or greater predicted or actual precipitation. A construction site inspection checklist and inspection log shall be maintained at the project site at all times and available for review by the building official. (copies of the self-inspection checklist and inspection logs are available upon request.)
16. Trash and construction related solid waste must be deposited into a covered receptacle to prevent contamination of rainwater and dispersal by wind.
17. Sediments and other material may not be tracked from the site by vehicle traffic. the construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
18. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.
19. As the civil engineer/architect of the project, I have reviewed the best management practices handbooks, california stormwater quality task force, sacramento, california, and have proposed the implementation of the best management practices applicable to effectively minimize the negative impacts of this project's construction activities on the surrounding water quality. The selected bmp's will be installed, monitored, and maintained to ensure their effectiveness. The bmp's that I have not chosen for implementation are redundant or deemed not applicable to the proposed construction activities. If at any time site conditions and/or the county official warrant reevaluation and revisions of the chosen bmp's, the appropriate changes will be made without unnecessary delay. I am aware that failure to properly implement and maintain, while undergoing construction, the bmp's necessary to prevent the discharge of pollutants from the project could result in significant penalties and/or delays.

______________________ 31 MAY 2022
civil engineer — date

RON KOESTER ______________________ ____________
☐ owner ■ authorized representative — date

20. As the project owner or authorized agent of the owner, I have read and understand the requirements to control storm water pollution from sediments, erosion, and construction materials, and I certify that I will comply with these requirements. I or my representative, contractor, developer, or engineer will make certain that all best management practices (bmp's) shown on this plan will be fully implemented, and all erosion control devices will be kept clean and functioning. periodic inspections of the bmp's will be conducted, and a current log, specifying the exact nature of the inspection and any remedial measures, will be kept at the construction site at all times and will be available for the review by the building official.

As the project owner or authorized agent of the owner, "I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete. I am aware that submitting false and/or inaccurate information, failing to update the local swppp to reflect current conditions, or failing to properly and/or adequately implement the local swppp may result in revocation of grading and/or other permits or other sanctions provided by law."

______________________ ____________
☐ owner ☐ authorized representative (permitee) — date

____
print name

ATTACHMENT A NOTES

a. Eroded sediments and other pollutants must be retained on site and may not be transported from the site via sheet flow, swales, area drains, natural drainage courses or wind.
b. Stockpiles of earth and other construction related materials must be protected from being transported from the site by the forces of wind or water.
c. Fuels, oils, solvents and other toxic materials must be stored in accordance with their listing and are not to contaminate the soil and surface waters. All approved storage containers are to be protected from the weather. Spills must be cleaned up immediately and disposed of in a proper manner. Spills may not be washed into the drainage system.
d. Excess or waste concrete may not be washed into the public way or any other drainage system. Provisions shall be made to retain concrete wastes on site until they can be disposed of as solid waste.
e. Trash and construction related solid wastes must be deposited into a covered receptacle to prevent contamination of rain water and dispersal by wind.
f. Sediments and other materials may not be tracked from the site by vehicle traffic. The construction entrance roadways must be stabilized so as to inhibit sediments from being deposited into the public way. Accidental depositions must be swept up immediately and may not be washed down by rain or other means.
g. Any slopes with disturbed soils or denuded of vegetation must be stabilized so as to inhibit erosion by wind and water.

EROSION CONTROL
EC1 – SCHEDULING
EC2 – PRESERVATION OF EXISTING VEGETATION
EC3 – HYDRAULIC MULCH
EC4 – HYDROSEEDING
EC5 – SOIL BINDERS
EC6 – STRAW MULCH
EC7 – GEOTEXTILES & MATS
EC8 – WOOD MULCHING
EC9 – EARTH DIKES AND DRAINAGE SWALES
EC10 – VELOCITY DISSIPATION DEVICES
EC11 – SLOPE DRAINS
EC12 – STREAM BANK STABILIZATION
EC13 – POLYACRYLAMIDE SOIL BINDER
EC14 – COMPOST BLANKETS
EC15 – SOIL PREPARATION\ROUGHENING
EC16 – NON-VEGETATED STABILIZATION

TEMPORARY SEDIMENT CONTROL
SE1 – SILT FENCE
SE2 – SEDIMENT BASIN
SE3 – SEDIMENT TRAP
SE4 – CHECK DAM
SE5 – FIBER ROLLS
SE6 – GRAVEL BAG BERM
SE7 – STREET SWEEPING AND VACUUMING
SE8 – SANDBAG BARRIER
SE9 – STRAW BALE BARRIER
SE10 – STORM DRAIN INLET PROTECTION
SE11 – ACTIVE TREATMENT SYSTEMS
SE12 – TEMPORARY SILT DIKE
SE13 – COMPOST SOCKS & BERMS
SE14 – BIOFILTER BAGS

WIND EROSION CONTROL
WE1 –WIND EROSION CONTROL

EQUIPMENT TRACKING CONTROL
TC1 – STABILIZED CONSTRUCTION ENTRANCE EXIT
TC2 – STABILIZED CONSTRUCTION ROADWAY
TC3 – ENTRANCE/OUTLET TIRE WASH

NON-STORM WATER MANAGEMENT
NS1 –WATER CONSERVATION PRACTICES
NS2 – DEWATERING OPERATIONS
NS3 – PAVING AND GRINDING OPERATIONS
NS4 – TEMPORARY STREAM CROSSING
NS5 – CLEAR WATER DIVERSION
NS6 – ILLICIT CONNECTION/DISCHARGE
NS7 – POTABLE WATER/IRRIGATION
NS8 – VEHICLE AND EQUIPMENT CLEANING
NS9 – VEHICLE AND EQUIPMENT FUELING
NS10 – VEHICLE AND EQUIPMENT MAINTENANCE
NS11 – PILE DRIVING OPERATIONS
NS12 – CONCRETE CURING
NS13 – CONCRETE FINISHING
NS14 – MATERIAL AND EQUIPMENT USE
NS15 – DEMOLITION ADJACENT TO WATER
NS16 – TEMPORARY BATCH PLANTS

WASTE MANAGEMENT & MATERIAL POLLUTION CONTROL
WM1 – MATERIAL DELIVERY AND STORAGE
WM2 – MATERIAL USE
WM3 – STOCKPILE MANAGEMENT
WM4 – SPILL PREVENTION AND CONTROL
WM5 – SOLID WASTE MANAGEMENT
WM6 – HAZARDOUS WASTE MANAGEMENT
WM7 – CONTAMINATION SOIL MANAGEMENT
WM8 – CONCRETE WASTE MANAGEMENT
WM9 – SANITARY/SEPTIC WASTE MANAGEMENT
WM10 – LIQUID WASTE MANAGEMENT

n.p.d.e.s. notes

best management practices for construction activity

i. the following bmps apply to all jobs:

WM1 material delivery and storage .
prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials on site, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

WM2 material use
prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use on site, and training employees and subcontractors.

WM4 spill prevention and control
prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

WM5 solid waste management
solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

WM6 hazardous waste management
prevent or reduce the discharge of pollutants to stormwater from hazardous waste through proper material use, waste disposal, and training of employees and subcontractors.

SE3 sediment trap
a sediment trap is a containment area where sediment-laden runoff is temporarily detained under quiescent conditions, allowing sediment to settle out or before the runoff is discharged. sediment traps are formed by excavating or constructing an earthen embankment across a waterway or low drainage area.

TC2 stabilized construction roadway
access roads, subdivision roads, parking areas, and other on site vehicle transportation routes should be stabilized immediately after grading, and frequently maintained to prevent erosion and control dust.

ii. the following bmps apply to site construction

WM8 concrete waste management
prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout off site, performing on site washout in a designated area, and training employee and subcontractors.

WM9 sanitary/septic waste management
proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

iii. for general site applications the following bmps may apply

EC2 preservation of existing vegetation
carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

SE10 storm drain inlet protection
storm drain inlet protection consists of a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet. storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction.

SE4 check dams
a check dam is a small barrier constructed of rock, gravel bags, sandbags, fiber rolls, or reusable products, placed across a constructed swale or drainage ditch. check dams reduce the effective slope of the channel, thereby reducing the velocity of flowing water, allowing sediment to settle and reducing erosion.
SE8 sandbag barrier
a sandbag barrier is a series of sand-filled bags placed on a level contour to intercept sheet flows. sandbag barriers pond sheet flow runoff, allowing sediment to settle out.

iv. the following bmps will apply to grading projects:

EC1 scheduling
scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of bmps such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. the purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

EC11 slope drains
a slope drain is a pipe used to intercept and direct surface runoff or groundwater into a stabilized watercourse, trapping device, or stabilized area. slope drains are used with earth dikes and drainage ditches to intercept and direct surface flow away from slope areas to protect cut or fill slopes.

EC4 hydroseeding
hydroseeding typically consists of applying a mixture of wood fiber, seed, fertilizer, and stabilizing emulsion with hydro-mulch equipment, to temporarily protect exposed soils from erosion by water and wind.

EC9 earth dikes and drainage swales
an earth dike is a temporary berm or ridge of compacted soil used to divert runoff or channel water to a desired location. a drainage swale is a shaped and sloped depression in the soil surface used to convey runoff to a desired location. earth dikes and drainage swales are used to divert off site runoff around the construction site, divert runoff from stabilized areas and disturbed areas, and direct runoff into sediment basins or traps.

NS10 vehicle & equipment maintenance
prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". the best option would be to perform maintenance activities at an off site facility. if this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. employees and subcontractors must be trained in proper procedures.

NS8 vehicle and equipment cleaning
vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. procedures and practices include but are not limited to: using off site facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

NS9 vehicle and equipment fueling
vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. this can be accomplished by using off site facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

WE1 wind erosion control
wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

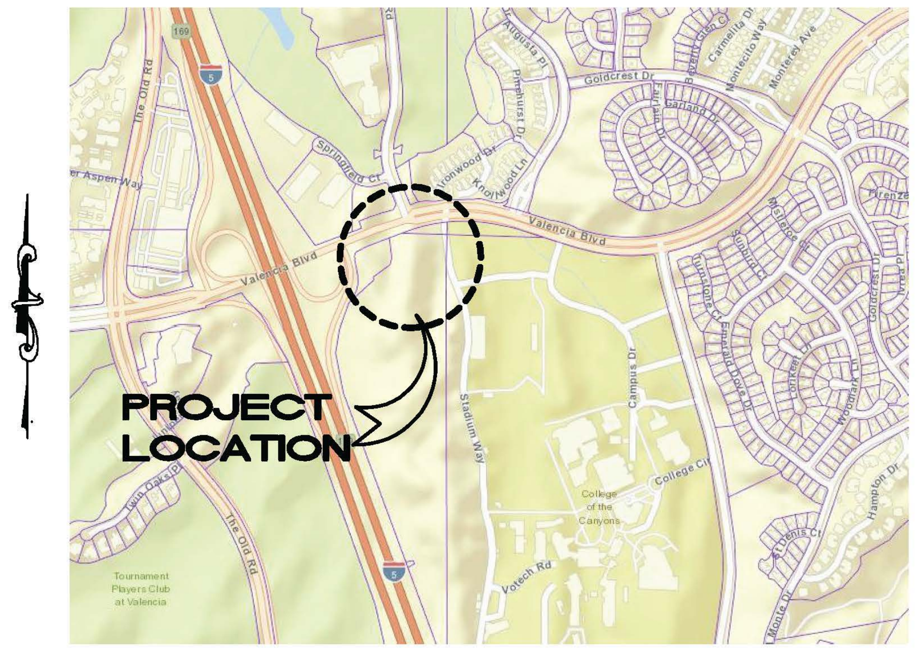
v. the following bmps will apply to private roads and subdivision projects with road construction:

NS3 paving and grinding operations
prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

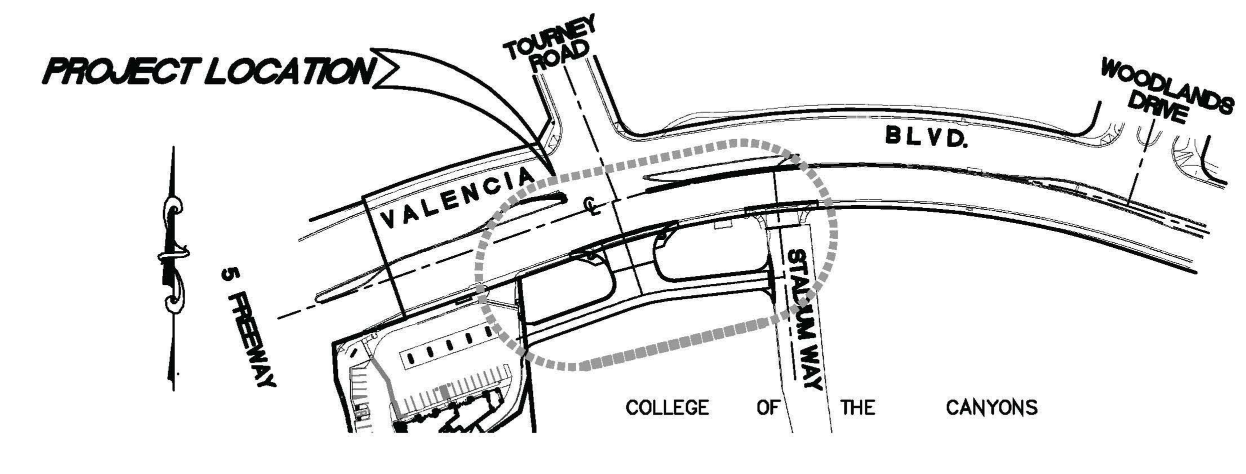
WM8 concrete waste management
prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout off site, performing on site washout in a designated area, and training employee and subcontractors.

vi. the following bmps may apply to sites with certain existing conditions or due to complex bmps being implemented:

wm-07 contaminated soil management
prevent or reduce the discharge of pollutants to stormwater from contaminated soil and highly acidic or alkaline soils by conducting pre- construction surveys, inspecting excavations regularly, and remediating contaminated soil promptly.



VICINITY MAP
N.T.S.



LOCATION MAP
1"=200'

FOR IMPLEMENTATION OF EROSION CONTROL PLAN

CONTACT: Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage
661-362-3222

AS THE PROJECT OWNER OR AGENT OF THE OWNER, I HAVE READ AND UNDERSTAND THE REQUIREMENTS LISTED ABOVE, NECESSARY TO CONTROL STORM WATER POLLUTION FROM SEDIMENTS, EROSION, AND CONSTRUCTION MATERIALS, AND I CERTIFY THAT I WILL COMPLY WITH THESE REQUIREMENTS.

PRINT NAME: RON KOESTER SIGNATURE: ____________ DATE: 31 MAY 2022

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ____________________

DATE: ____________________

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

THE STAMPING OF THESE PLANS AND SPECIFICATIONS SHALL NOT BE USED AS A SUBSTITUTE FOR PERMIT OR MEANS AS AN APPROVAL OF ANY VIOLATION OF THE PROVISIONS OF ANY CITY OR COUNTRY ORDINANCE OR STATE LAW.

PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:
CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:
RON KOESTER RCE # 42399 — 31 MAY 2022 DATE

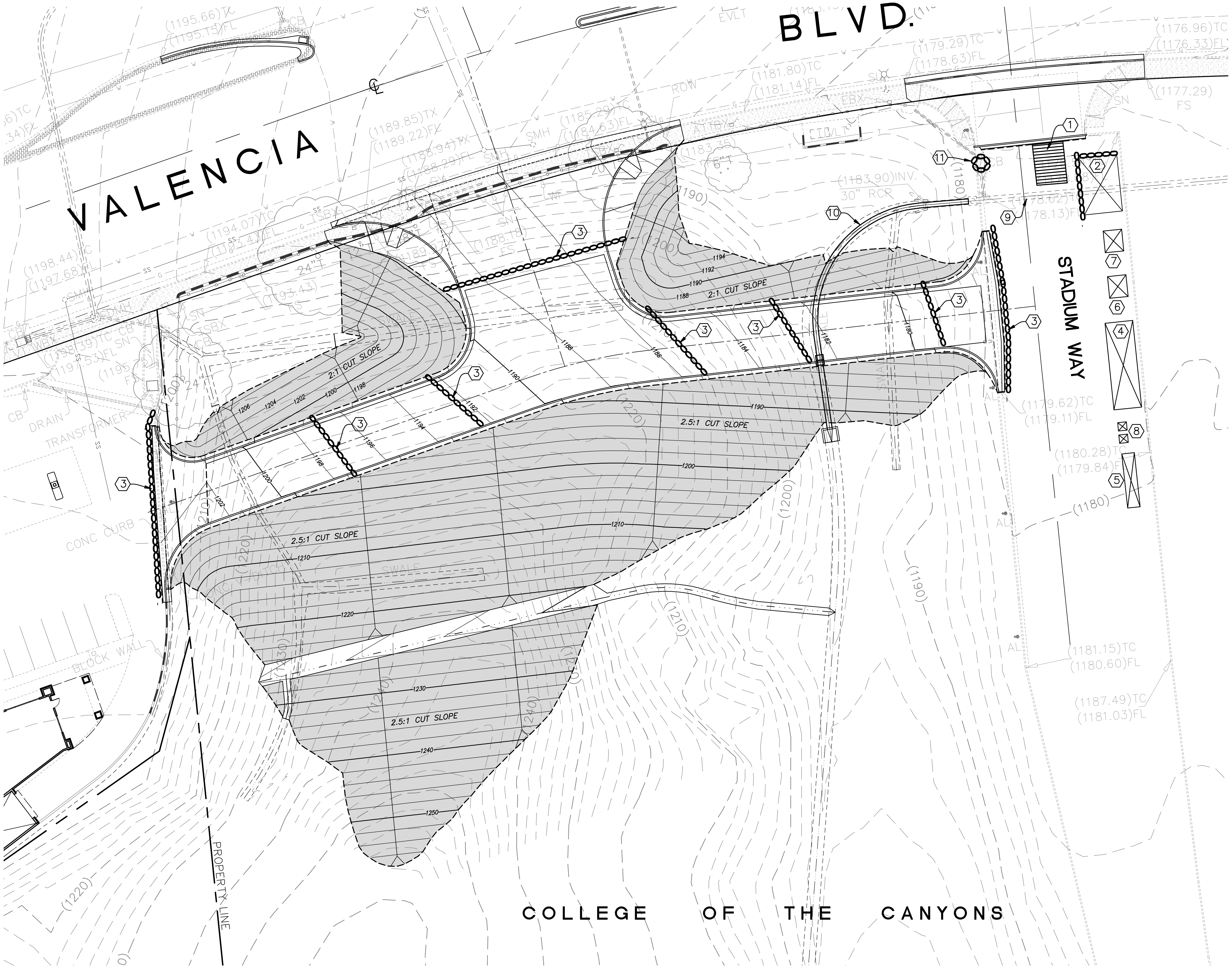
REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
X				

CITY OF SANTA CLARITA
EROSION CONTROL PLAN
VICINITY MAP, DETAILS STANDARD NOTES

SCALE:	AS SHOWN
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	1 OF 2

GRA22-00000



EROSION LEGEND:

1. —PROVIDE STABILIZED CONSTRUCTION ENTRANCE PER TC1.
2. —PROVIDE CONCRETE WASH OUT AREA PER WM8.
3. —PROVIDE 1 ROW OF SANDBAGS, 2 BAGS HIGH PER SE8.
4. —PROVIDE VEHICLE AND EQUIPMENT MAINTENANCE AREA PER NS10.
5. —OFFICE TRAILER LOCATION ON-SITE, LOCATION MAY VARY DURING PROJECT.
6. —ENCLOSED AND FULLY CONTAINED STORAGE BINS FOR PAINTS AND SOLVENTS. CONTRACTOR TO DETERMINE BIN SIZE BASED UPON SITE USAGE NEED PER WM1 AND WM2.
7. —PROVIDE COVERED TRASH AREA, SIZE TO BE DETERMINED BY CONTRACTOR FOR SITE NEED PER WM5, WM6, AND WM10.
8. —PROVIDE PORTA POTTY, WM9.
9. —EXISTING STORM DRAIN.
10. —PROPOSED STORM DRAIN.
11. —PROVIDE INLET PROTECTION PER CASQUA SE-10.

NOTE:

1) — STREET SWEEPING FOR ENTIRE SITE (SE7)
2) — WIND EROSION AND DUST CONTROL FOR ENTIRE SITE (WE1)

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:

CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
△				

CITY OF SANTA CLARITA
EROSION CONTROL PLAN
PLAN SHEET

SCALE: 1"=20'
DATE: 05/31/22
JOB NO. 3547
CASE NO. GRA22-00000
SHEET: 2 OF 2

CRC Enterprises

Civil Engineering • Surveying
Construction Management • Planning

CRC 3547

HYDROLOGY REPORT

Project Site:
26455 Rockwell Canyon Rd
Santa Clarita, CA 91355
APN 2861-004-900

PREPARED Under the Direction of:

07/07/2022

Ron Koester R.C. E. No. 42399 Date

27600 Bouquet Cyn. Rd, Ste. 200 • Santa Clarita, CA 91350 • Tel: (661) 297-2336 • E-Mail: crc@socal.rr.com

TABLE OF CONTENTS

Section 1.0

PROJECT SUMMARY

1.1 DESIGN PARAMETERS

References: Los Angeles Department of Public Works, Hydrology Manual

Rainfall Isohyet:	6.7 in (50yr – 24hr)
85^{th} Percentile, 24-Hr Rainfall:	0.98 in
Soil Type:	98

Note: Project not within FEMA Flood Zone
Project not within County Adopted Floodplain

A Hydrology map delineating the Tributary Drainage areas and tabulated findings within this project for this tract is included in the Appendix of this report.

1.2 OVERVIEW OF ANALYSIS PROCEDURES

Analysis of the stormdrain runoff for both the existing and proposed conditions used the same techniques for analysis. Those being as follows:

- Used LA County HydroCalc Program to determine times of concentration and peak flow rates.
- Used LA County HydroCalc program to determine the SWQDv from the 85th percentile, 50-yr storm.

1.3 PROJECT PURPOSE AND SCOPE

This new driveway access development is located within the City of Santa Clarita in the County of Los Angeles at 26455 Rockwell Canyon Road, APN 2861-004-900.The lot is 27.85 acres in size with no existing development and sits east of the 5 Interstate Freeway and south of Valencia Boulevard. This site proposes roadway access on Valencia Blvd that joins the existing gas station facility and the existing site infrastructure of the college of the canyons parking lot and driveway area.

1.4 EXISTING & PROPOSED DRAINAGE CONDITIONS

The site's existing conditions and terrain cause majority of the runoff to drain north east, ultimately reaching Valencia Boulevard. The runoff from the site drains to designated catch basins positioned in various locations in the region.

In the proposed conditions, the site's runoff drains north east toward Valencia Boulevard ultimately collected by catch basins and conveyed to its designated location.

1.5 HYDROLOGIC ANALYSIS

The methodology used to compute stormwater runoff was that described in the latest County of Los Angeles Hydrology Manual. The LA County HydroCalc program was also used for stormwater runoff calculation purposes. A 50-yr Storm is used for this analysis.

The site's Existing Conditions were broken up and analyzed as five separate subareas (1A, 2A, 3A, 4A and 5A). Subarea 1A and 2A consist of runoff within the public right of way located north of the existing gas station. Subarea 1A drains along Valencia Boulevard to an existing catch basin located on the west bound side of the street. Subarea 2A drains along Valencia Boulevard and is collected by a catch basin located on the east bound side of the street in front of the existing gas station. Subarea 3A consists of the existing gas station whose sheet flow is collected by a catch basin and a trench drain located at the driveway entrance to the property. Subarea 4A consists of a portion of the hillside adjacent to the existing gas station, which drains northward and is collected by a network of swales that convey the flow to a nearby catch basin. Subarea 5A consists of a portion of Valencia Boulevard as well as a portion of the hillside west of Stadium Way. The table below summarizes the existing conditions Hydrological Analysis.

Subarea	Area (ac)	Flowline (ft)	T_C (min)	Q_{50} (cfs)	**Q_{BB} (cfs)**	**DP (cu-yd)**
1A	0.85	613	6	2.85	**	**
2A	0.75	474	5	2.74	**	**
3A	0.90	339	5	3.29	**	**
4A	2.34	606	5	8.09	11.85	132
5A	6.97	1169	7	20.9	30.62	392
Site Total	**11.82**	**-**	**-**	**37.87**	**42.47**	**524**

**No debris analysis required

The total area analyzed is 11.82 acres and generates a Q_{50} runoff of 37.87 cfs. The majority of this runoff outlets to Valencia Boulevard.

In the Proposed Conditions, the site breaks up into 7 separate subareas (1A, 2A, 3A, 4A-4B, 5A, and 6A) and is further separated into 6 separate categories (1-6). The subarea labeled "1" consists of a portion of Valencia Boulevard's west bound lanes whose sheet flow is collected by a catch basin at the edge of the median.

The subarea labeled as "2" consists of a portion of Valencia Boulevard's east bound lanes north of the existing gas station which drain to the catch basin at the edge of the entrance to the property. The subarea labeled as "3" consists of the existing gas station whose runoff sheet flows toward the driveway and into a catch basin and a trench drain.

Subareas labeled "4" consist of the hillside south of the gas station and a small region of the hillside at the north eat corner of subarea 3A. The runoff from the hillside south of the gas station is labeled as “4B” and drains north to the exiting swale and then is conveyed underneath the proposed driveway by a 6” steel pipe. This runoff is discharged into a swale located in subarea “4A,” which collects the runoff from subarea “4A.” The runoff from subareas labeled “4” is then discharged into a catch basin. The subarea labeled as “5” consists of the eastern half of site, and includes a portion of Valencia Boulevard and the hillside south of the proposed development. Sheet flow from subarea “5A” is collected by a catch basin located on Stadium Way. The runoff from subarea “6A” sheet flows down the hillside and is collected by a proposed concrete swale which connects to a 24 inch RCP pipe. This runoff is removed from the site by way of connecting storm drains.

The table below summarizes the Proposed Conditions Hydrological Analysis:

Subarea	Area (ac)	Flowline (ft)	T_C (min)	Q_{50} (cfs)	Q_{BB} (cfs)	DP (cu-yd)
1A	0.85	620	6	2.74	**	**
2A	0.75	474	5	2.65	**	**
3A	0.93	339	5	3.4	**	**
4A	0.03	50	5	0.106	**	**
4B	1.76	604	5	6.22	9.11	99
5A	3.00	548	5	10.7	15.68	169
6A	4.48	1011	7	13.4	19.63	252
Site Total	**11.82**	**-**	**-**	**39.22**	**44.42**	**520**

**No debris analysis required

Comparing the existing and the proposed conditions, the runoff by the 50 year-storm increased by +1.35 cfs for the proposed site. The analyses shows that burn and bulk flow increased by +1.95 cfs and the Debris production decreased by 4 cu-yd.

1.6 <u>CONCLUSION</u>

The site is currently an undeveloped hillside within the City of Santa Clarita within the County of Los Angeles located at 26455 Rockwell Canyon Road. The runoff of the site generally sheet flows north east where majority of the runoff drains offsite by way of storm drains.

In the proposed conditions there will be a proposed drive way to provide roadway access on Valencia Blvd to the existing gas station and the college of the canyons parking lot. The overall drainage design of the site has been adequately designed to handle the runoff of a 50-yr storm and is consistent with the requirements of the County of Los Angeles, Department of Public Works.

Section 2.0

HYDROLOGIC CALCULATIONS

(EXISTING CONDITIONS - HYDROCALC CALCULATOR)

Peak Flow Hydrologic Analysis

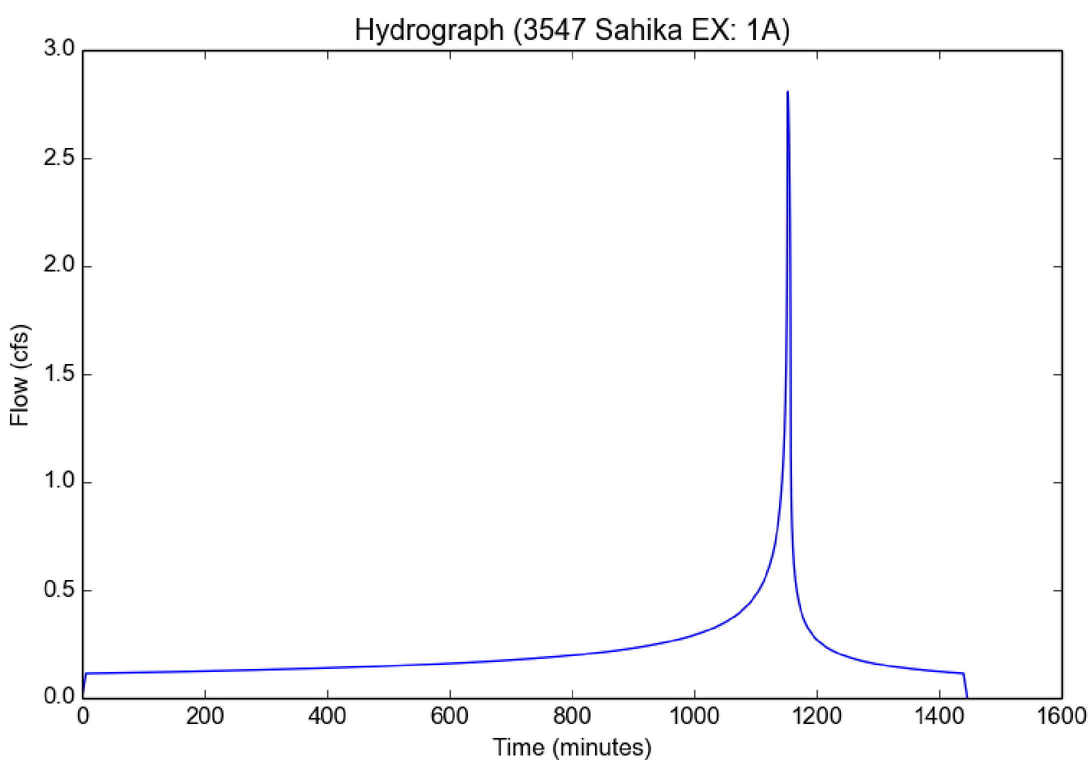
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Existing/Output/3547 Sahika EX Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika EX
Subarea ID	1A
Area (ac)	0.85
Flow Path Length (ft)	613.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.7
Percent Impervious	1.0
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.6691
Undeveloped Runoff Coefficient (Cu)	0.8591
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.8069
Burned Peak Flow Rate (cfs)	2.85
24-Hr Clear Runoff Volume (ac-ft)	0.4236
24-Hr Clear Runoff Volume (cu-ft)	18451.8083



Peak Flow Hydrologic Analysis

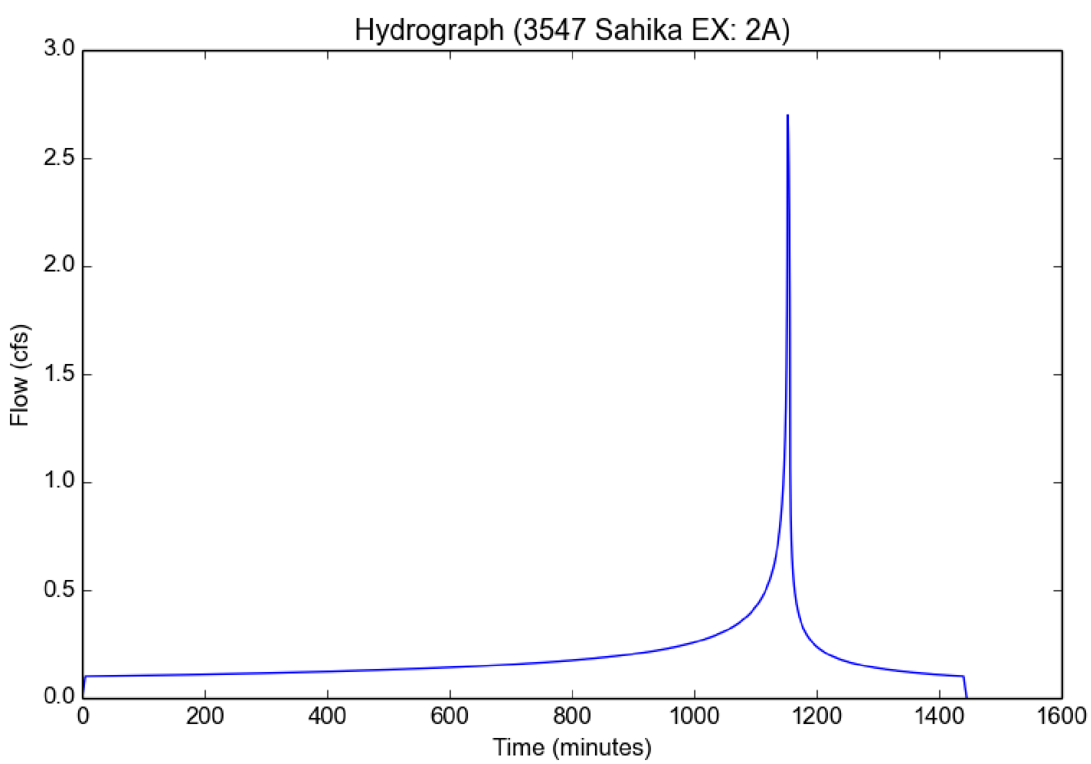
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Existing/Output/3547 Sahika EX Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika EX
Subarea ID	2A
Area (ac)	0.75
Flow Path Length (ft)	474.0
Flow Path Slope (vft/hft)	0.047
50-yr Rainfall Depth (in)	6.7
Percent Impervious	1.0
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.6982
Burned Peak Flow Rate (cfs)	2.7403
24-Hr Clear Runoff Volume (ac-ft)	0.3738
24-Hr Clear Runoff Volume (cu-ft)	16281.0051



Peak Flow Hydrologic Analysis

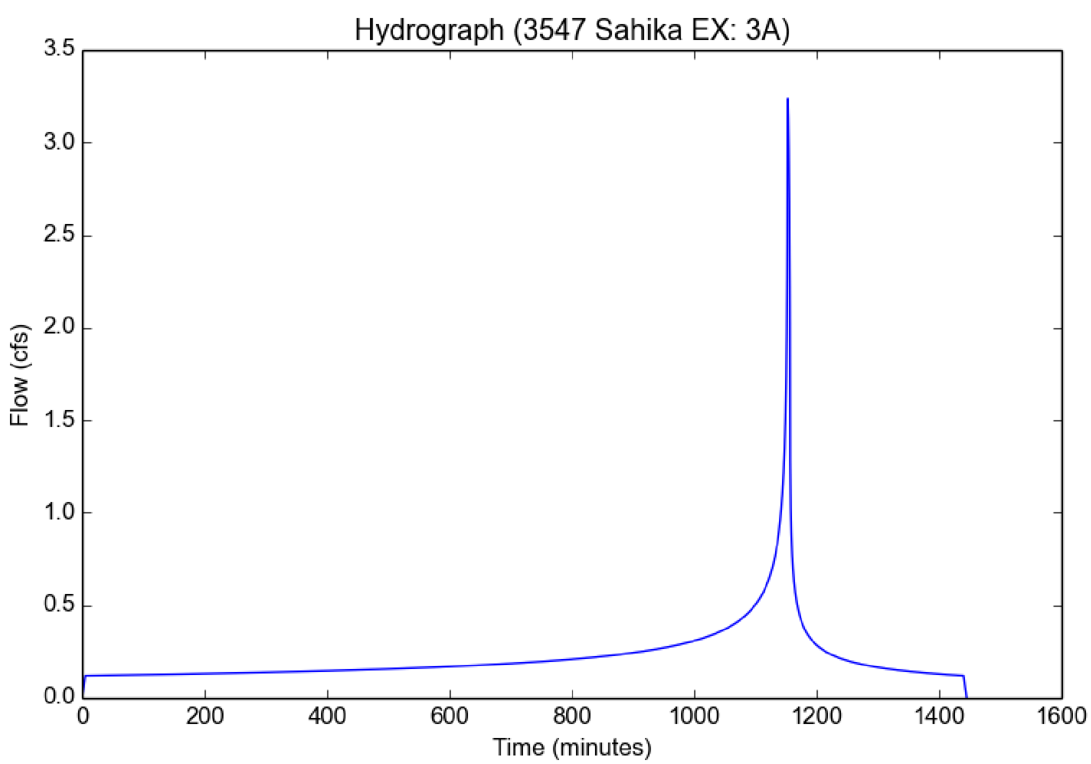
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Existing/Output/3547 Sahika EX Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika EX
Subarea ID	3A
Area (ac)	0.9
Flow Path Length (ft)	339.0
Flow Path Slope (vft/hft)	0.041
50-yr Rainfall Depth (in)	6.7
Percent Impervious	1.0
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.2379
Burned Peak Flow Rate (cfs)	3.2883
24-Hr Clear Runoff Volume (ac-ft)	0.4485
24-Hr Clear Runoff Volume (cu-ft)	19537.2061



Peak Flow Hydrologic Analysis

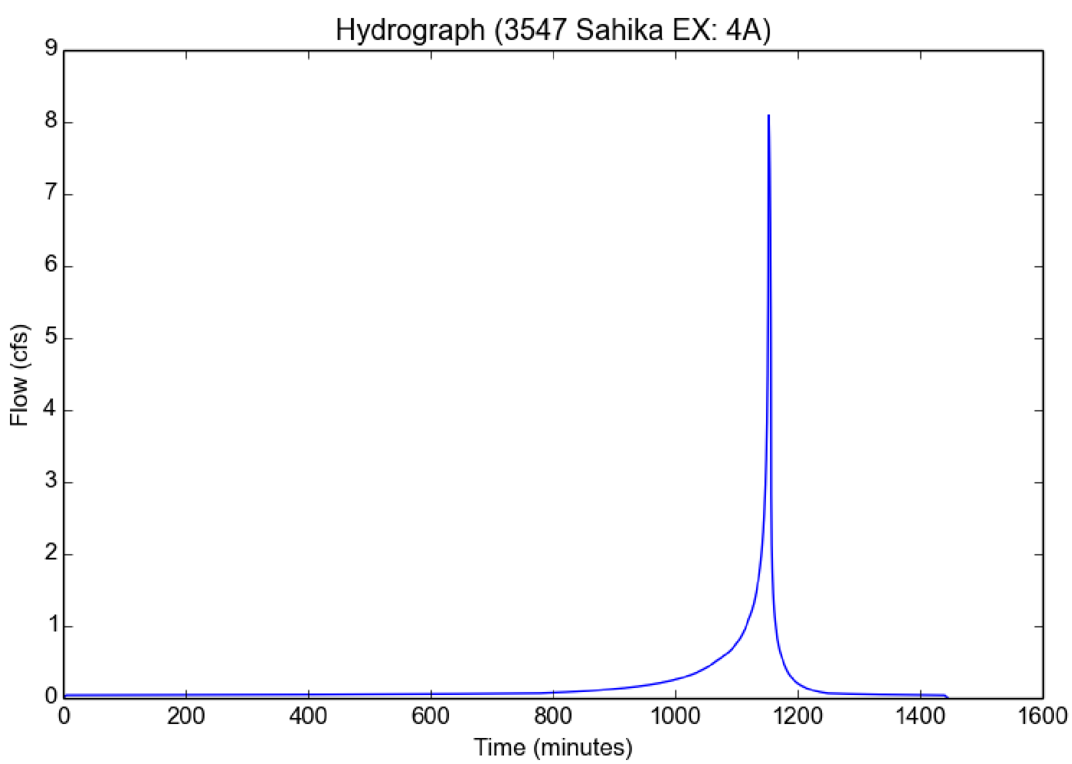
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Existing/Output/3547 Sahika EX Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika EX
Subarea ID	4A
Area (ac)	2.34
Flow Path Length (ft)	606.0
Flow Path Slope (vft/hft)	0.185
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.865
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	8.0911
Burned Peak Flow Rate (cfs)	8.2681
24-Hr Clear Runoff Volume (ac-ft)	0.3705
24-Hr Clear Runoff Volume (cu-ft)	16137.0937



Peak Flow Hydrologic Analysis

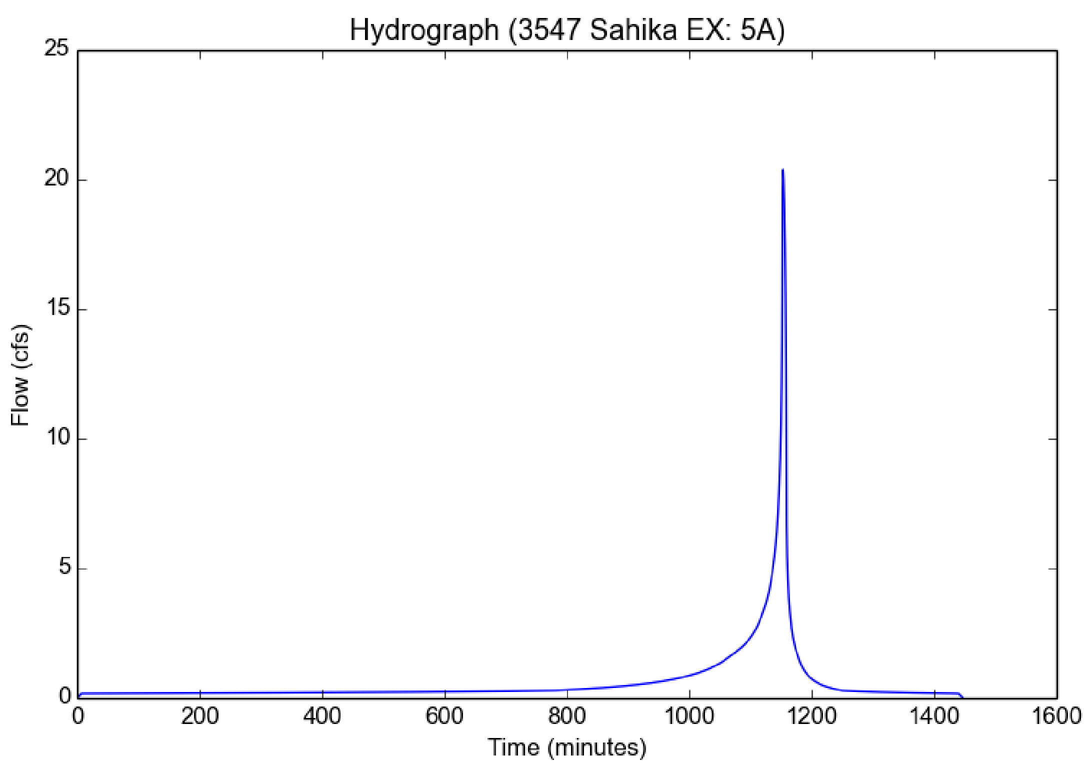
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Existing/Output/3547 Sahika EX Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika EX
Subarea ID	5A
Area (ac)	6.97
Flow Path Length (ft)	1169.0
Flow Path Slope (vft/hft)	0.104
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.079
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.4127
Undeveloped Runoff Coefficient (Cu)	0.8536
Developed Runoff Coefficient (Cd)	0.8572
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	20.3908
Burned Peak Flow Rate (cfs)	20.8557
24-Hr Clear Runoff Volume (ac-ft)	1.2685
24-Hr Clear Runoff Volume (cu-ft)	55256.167



Section 2.0

HYDROLOGIC CALCULATIONS

(PROPOSED CONDITIONS - HYDROCALC CALCULATOR)

Peak Flow Hydrologic Analysis

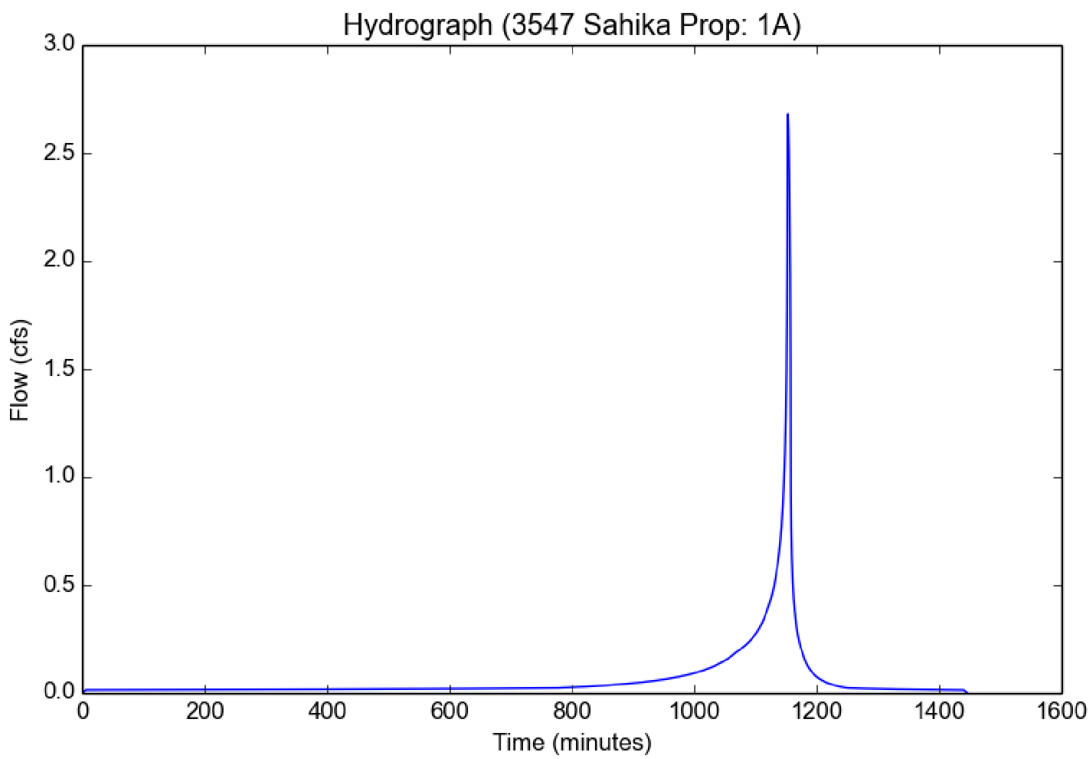
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	1A
Area (ac)	0.85
Flow Path Length (ft)	620.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.6691
Undeveloped Runoff Coefficient (Cu)	0.8591
Developed Runoff Coefficient (Cd)	0.8596
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.6807
Burned Peak Flow Rate (cfs)	2.7414
24-Hr Clear Runoff Volume (ac-ft)	0.1346
24-Hr Clear Runoff Volume (cu-ft)	5861.7689



Peak Flow Hydrologic Analysis

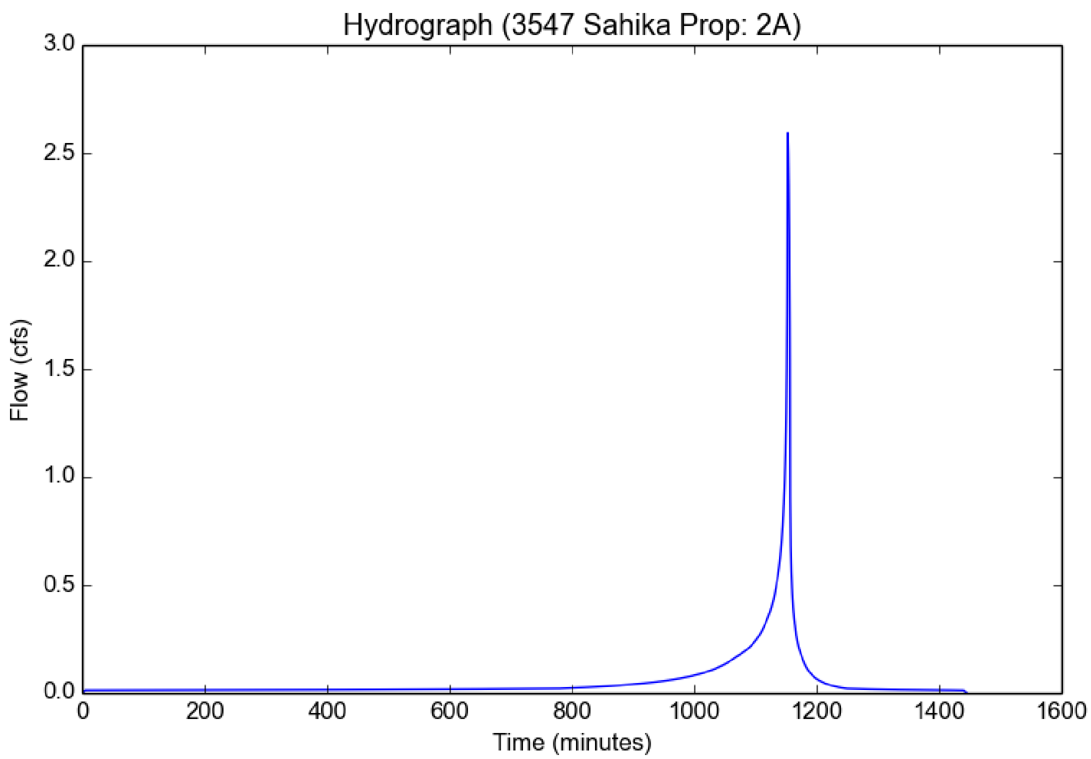
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	2A
Area (ac)	0.75
Flow Path Length (ft)	474.0
Flow Path Slope (vft/hft)	0.047
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.865
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.5933
Burned Peak Flow Rate (cfs)	2.65
24-Hr Clear Runoff Volume (ac-ft)	0.1187
24-Hr Clear Runoff Volume (cu-ft)	5172.1454



Peak Flow Hydrologic Analysis

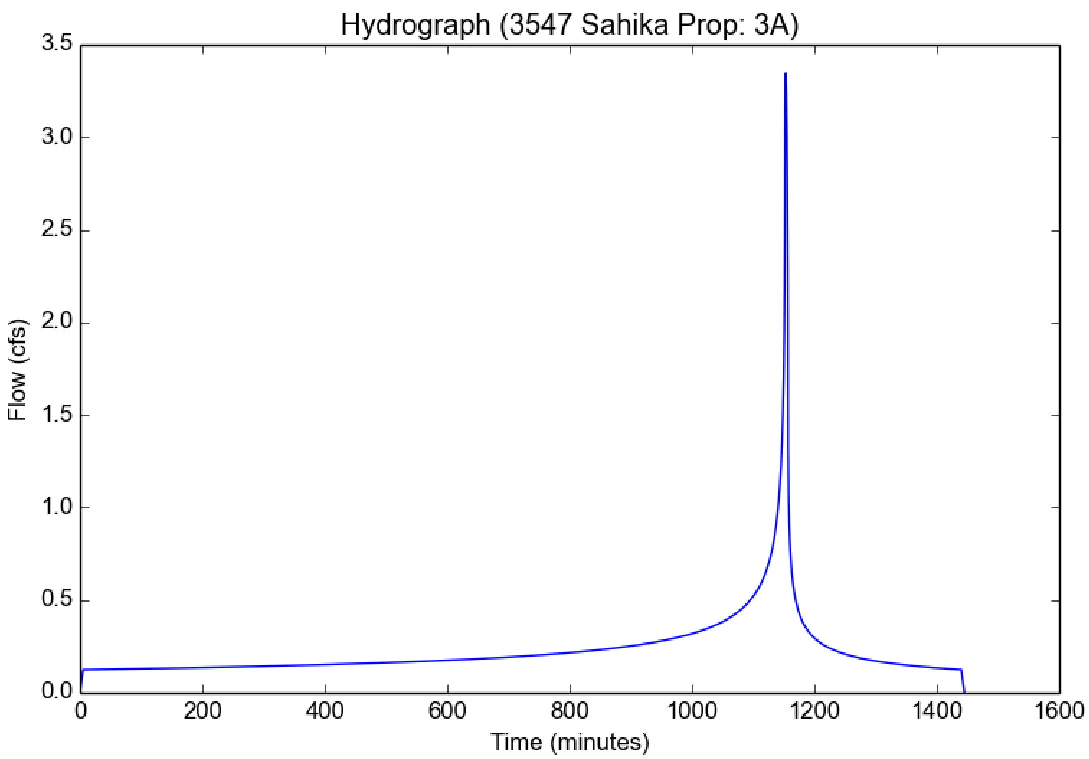
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	3A
Area (ac)	0.93
Flow Path Length (ft)	339.0
Flow Path Slope (vft/hft)	0.041
50-yr Rainfall Depth (in)	6.7
Percent Impervious	1.0
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.9
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	3.3458
Burned Peak Flow Rate (cfs)	3.3979
24-Hr Clear Runoff Volume (ac-ft)	0.4635
24-Hr Clear Runoff Volume (cu-ft)	20188.4463



Peak Flow Hydrologic Analysis

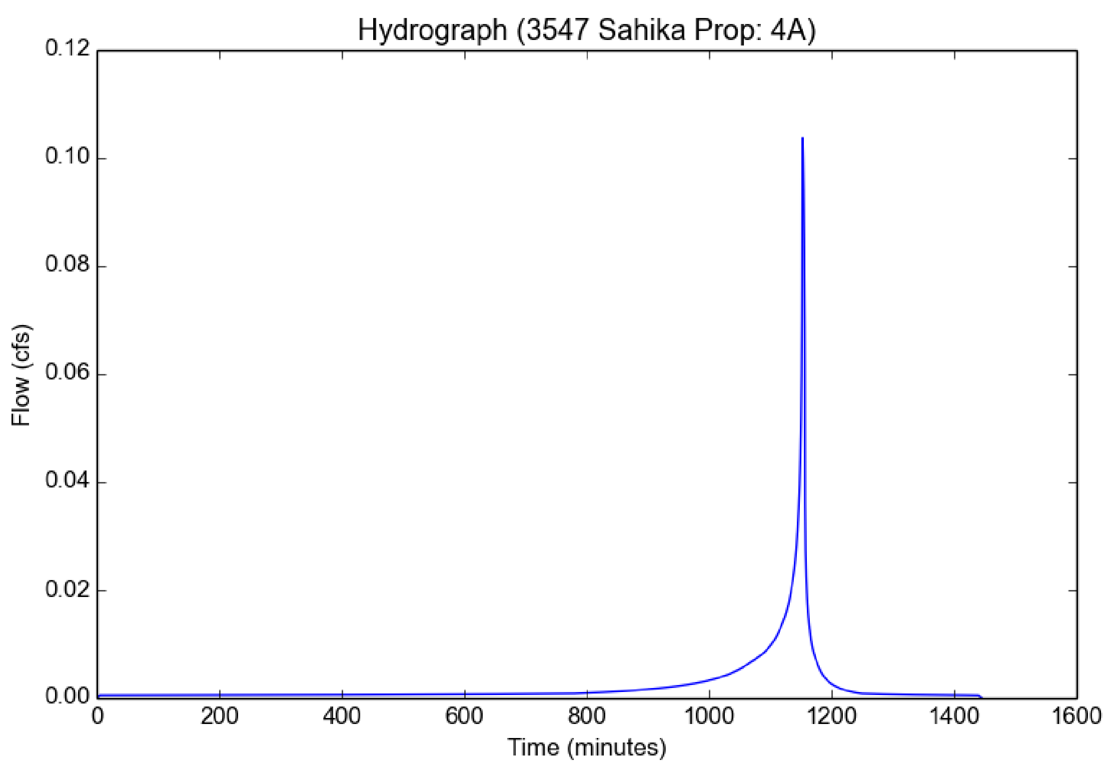
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	4A
Area (ac)	0.03
Flow Path Length (ft)	50.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.865
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	0.1037
Burned Peak Flow Rate (cfs)	0.106
24-Hr Clear Runoff Volume (ac-ft)	0.0047
24-Hr Clear Runoff Volume (cu-ft)	206.8858



Peak Flow Hydrologic Analysis

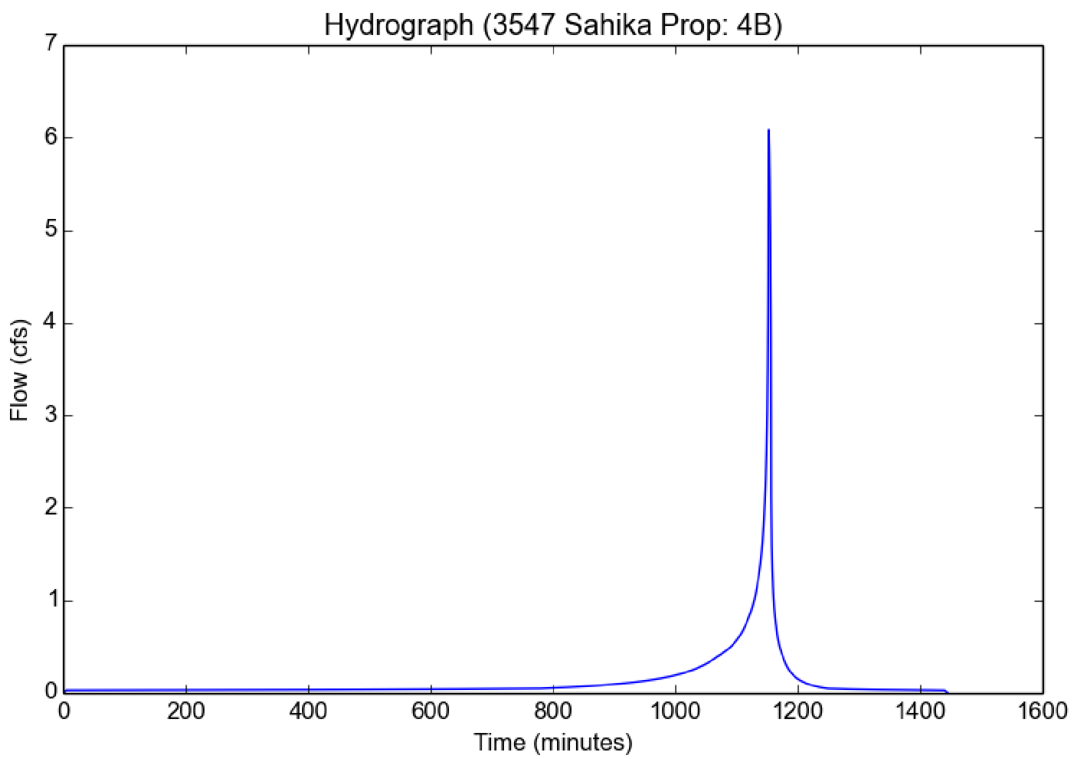
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	4B
Area (ac)	1.76
Flow Path Length (ft)	604.0
Flow Path Slope (vft/hft)	0.146
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.865
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	6.0856
Burned Peak Flow Rate (cfs)	6.2187
24-Hr Clear Runoff Volume (ac-ft)	0.2786
24-Hr Clear Runoff Volume (cu-ft)	12137.3012



Peak Flow Hydrologic Analysis

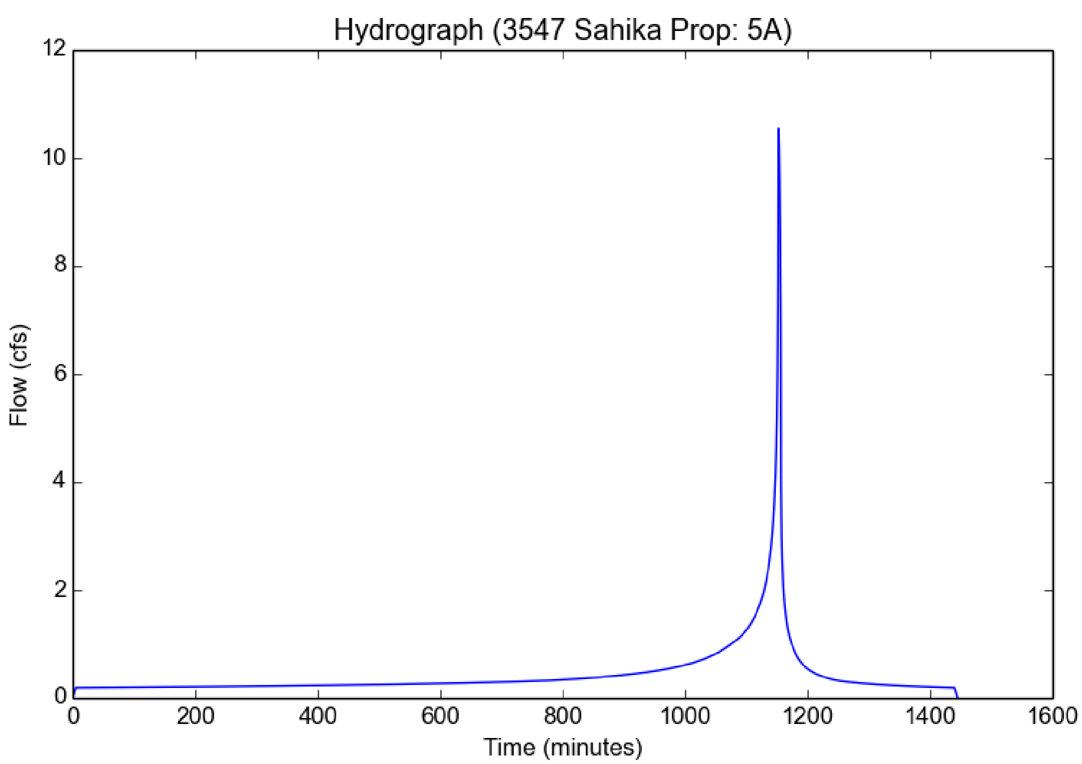
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	5A
Area (ac)	3.0
Flow Path Length (ft)	548.0
Flow Path Slope (vft/hft)	0.051
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.411
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.9974
Undeveloped Runoff Coefficient (Cu)	0.8646
Developed Runoff Coefficient (Cd)	0.8792
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	10.5432
Burned Peak Flow Rate (cfs)	10.7463
24-Hr Clear Runoff Volume (ac-ft)	0.8881
24-Hr Clear Runoff Volume (cu-ft)	38687.1786



Peak Flow Hydrologic Analysis

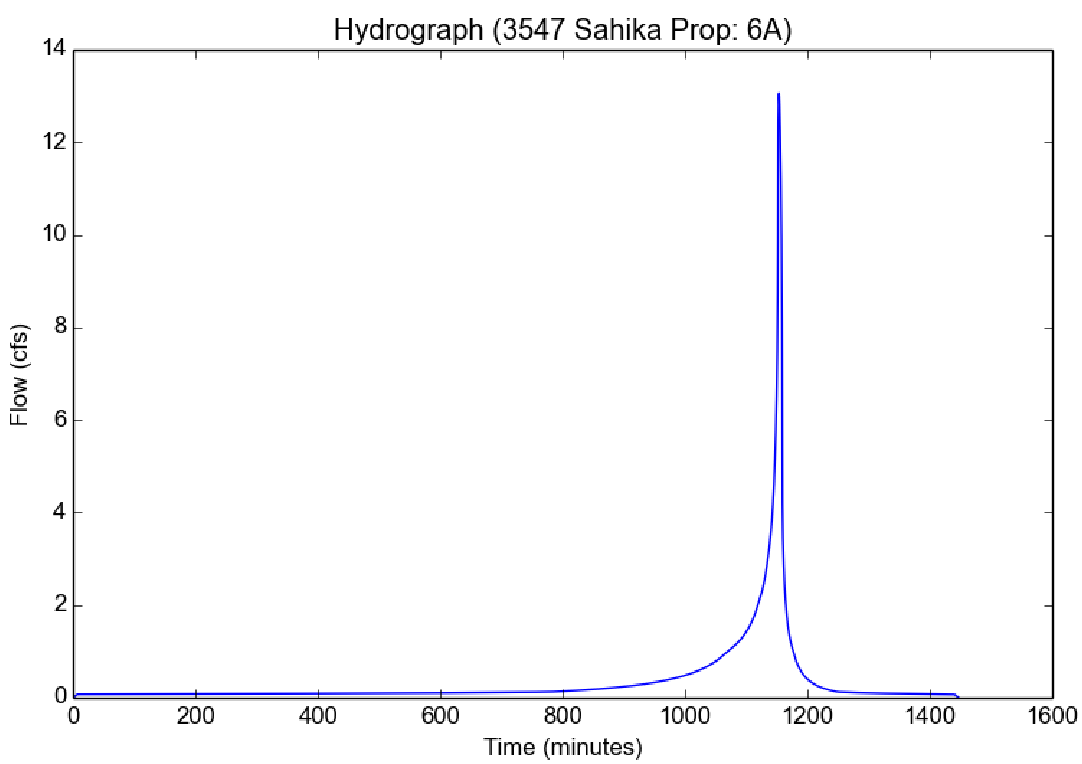
File location: F:/Job Files/3547-Sahika INC/Civil/Hydrology/Calculations/Proposed/Output/3547 Sahika Prop Report.pdf
Version: HydroCalc 1.0.3

Input Parameters

Project Name	3547 Sahika Prop
Subarea ID	6A
Area (ac)	4.48
Flow Path Length (ft)	1011.0
Flow Path Slope (vft/hft)	0.108
50-yr Rainfall Depth (in)	6.7
Percent Impervious	0.01
Soil Type	98
Design Storm Frequency	50-yr
Fire Factor	0.34
LID	False

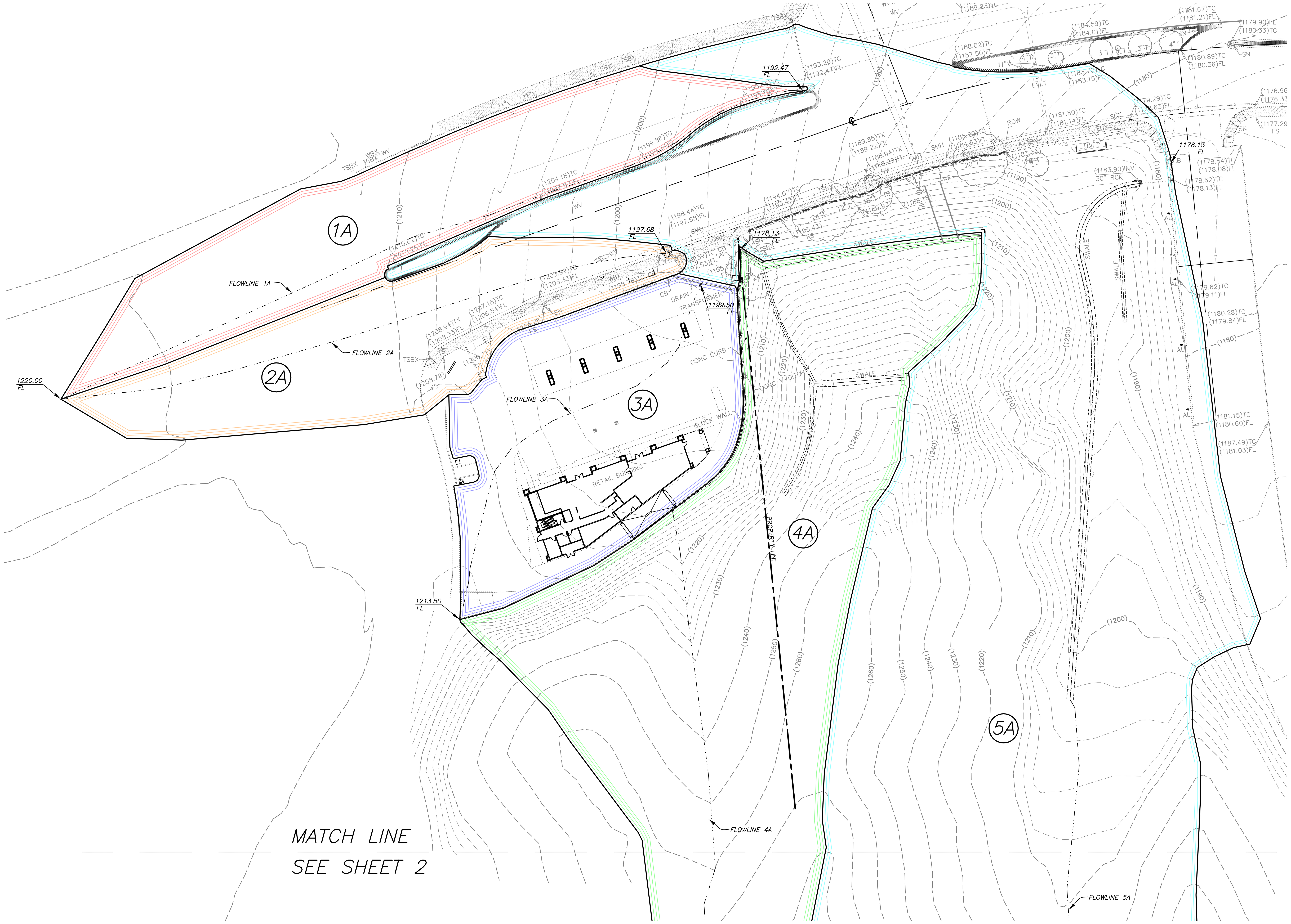
Output Results

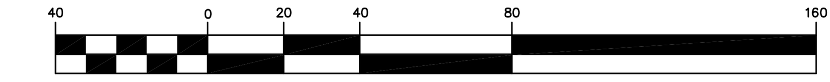
Modeled (50-yr) Rainfall Depth (in)	6.7
Peak Intensity (in/hr)	3.4127
Undeveloped Runoff Coefficient (Cu)	0.8536
Developed Runoff Coefficient (Cd)	0.854
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	13.0573
Burned Peak Flow Rate (cfs)	13.3628
24-Hr Clear Runoff Volume (ac-ft)	0.7092
24-Hr Clear Runoff Volume (cu-ft)	30891.0058



Appendix A

HYDROLOGY/LOW IMPACT DEVELOPMENT MAP





GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

LEGEND

1A	SUBAREA LABEL
	SUBAREA BOUNDARY
	SUBAREA COLOR SHADING
	MINOR CONTOURS
	MAJOR CONTOURS

HYDROLOGIC PARAMETERS

24 HR 6.7 in
SOILS TYPE: 098

EXISITING HYDROLOGIC TABLE

SUBAREA	AREA (AC)	FLOWLINE (ft)	SLOPE	IMP	50yr – Tc (min)	Q_{50}(cfs)	VOLUME (cu–ft)	Q_{BB}	DP (yd^3)
1A	0.85	613	0.045	1.00	6.00	2.85	18452	**	**
2A	0.75	474	0.047	1.00	5.00	2.74	16281	**	**
3A	0.90	339	0.041	1.00	5.00	3.29	19537	**	**
4A	2.34	606	0.185	0.01	5.00	8.09	16137	11.85	132
5A	6.97	1169	0.104	0.08	7.00	20.90	55256	30.62	392
TOTAL	11.81	–	–	–	–	37.87	125663	–	–

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ____________

DATE: ____________

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

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PLANS PREPARED FOR:

Santa Clarita Community College District
26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:

CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER RCE # 42399 07 JULY 2022 DATE

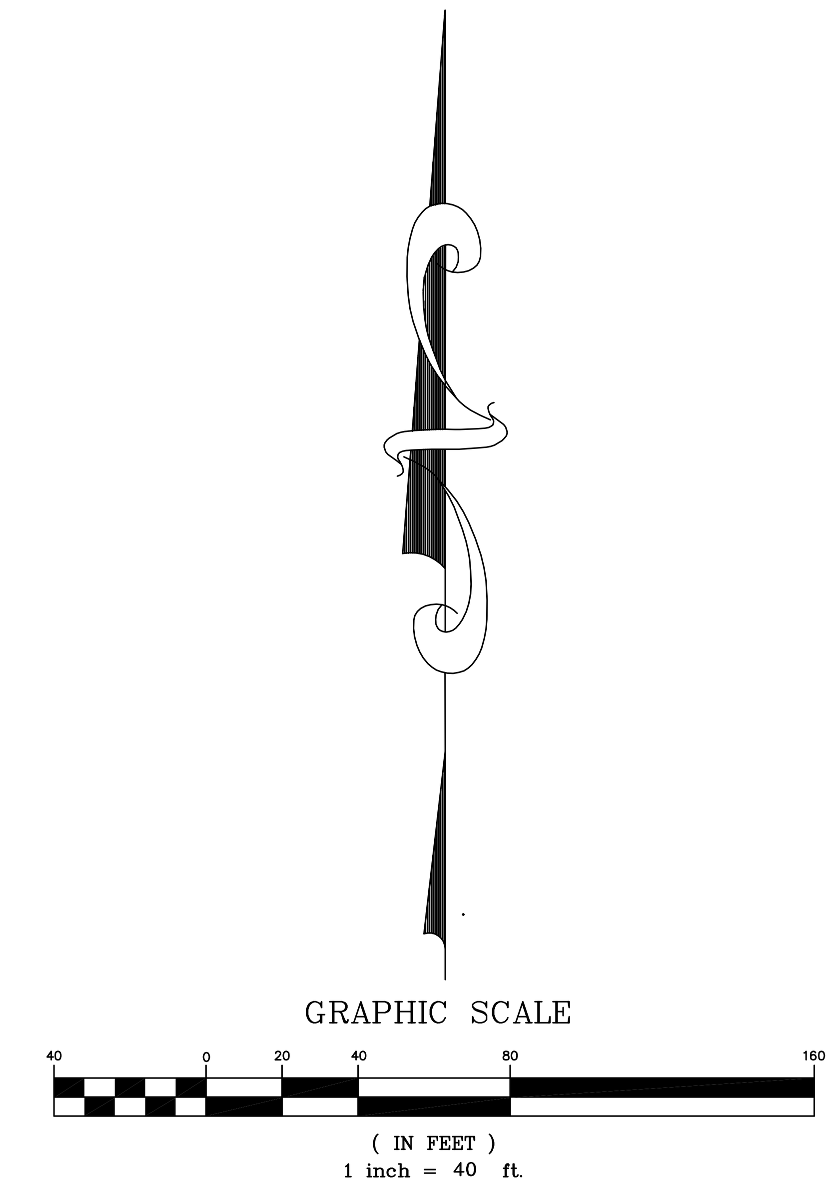
REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
△				

CITY OF SANTA CLARITA
HYDROLOGY PLAN
EXISTING CONDITIONS

SCALE: 1"=60'
DATE: 07/07/22
JOB NO. 3547
CASE NO:
SHEET: 1 OF 4

GRA22-00000



LEGEND

1A SUBAREA LABEL
SUBAREA BOUNDARY
SUBAREA COLOR SHADING
MINOR CONTOURS
MAJOR CONTOURS

HYDROLOGIC PARAMETERS

24 HR	6.7 in
SOILS TYPE:	098

EXISITING HYDROLOGIC TABLE

SUBAREA	AREA (AC)	FLOWLINE (ft)	SLOPE	IMP	50yr – Tc (min)	Q_{50}(cfs)	VOLUME (cu–ft)	Q_{BB}	DP (yd^3)
1A	0.85	613	0.045	1.00	6.00	2.85	18452	**	**
2A	0.75	474	0.047	1.00	5.00	2.74	16281	**	**
3A	0.90	339	0.041	1.00	5.00	3.29	19537	**	**
4A	2.34	606	0.185	0.01	5.00	8.09	16137	11.85	132
5A	6.97	1169	0.104	0.08	7.00	20.90	55256	30.62	392
TOTAL	11.81	–	–	–	–	37.87	125663	–	–

CITY OF SANTA CLARITA
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CRC Enterprises
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Santa Clarita Ca. 91350
Telephone (661) 297–2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER	RCE # 42399	07 JULY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

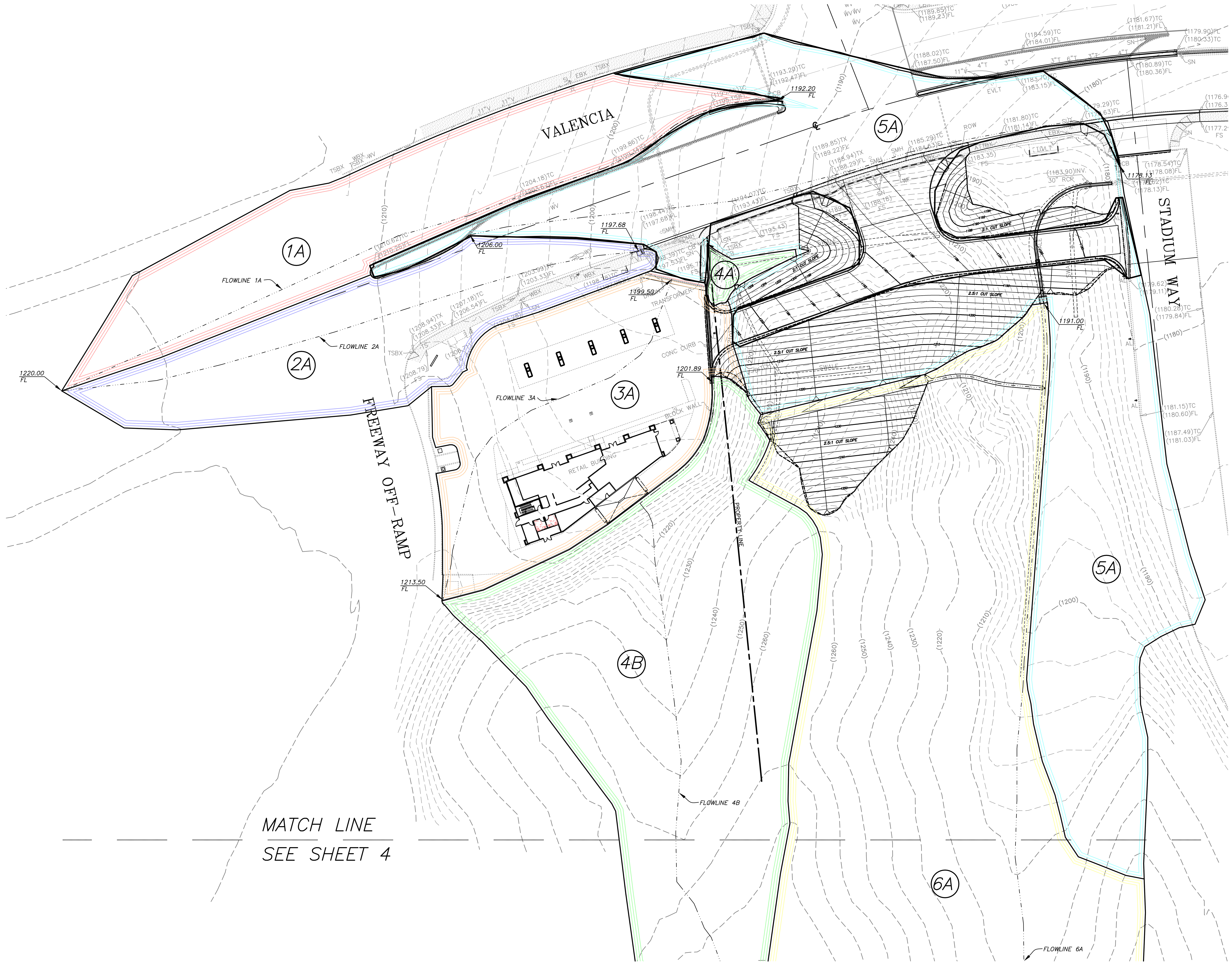
NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
X				

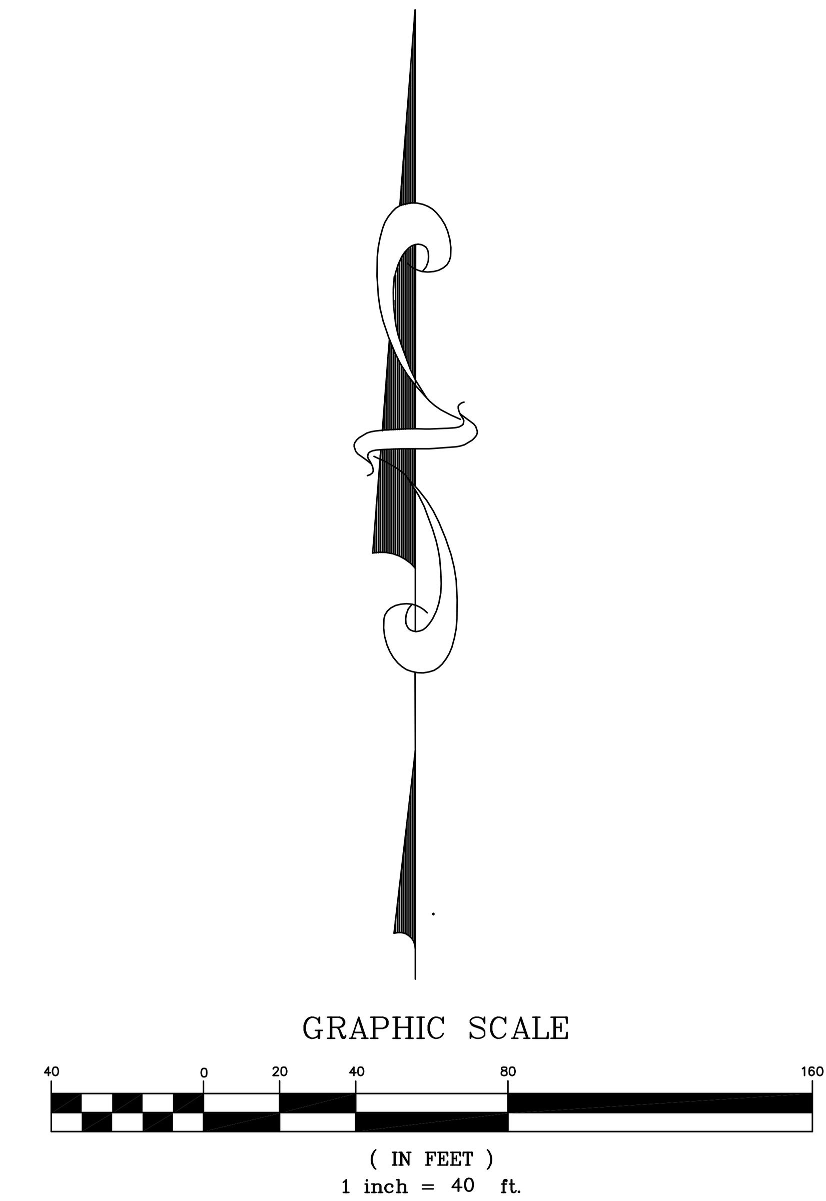
CITY OF SANTA CLARITA

HYDROLOGY PLAN

EXISTING CONDITIONS

SCALE: 1"=60'
DATE: 07/07/22
JOB NO. 3547
CASE NO:
SHEET: 2 OF 4





LEGEND

1A	SUBAREA LABEL
	SUBAREA BOUNDARY
	SUBAREA COLOR SHADING
	MINOR CONTOURS
	MAJOR CONTOURS

HYDROLOGIC PARAMETERS

24 HR 6.7 in
SOILS TYPE: 098

EXISITING HYDROLOGIC TABLE

SUBAREA	AREA (AC)	FLOWLINE (ft)	SLOPE	IMP	50yr – Tc (min)	Q_{50}(cfs)	VOLUME (cu–ft)	Q_{BB}	DP
1A	0.85	620	0.045	0.01	6.00	2.74	5862	**	**
2A	0.75	474	0.047	0.01	5.00	2.65	5172	**	**
3A	0.93	339	0.041	1.00	5.00	3.40	20188	**	**
4A	0.03	50	0.020	0.01	5.00	0.11	207	**	**
4B	1.76	604	0.146	0.01	5.00	6.22	12137	9.11	99
5A	3.00	548	0.051	0.41	5.00	10.70	38687	15.68	169
6A	4.48	1011	0.108	0.01	7.00	13.40	30891	19.63	252
TOTAL	11.82	–	–	–	–	39.22	113144	–	–

** NO ANALYSIS REQUIRED

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ____________________

DATE: ____________________

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GEOTECHNICAL REVIEW BY:
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com

PLANS PREPARED UNDER THE DIRECTION OF:

XXX DATE

PLANS PREPARED FOR:

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26455 Rockwell Cyn. Rd.
Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:

CRC Enterprises
27600 Bouquet Canyon Road Suite 200
Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER RCE # 42399 07 JULY 2022 DATE

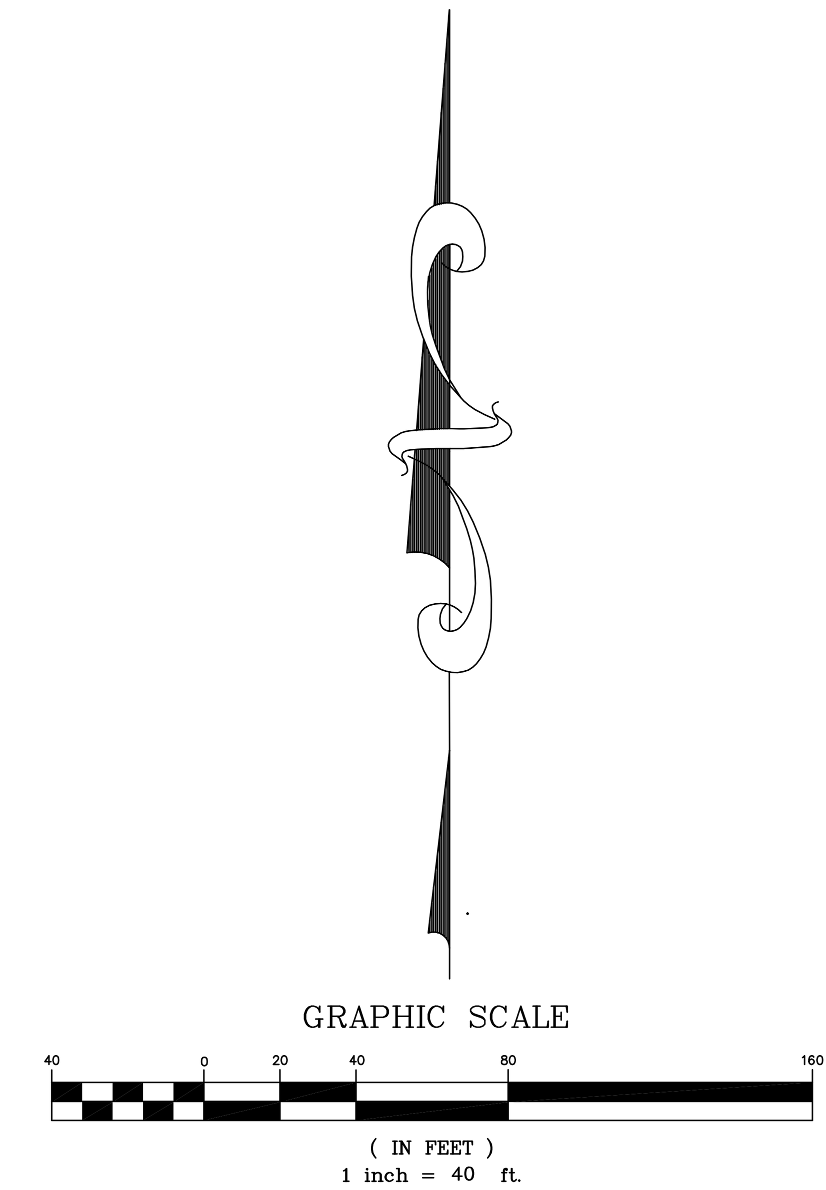
REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
1				

CITY OF SANTA CLARITA
GRADING PLAN
PROPOSED CONDITIONS

SCALE: 1"=60'
DATE: 06/30/22
JOB NO. 3547
CASE NO:
SHEET: 3 OF 4

GRA22-00000



LEGEND

1A	SUBAREA LABEL		MINOR CONTOURS
	SUBAREA BOUNDARY		MAJOR CONTOURS
	SUBAREA COLOR SHADING		

HYDROLOGIC PARAMETERS

24 HR 6.7 in
SOILS TYPE: 098

EXISITING HYDROLOGIC TABLE

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2A	0.75	474	0.047	0.01	5.00	2.65	5172	**	**
3A	0.93	339	0.041	1.00	5.00	3.40	20188	**	**
4A	0.03	50	0.020	0.01	5.00	0.11	207	**	**
4B	1.76	604	0.146	0.01	5.00	6.22	12137	9.11	99
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6A	4.48	1011	0.108	0.01	7.00	13.40	30891	19.63	252
TOTAL	11.82	–	–	–	–	39.22	113144	–	–

** NO ANALYSIS REQUIRED

CITY OF SANTA CLARITA
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GRADING AND DRAINAGE
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UNIFIED DEVELOPMENT CODE

BY: ____________

DATE: ____________

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27825 Smyth Drive, Valencia, CA 91355
661.294.0065, ESeward@SewardGeo.com

PLANS PREPARED UNDER THE DIRECTION OF:

XXX DATE

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Santa Clarita, CA 91355
Attn: Mr. Jim Schrage

PLANS PREPARED BY:

CRC Enterprises
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Santa Clarita Ca. 91350
Telephone (661) 297-2336 email: crc@socal.rr.com

PLANS PREPARED UNDER THE DIRECTION OF:

RON KOESTER RCE # 42399 07 JULY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
1				

CITY OF SANTA CLARITA
GRADING PLAN
PROPOSED CONDITIONS

SCALE: 1"=60'
DATE: 06/30/22
JOB NO. 3547
CASE NO:
SHEET: 4 OF 4

Attachment H

Geotechnical Report

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

GEOTECHNICAL REPORT
Review of Fine Grading Plan, dated 5/31/22

Fine Grading Plan for Access Road
College of the Canyons
26455 Rockwell Canyon Road
Santa Clarita, California

Prepared for:

Sahika, Inc.
26858 Provence Drive
Calabasas, CA 91302

Job No.: 22-2745-5
Dated: June 8, 2022

TABLE OF CONTENTS

TABLE OF CONTENTS

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

June 8, 2022 Job No.: 22-2745-5

Sahika, Inc.
26858 Provence Drive
Calabasas, CA 91302

Attention: Mr. Sudhir Sood

Subject: **GEOTECHNICAL REPORT**
Review of Fine Grading Plan, dated 5/31/22

Project: Fine Grading Plan for Access Road
College of the Canyons
26455 Rockwell Canyon Road
Santa Clarita, California

References: at end of text

Dear Mr. Sood:

This report presents our opinions regarding existing geotechnical conditions at the above-referenced site relative to the Fine Grading Plan prepared by CRC Enterprises, dated May 31, 2022, and their effects on the proposed development.

1.0 SCOPE OF WORK

This review included the following tasks:

1. Review of the site topography and the 1”=20’ scale Fine Grading Plan prepared by CRC Enterprises, dated 5/31/22. This plan was provided to our office in computerized format (AutoCAD). This plan was used as the base for our 20-scale Geotechnical Map. We make no representations regarding the accuracy of the plan used as the base map.
2. Review of published reports and maps listed in the **References** section.
3. Review of the 2003 Munger Map Book, California-Alaska Oil & Gas Field and review of records on the California Department of Conservations Geologic Energy Management Division (CalGEM) website.
4. Review of Alquist-Priolo Fault Rupture Hazard Zones in California (CDMG Special Publication 42).

5. Review of the following aerial photographs:

YEAR	FLIGHT	FRAME	SCALE	AGENCY
1/1/28	C-300	E-122, E-150, E-151	1:18000±	Fairchild
7/18/30	C-1001A	A-172, Z-166, Z-167	1:18000±	Fairchild
4/30/40	AXJ-1940	320-65, 320-66	1:20000±	USDA
1/1/59	AXJ-1959	4W-168, 4W-197, 4W-198	1:20000±	USDA
10/24/63	HA-UW	8, 9	1:14,400	Mark Hurd Aerial Surveys
3/29/68	TG-2445	4-108, 4-109, 4-110	1:24000±	LA County Engineers
2/1/76	TG-7600	20-11, 20-12	1:24000±	Teledyne Geotronics
1994 – 2018	- Various Images	-	-	Google Earth Web Application

6. Coordination with the Supervising Civil Engineer, CRC Enterprises.
7. Coordination with Underground Service Alert to obtain clearance from potentially impacted utilities prior to the subsurface exploration.
8. Geologic field mapping of the site.
9. Excavation, sampling and logging of 5 trenches excavated to a maximum depth of 10 feet.
10. Laboratory testing of selected bulk and ring (modified California drive) samples obtained during our subsurface investigation. Testing included dry density and moisture content of in-situ soils, percent minus #200 sieve size and direct shear.
11. Geotechnical review of the data obtained from the trenches and laboratory test data.
12. Geotechnical evaluation of soil shear strength.
13. Preparation of a cross section illustrating anticipated geologic conditions for the proposed cut slope.
14. Slope stability analyses of proposed 60 ft high 2.5:1 gradient cut-slope.
15. Preparation of the enclosed Geotechnical Map illustrating our geologic data in relation to the proposed Fine Grading Plan design.
16. Preparation of pertinent figures and illustrations, including Location Map, trench logs, laboratory test reports, and figures for inclusion in this report.

17. Preparation of this Geotechnical Report describing the completed scope of work, the geologic and geotechnical conditions at the site, the results of our analyses along with appropriate conclusions and recommendations for the Fine Grading Plan.

2.0 SITE DESCRIPTION

The subject site is located along the south side of Valencia Boulevard, directly south of the "T" intersection with Tourney Road, within College of the Canyon's property. An existing gas station is located along the west side of the site and an access road (Stadium Way) for the College's sports stadium parking is located east of the site. An existing north-facing, combination 2:1 and 3:1 horizontal to vertical (h:v) gradient cut-slope is present at the location of the proposed grading improvements. The site topography consists of a north-south trending ridgeline that descends towards the north, down to Valencia Boulevard. The highest elevation is approximately 1,260 ft along the upper portion of the ridgeline at the south-central portion of the site to a low point elevation of 1,176 ft within Valencia Boulevard at the northeast portion of the site. For details see the location map and the geotechnical map that accompany this report. Vegetation consists predominantly of grasses with a light growth of bushes with some scattered trees.

3.0 PROPOSED DEVELOPMENT

Review of the Fine Grading Plan indicates that an east-west private road is proposed to connect Stadium Way to the existing gas station located at the northeast corner of Valencia Boulevard and the Interstate 5 northbound freeway off-ramp. The entrance to Stadium Way from Valencia Boulevard will be removed and replaced with the Tourney Road extension south of Valencia Boulevard. Access from Stadium Way to Valencia Boulevard will be via the new east-west access road to Tourney Road.

An approximately 60-ft high 2.5:1 (h:v) gradient cut-slope is proposed to accommodate the proposed improvements. Two small berms, up to 14 feet in height, are proposed between existing Valencia Boulevard and the proposed access road connecting the gas station and Stadium Way. The private access road includes asphalt concrete pavements and Portland Cement Concrete (PCC) curbs and gutter. A 24-inch diameter reinforced concrete pipe (RCP) is proposed to convey water from an existing concrete swale to an existing storm drain.

Proposed street improvements to Valencia Boulevard are per separate road plans, which include modifications to the medians, removal of the existing Stadium Way connection to Valencia Boulevard, and a new intersection of the Tourney Road extension south of Valencia Boulevard.

Review of the grading plan indicates that the grading consists of proposed cuts. The maximum depth of proposed cut (vertical) is approximately 30 feet, near the toe of proposed cut-slope.

4.0 FIELD EXPLORATION AND LABORATORY TESTING

4.1 Surface Mapping

For this report, surface geologic mapping in conjunction with aerial photo interpretations was undertaken by personnel from Allan E. Seward Engineering Geology Inc. (AESEGI) using the Fine Grading Plan as the base map.

4.2 Subsurface Investigations

Our subsurface investigation consisted of the excavation, logging and sampling of five (5) trenches (T-1 to T-5) to a maximum depth of 10 feet on January 27, 2022. The trenches were excavated using a mini-excavator and were logged and sampled by a Certified Engineering Geologist from this firm. Following completion of logging, the trenches were backfilled with the excavated materials. The locations of the trenches are shown on the Geotechnical Map.

The Trench Logs included in **Appendix A** represent our interpretation of field data observed at each location by our geologic/engineering staff at the time of excavation, along with refinements based on laboratory test results. The distribution and engineering characteristics of materials in adjacent areas may vary from those observed in the explorations.

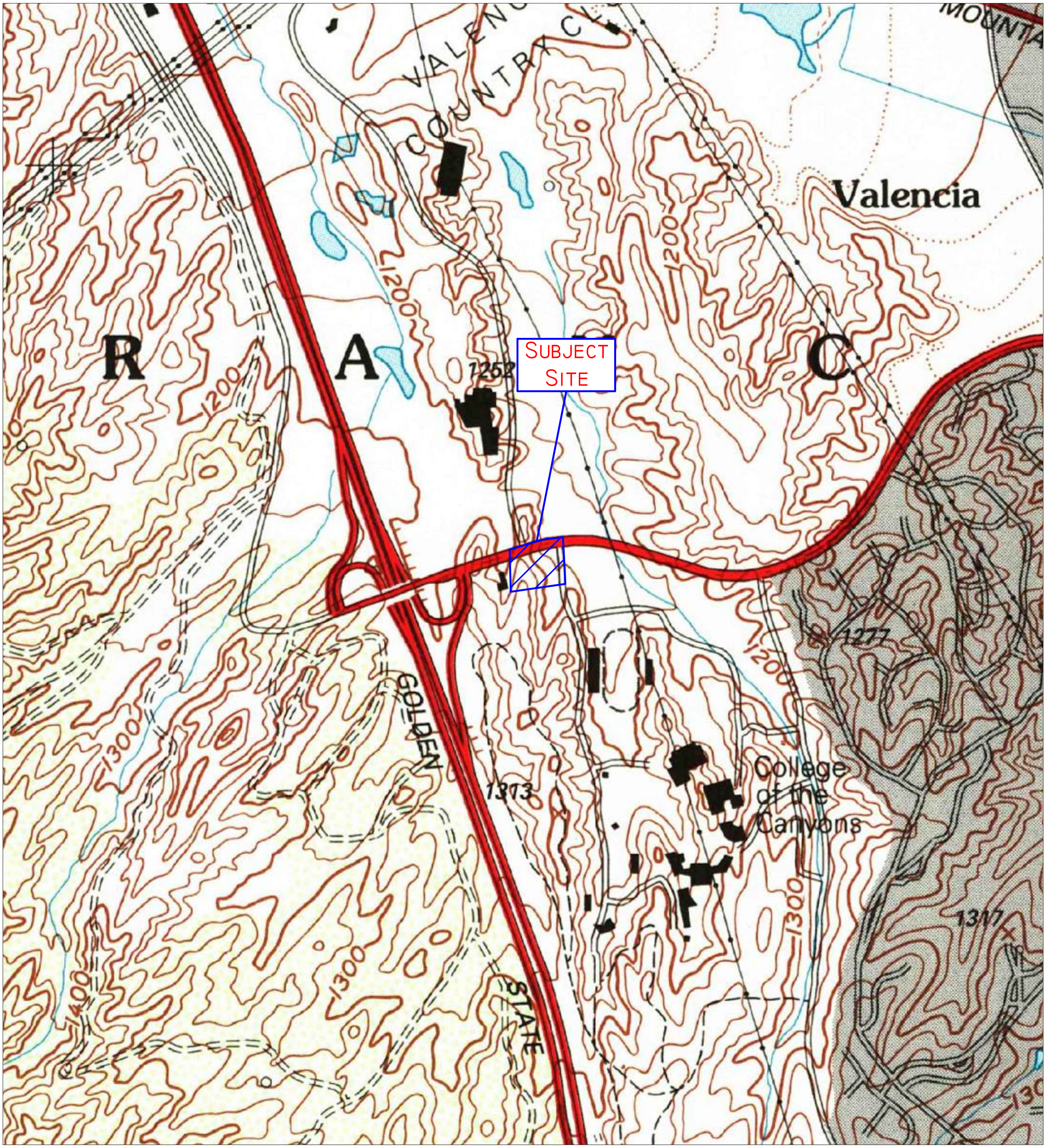
4.3 Sampling Procedures

Modified California drive ring samples were obtained in the trenches at various depths (see logs in **Appendix A**) in general by driving the sampler using a hydraulic hammer attached to the mini-excavator. Recovered soil samples were sealed in plastic containers. Bulk (disturbed) samples of near surface soils were obtained from cuttings developed during excavation of the exploratory trenches. The samples were transported to our geotechnical laboratory for further classification and testing.

The bulk samples were collected for classification and laboratory testing purposes and represent a mixture of soils within the noted depths.

4.4 Laboratory Program

Soil samples were visually classified in the field. Thereafter, the samples were brought to our laboratory, the visual soil classifications were checked using visual-manual procedures (ASTM Standard Practice D2488), and the trench logs were reviewed in order to select soil samples for laboratory testing.



SOURCE: USGS NEWHALL QUADRANGLE, DATED 1995

APPROXIMATE SCALE: 1"=1,000'

NOTE: THIS IS NOT A SURVEY OF THE PROPERTY

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ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

LOCATION MAP

JOB NO.: 22-2745-5	DATE: 6/8/22

The laboratory testing on selected samples consisted of in-situ moisture content (ASTM D2216) and dry density (ASTM D7263), Amount of Material in Soil Finer than No. 200 Sieve (ASTM D1140), and direct shear (ASTM D3080).

Based on laboratory test results the soil samples classifications were further refined per the Unified Soils Classification System (ASTM Standard Practice D2487). In-situ moisture content and dry density were used to evaluate the in-situ soil strength and selection of samples for additional testing. Amount of Material in Soils Finer than No. 200 Sieve was performed for classification purposes. Direct shear testing was performed for evaluation of shear strength for stability analyses.

Results of the laboratory testing are provided in **Appendix B** of this report, presented on the trench logs, or within the following sections of this report. The results of the field investigation and the laboratory tests were used as the basis for our analyses and recommendations presented in this report.

5.0 GENERALIZED GEOLOGIC AND GEOTECHNICAL SUBSURFACE CONDITIONS AND SOIL PROPERTIES

5.1 Regional Geology

The subject site is located in the Transverse Range geologic Provence of Southern California in the eastern portion of the Ventura Basin near the boundary of between the Ventura and Soledad Basins, as originally defined by Bailey and Jahns (1954). The Soledad Basin is a southwesterly-plunging synclinal structure bounded by pre-Cenozoic metamorphic rocks of the Sierra Pelona to the north, Precambrian crystalline basement rocks of the San Gabriel Mountains to the southeast, and the San Gabriel fault to the southwest. The Ventura Basin is a westerly-plunging depositional basin produced by tectonic down-warping initiated during the early Miocene, with an axis approximately coinciding with the Santa Clara River. The down-warping of this synclinal structure has caused a thick accumulation of Cenozoic sediments.

On the subject site, the only bedrock exposed is the deeply eroded remnants of Quaternary terrace deposits. The terrace deposits are still in a relatively horizontal position. No active (Holocene) faults are known to exist on the site per Alquist-Priolo criteria. The active segment of the San Gabriel Fault is located approximately 1.85 miles northeast of the site and the active San Andreas Fault is located approximately 19.8 miles northeast of the site.

Artificial fill is present at both the east and west portions of the site and soil and colluvium mantle the original natural slope areas of the site.

The extreme easterly portion of the proposed east-west access road grading is located in a zone of required liquefaction investigation per the State Seismic Hazards Zones Map for the Newhall Quadrangle as having potential for liquefaction (see Figure D1). Prior to approval of a ***"Project"*** by a city or county a geotechnical report defining and delineating any seismic hazard is required per the California Public Resource Code Title 14, Division 2, Chapter 7.8, the Seismic Hazards Mapping Act. However, it is our opinion that the proposed access road is exempt from the ***"Project"*** definition. Therefore, it is opined that the City of Santa Clarita will not require an evaluation of the potential for liquefaction and appropriate mitigation measures (if applicable). This does not mean that the site is not susceptible to liquefaction and associated ground deformations during an earthquake.

The steep hillside areas of the site are located in a zone of required investigation for earthquake-induced landslides. Landslides were not observed on the historic aerial photos reviewed for this project nor were they encountered during the field investigation.

5.2 Geologic Structure

The bedding structure within the Quaternary terrace deposits is generally horizontal to sub-horizontal with dips ranging from 2 to 6 degrees towards the northwest and towards the northeast. Due to the lenticular mode of origin for the Quaternary terrace deposits, bedding is very indistinct and discontinuous. No clay-rich beds were observed during our investigation. Therefore, due to lack of continuous bedding planes and the relatively flat bedding, bedding has no meaningful significance to the stability of the existing natural or proposed graded slopes. The Geotechnical Map and Cross Section 1-1' illustrate the three-dimensional geometry of the bedding on the subject site.

5.3 Geologic Units

A general description of geologic units is presented below. Distribution of these units are shown on the **Geotechnical Map**.

5.3.1 Quaternary Terrace (Qt)

In this report we have used the term Quaternary terrace deposits for the bedrock unit. Published geologic maps use this designation for the site bedrock (Kew, 1924 and Winterer and Durham, 1962). This term designates remnants of alluvial sediments deposited during Pleistocene (11,000 to 700,000 years ago), uplifted, and eroded to form terraces.

These deposits are the dominant geologic unit at the site and consist of discontinuous and lensing, crudely stratified, poorly consolidated, light reddish-brown to light yellowish-brown to tan, silty sandstone with scattered pebbles and gravel and sandstone with gravel lenses and isolated cobbles.

5.3.2 Colluvium (Qcol)

Colluvium is a heterogeneous deposit formed on slopes as a result of weathering, sheet wash, creep and shallow debris flows on sloping ground. This unit is generally thickest in swales and side canyons, and at the toe of existing natural slopes, where it commonly interfingers with the canyon alluvial deposits. The colluvium encountered in Trench T-4 was 4 feet thick. The colluvium generally consists of medium- to dark-brown silty sand with gravel, but may vary depending on the composition of the source material. Colluvium is noted on our logs but is not shown on the Geotechnical Map.

5.3.3 Residual Soil

Natural surfaces on the site are mantled by surface soils formed by in-place weathering of the underlying parent material. Residual soil is best developed on old, gently dipping surfaces. The soils observed generally consist of light reddish-brown silty sand with gravel. Soil is noted on our logs but is not shown on the Geotechnical Map. The boundary between the soil and Quaternary terrace deposits was gradational.

5.3.4 Artificial Fill (af)

Artificial fill is present at the westerly margin of the site within the existing gas station area as well as at the eastern portion of the site within a narrow small canyon area. The artificial fill along the eastern portion of the site was placed around the late 1960's and is possibly from the grading and construction of Interstate 5 and/or Valencia Boulevard. The limits of artificial fill shown on the Geotechnical Map are based on field mapping.

5.4 Ground Water

No natural seeps, springs or indicators of near surface ground water were observed during our field investigation. Review of the Los Angeles County groundwater wells website indicates that there are no active water wells in the vicinity of the project site. Ground water is not anticipated to affect the proposed grading.

5.5 Oil Wells

Review of the California Department of Conservations Geologic Energy Management Division (CalGEM) well finder web page indicates that oil wells are not present within the subject property. The closest oil well is located approximately 2,450 ft easterly of the project along the south side of Valencia Boulevard.

5.6 Soil Compressibility

Terrace deposits and artificial fill are anticipated to be exposed at proposed grade for the access road. Compressibility of the terrace deposits is considered to be low. Compressibility of the artificial fill below a depth of about 5 feet is also considered to be low. Based on the amount of cut required to achieve proposed grade for the access road, the artificial fill is anticipated to be dense with negligible potential for significant settlement at that elevation.

5.7 Expansion Potential of Soils

Based on the granular nature of the terrace deposits and future fills generated from on-site soils are expected to have a very low expansion potential.

5.8 Potential Corrosivity of Soils

The Geotechnical and Materials Engineering Division (GMED) of the Los Angeles County Department of Public Works regards soil at a site to be corrosive to concrete and/or steel if the measured resistivity is 1,000 ohm-cm or less, and/or if the sulfate concentration is 2,000 ppm (0.20%) or greater, and/or if the pH is 5.5 or less. Also, a soil with a chloride concentration greater than or equal to 500 ppm is considered deleterious to ferrous metals.

Soil resistivity, chloride content, soluble sulfate content, and pH were measured on a mixture of terrace deposit soils collected from Trench T-4 at a depth of 4.5 to 6 feet to assess the potential corrosive effects on concrete and metals. Results of this testing are presented in Table B1 (**Appendix B**) and are discussed below.

- The measured resistivity value of the soil sample was 30,544 ohm-cm (which classifies as mildly corrosive to ferrous metals, per Los Angeles County Department of Public Works classification).
- Chloride content of the soil sample was 130 parts per million (ppm). Soils in this chloride content range have a negligible effect on concrete or ferrous metals.
- Sulfate content of the soil sample was less than 0.009 percent. Soils in this sulfate content range have a negligible effect on concrete per ACI 318 (Table 4.3.1).
- Based on the pH value measured in the soil sample (8.7), acidity of site soils is low and not anticipated to increase soil corrosivity.

5.9 Shear Strength

Direct Shear testing was performed on California drive ring samples to evaluate shear strength of terrace deposits. Shear strength parameters selected for design are tabulated below and used to analyze slope stability. Direct shear laboratory test reports are presented in **Appendix B**.

Summary of Shear Strength Parameters

Material	Moist Unit Weight, pcf	Residual Shear Strength	
		Phi, degrees	Cohesion, psf
Terrace Deposits (Qt)	125	31	130

6.0 SLOPE STABILITY

6.1 Gross Stability

Limit equilibrium analyses were performed to evaluate the stability of the 60-ft high 2.5:1 gradient cut-slope utilizing Cross Section 1-1'. The analyses included evaluation of gross slope stability under static and seismic loading conditions. Slope stability diagrams graphically illustrating the results of our analyses are attached for review. The critical failure surface under static loading conditions is plotted on Cross Section 1-1' in **Appendix C**.

The slope stability analyses used the 2D limit equilibrium software, Slide, by RocScience. This software utilizes robust search methods to locate critical slip surfaces and computes associated minimum factors of safety. Due to the very shallow bedrock bedding conditions (i.e., apparent dips of 2 to 6 degrees), the analyses used Spencer's complete equilibrium procedure to evaluate critical circular failure surfaces.

Analysis for seismic slope stability was performed using the pseudostatic procedure. In this procedure the seismic loading is introduced into the conventional limit equilibrium analysis as a static horizontal force equal to the soil weight multiplied by a seismic coefficient, *k*. The seismic coefficient is an empirical value which in no way models actual seismic forces. However, the pseudostatic procedure does provide some indication of slope stability or instability during seismic loading. A pseudostatic coefficient of 0.15g was selected for the analysis.

The results of the stability analyses are graphically illustrated in **Appendix D**. Based on the results, the analyzed natural slope complies with City of Sana Clarita minimum factor of safety requirements for gross stability under static (FS $\geq$ 1.5) and seismic (FS $\geq$ 1.0) loading conditions.

6.2 Surficial Slope Stability Analyses

Surficial stability of the terrace deposits anticipated to be exposed in the cut-slope was analyzed using the "Infinite Slope" method and the shear strength parameters discussed above. In this method, a factor of safety against surficial slope instability (i.e., in the upper 4 feet) is evaluated along an assumed plane oriented parallel to the slope face. In accordance with standard practice and building code requirements, the parallel seepage condition was applied to model potential development of saturated soil conditions within the upper 4 feet of the slope face. Based on the results, the terrace deposits material meets minimum factor of safety requirements for surficial stability (i.e., FS=1.5) at a 2.5:1 (h:v) slope gradient (see **Figure C1**) under saturated conditions.

7.0 GENERAL CONCLUSIONS AND RECOMMENDATIONS

7.1 Earthwork and Grading Recommendations

7.1.1 Introduction

All grading shall be accomplished under the observation and testing of the Project Geotechnical Engineer, Engineering Geologist and/or their authorized representatives in accordance with the recommendations contained herein, the current City of Santa Clarita Building Code requirements and this firm's "Recommended Earthwork Specifications" (**Appendix D**).

7.1.2 Site Preparation

The purpose of site preparation is to clear and strip the site of organics (vegetation), topsoil, roots, undocumented artificial fill, rubble, construction debris and other unsuitable materials, as applicable, and to grade the site to provide a firm support for the proposed pavements. All organics should be removed from the site for proper disposal. The geotechnical engineer and/or his representatives shall observe the excavated areas (i.e., cut-slopes and pavement subgrades) prior to construction of concrete terrace benches, down drains, and pavements.

7.1.3 Removals

In order to provide a uniform firm bottom prior to construction of the proposed pavements the terrace deposits and artificial fill shall be removed to at least 1 ft below proposed subgrade. If the removal bottom is not firm and unyielding additional removals may be warranted. The exact depth and extent of necessary removals will be determined in the field during the grading operations when observations and more location-specific evaluations can be performed.

7.1.4 Preparation of Removal Bottom Areas

After the ground surface to receive fill has been exposed, it shall be ripped to a minimum depth of six inches, brought to optimum moisture content or above and thoroughly mixed to obtain a near uniform moisture condition and uniform blend of materials, and then compacted to at least 90 percent of Maximum Dry Density (MDD), per ASTM Test Method D1557.

7.1.5 Rippability

The terrace deposit can generally be graded using typical grading equipment and techniques.

7.1.6 Fill Materials

Onsite soils, except any debris or organic matter, may be used as sources for compacted fills. Rock or similar irreducible material with a maximum dimension greater than twelve (12) inches may not be placed in the fill. However, fills are not proposed, except for a minimal removal and recompaction below the access road pavements. Therefore, rocks larger than 3 inches in dimension shall be removed during placement of fill soils within 12 inches of the pavement subgrade. Any large rock fragments over three (3) inches in size will require removal.

7.1.7 Fill Compaction

All fill material should be placed in uniform lifts not exceeding 8 inches in thickness prior to compaction, water conditioned to at least optimum moisture content, thoroughly mixed to obtain a near uniform moisture condition and uniform blend of materials, and compacted to at least 90 percent of Maximum Dry Density (MDD), per ASTM Test Method D1557 and 95% within 12 inches of pavement subgrades.

7.1.8 Construction of Fill Slopes

Fill slopes are not proposed on the grading plan. However, the following recommendations are provided should the situation arise during the grading that requires construction of a fill slope. Fill slope inclination should not be steeper than 2:1 (h:v). The relative compaction requirement of the finished fill-slope faces depends on the construction method. A compaction of at least 90 percent of the MDD, per ASTM D1557, is for finished fill-slope faces constructed by over-building the slope, typically 2 ft vertically, and cutting back to the compacted fill material. If the fill-slope face is constructed basically on-grade then the outer 10 feet, measured horizontal from the slope face, shall be compacted to at least 92 percent of the MDD, per ASTM D1557.

7.2 Shrinkage and Bulking Factors

The proposed grading consists of cuts and limited removal and recompaction below pavements. Therefore, bulking and shrinkage factors are not applicable to the proposed earthworks.

7.3 Proposed Cut-Slopes

A 2.5:1 (h:v) gradient cut-slope with the maximum proposed height of 60 feet is proposed on the Grading Plan. This cut-slope has been designated as CS-1 on the Geotechnical Map. Cut-Slope CS-1 is a north-facing slope and extends to a maximum height of 60 feet located directly south and adjacent to the proposed east-west access road. This slope is anticipated to expose Quaternary terrace deposits with the eastern portion of slope anticipated to expose artificial fill. The portion of the cut-slope that will expose artificial fill is 10 feet high.

Quaternary terrace deposits are generally coarse-grained, poorly stratified, and inclined at very low angles. Due to the lenticular mode of origin for the terrace deposits, bedding is very indistinct and discontinuous. No clay-rich beds were observed during our investigation. Due to the flat to relatively flat and discontinuous bedding planes, bedding has no meaningful significance to the stability of the proposed graded slopes. Therefore, 2.5:1 (h:v) gradient or flatter cut-slopes exposing Quaternary terrace deposits will be grossly stable with respect to translational failures along bedding planes and will be considered grossly stable. The area anticipated to expose artificial fill will be evaluated during the grading operations.

In addition, there are two small berm slopes, less than 15 ft in height, proposed on the grading plan between existing Valencia Boulevard and the proposed access road located along the toe of proposed cut-slope CS-1. The berm cut-slope are designed at 2:1 (h:v) gradient. These berm slopes will generally expose terrace deposits. A small portion of the eastern berm slope is anticipated to expose artificial fill. These cut-slopes are considered gross stable. It is opined that these minor cut-slopes will be surficially stable. This is based on the performance of the existing 2:1 cut-slope exposing terrace deposits and that it is unlikely these minor cut-slopes would become saturated to a depth of 4 ft. These 2:1 cut slopes should be evaluated during the grading operations.

7.4 Natural Slopes

Natural slope areas are oriented such that they will not affect the proposed improvements.

7.5 Private Storm Drains

The proposed storm drains are anticipated to be constructed with 24-inch diameter reinforced concrete pipe (RCP) and steel. Pipe bedding, shading, and trench backfill and compaction procedures should conform to the specifications in the current Standard Specifications for

Public Works Construction "Greenbook" and Los Angeles County Department of Public Works Additions and Amendments to the Standard Specifications for Public Works Construction 2006 edition "Graybook".

7.6 Soil Corrosivity Considerations

Based on the results of sulfate content testing, corrosivity of soils at the site to concrete is expected to be negligible. Therefore, Type I or II Portland cement may be used for concrete structures that will be in contact with site soils. Based on the results of resistivity testing site soils classify as mildly corrosive to metals.

The on-site soils are not anticipated to exhibit corrosive characteristics to concrete or ferrous metals. However, the following precautionary measures may be implemented to mitigate for corrosion potential:

- Steel and wire reinforcement in concrete structures cast against site soils should have at least 3 inches of concrete cover.
- Buried utilities made of ferrous metals should be protected with polyethylene extruded coating, or with tape over primer per AWWA Standard C209 or C203, or with hot-applied coal tar enamel, or as recommended by manufacturers of the utility conduits.
- Metallic pipes that penetrate concrete structures should be surrounded by plastic sleeves, rubber seals, boots, or other dielectric material in order to prevent contact between the pipe and the concrete structure.
- Below-grade ferrous metals should be electrically insulated (isolated) from above-grade metals.

A corrosion engineer should be consulted for mitigation measures for potential corrosion of soil to metals.

7.7 Temporary Excavations, Shoring, and Backfill Recommendations

Temporary excavations should conform to the State Construction Safety Orders of the State Division of Industrial Safety, CAL-OSHA. For trench or other excavations up to 20 ft in height, OSHA requirements regarding personnel safety should be met using appropriate shoring (including trench boxes) or by laying back the slopes no steeper than 1.5:1 (h:v). Excavations deeper than 20 ft should be evaluated by the Project Engineer. On-site safety of personnel is the responsibility of the contractor.

The bases of excavations and trenches should be firm and unyielding prior to construction of foundations or installation of utilities. On-site materials, other than topsoil or soils with roots or deleterious materials may be used for backfilling of excavations.

7.8 Utility Trench Backfill

Utility trench backfill should be compacted at least to 90 percent of Maximum Dry Density (MDD), per ASTM D1557. Densification (compaction) by jetting of pipe bedding and shading may be used for clean sands or imported equivalent material provided they have a Sand Equivalent of at least 30 (per ASTM D2419). However, jetting should not be employed for compaction of bedding and shading material within the upper 3 ft of subgrades beneath concrete slabs-on-grade. Compaction of bedding and shading material shall be in accordance with Standard Specifications for Public Works Construction "Greenbook" specifications. The trench backfill compaction above the pipe zone shall be performed with a mechanical compaction device in accordance with specifications for trench backfill presented in **Appendix A**. If the excavated soils have dried, they should be moisture-conditioned to near Optimum Moisture Content prior to placement and compaction in trenches.

7.9 Erosion Potential

The potential for erosion of graded slopes that expose terrace deposits is quite high due to the lack of cementation or cohesion within the coarse-grained sand and cobble units. The graded slopes should be covered with a temporary retention screen (i.e., jute or geofabric) and planted as soon as possible following construction. The planting and maintenance of a vegetative cover on the graded slopes will resist rilling and erosion. A landscape architect should be consulted for selection of planting to mitigate potential erosion of the slope faces.

7.10 Drainage Recommendations

Ground water and soil moisture conditions can vary seasonally or for other reasons. It must be recognized that we do not and cannot have complete knowledge of the subsurface conditions at the site. It is possible that seepage could be encountered while stripping and excavating during site preparation at some areas (e.g., in drainages or along colluvial/bedrock contacts). Whenever seepage is observed, the condition must be evaluated by the Engineering Geologist and Geotechnical Engineer prior to covering with fill material.

Surface drainage control design should include provisions for positive surface gradients to ensure that surface runoff is not permitted to pond, particularly above slopes or adjacent to building foundations or slabs. Surface runoff should be directed away from slopes and foundations and collected in lined ditches or drainage swales, via non-erodible drainage devices, which should discharge to paved roadways, or existing watercourses. If these facilities discharge onto natural ground, means should be provided for control erosion and to create sheet flow.

It should be expected that, even with the construction of carefully planned and designed erosion control measures, some erosion may occur during the first few wet seasons after the project is completed. Site grading should be observed, particularly after heavy, prolonged rainfall, to identify erosion areas at an early stage. Maintenance work should be done as soon as practical to repair these areas and prevent their enlargement.

8.0 TENTATIVE PAVEMENT DESIGN AND ASSOCIATED GRADING

8.1 Asphalt Concrete (AC) Vehicle Pavements

Design of asphalt concrete pavement sections depends primarily on support characteristics (strength) of soil beneath the pavement section and on cumulative traffic loads within the service life of the pavement. Strength of the pavement subgrade is represented by R-Value test data. Traffic loads within service life of a pavement are represented by a Traffic Index (TI) which is calculated based on anticipated traffic loads and on the projected number of load repetitions during the design life of the pavement. The design TI value should be verified by the Project Civil Engineer prior to construction.

Based on soil type and compaction characteristics of future subgrade soils, and on judgment regarding variability of site soils, an R-Value of 32 was selected for preliminary design. Recommended pavement sections are provided in the following table for a design service life of 20 years.

Table 3 – Flexible Pavement Sections

Traffic Index (TI)	Pavement Section (Thickness in inches)	
	Asphalt Concrete	Base Course
4	3.0	4.5
5	3.0	5.5
6	4.0	6.0
7	4.5	8.5

The preceding pavement sections provide the minimum thickness of asphalt concrete permitted by the Caltrans design procedure. Alternate designs with greater asphalt thickness and smaller base course thickness can be provided upon request. The upper 12 inches of soil subgrade on which the base will be placed should be moisture conditioned to at least the Optimum Moisture Content, or above, and compacted to at least 95% of Maximum Dry Density, per ASTM D1557.

8.2 Portland Cement Concrete (PCC) Cross Gutter

PCC cross gutters should be supported on at least 6 inches of compacted base material. The upper 12 inches of soil subgrade on which the base will be placed should be moisture conditioned to at least the Optimum Moisture Content, or above, and compacted to at least 95% of Maximum Dry Density, per ASTM D1557.

8.3 PCC Curb and Gutter

Based on a very low expansion potential, PCC Portland cement concrete curbs and gutters may be cast directly on a compacted soil subgrade. The upper 12 inches of soil subgrade should be moisture conditioned to at least the Optimum Moisture Content, or above, and compacted to at least 90% of Maximum Dry Density, per ASTM D1557.

8.4 Concrete Sidewalks/Hardscape

The Fine Grading Plan does not indicate that sidewalks and/or hardscape are being proposed. However, the following preliminary recommendations are for PCC sidewalks that will not support vehicular traffic. PCC sidewalks should be at least 4 inches thick, and as a minimum, should be reinforced at mid-depth with 6x6-W1.4xW1.4 welded wire-fabric reinforcement.

Based on a very low expansion potential, PCC sidewalks may be cast directly on compacted soil subgrades. The soil subgrade should be moisture conditioned at least to Optimum Moisture Content and compacted to at least 95 percent of Maximum Dry Density (per ASTM D1557). The moisture conditioned subgrade should not be allowed to desiccate prior to casting of concrete hardscape elements.

To help minimize shrinkage cracking, concrete flatwork should be constructed using uniformly cured, low-slump concrete, with crack control joints spaced at intervals not exceeding 8 ft.

8.5 Base Course

The base course beneath pavements should have an R-value of at least 78 and should comply with specifications for untreated crushed aggregate base (CAB), or crushed miscellaneous base (CMB), as defined in Section 200-2 of the current **Green Book** (Standard Specifications for Public Works Construction), or aggregate base (AB-Class 2) as defined in Section 605.3 of the current Caltrans Highway Design Manual.

8.6 Grading Recommendations for Pavement Construction

8.6.1 General

All grading shall be performed under the observation and testing of the Project Geotechnical Engineer and/or their authorized representatives in accordance with the recommendations contained herein and in accordance with the current Building Code requirements of the City of Santa Clarita.

In order to provide suitable bearing support for the pavement section, all disturbed subgrade soils (e.g., due to desiccation or over-saturation by rainfall, broken water lines, etc.) must be removed and replaced with a minimum 12 inches of fill compacted to the required density and moisture content before placement of base and asphalt concrete or PCC pavement.

8.6.2 Subgrade Preparation

The top 6 inches of the sub-grade materials shall be scarified and moisture conditioned to Optimum Moisture Content, or above, immediately prior to pavement construction. The moisture content shall be brought to the specified percentage by the addition of water, by the addition and blending of dry suitable material, or by the drying of existing material. The subgrade material shall then be compacted to at least the minimum required density.

During processing of the top 6 inches of backfill in the pavement subgrade, all rocks larger than 3 inches in dimension shall be removed. If unsuitable material is found below the processing depth, it shall be removed and replaced as compacted fill. After compaction and trimming, the subgrade shall be firm, hard, and unyielding.

8.6.3 Placement of Base Materials

Base material shall be watered as required to facilitate compaction and spread and compacted in horizontal lifts of approximately equal thickness. The maximum compacted thickness of any aggregate base lift shall not exceed 6 inches. Each lift of aggregate base material shall be compacted to at least 95 percent of Maximum Dry Density, per ASTM D1557.

9.0 PLAN REVIEW AND CONSTRUCTION OBSERVATIONS

Allan E. Seward Engineering Geology, Inc should be retained to review all grading plans and specifications of this project for conformance with the recommendations provided in this report. When all of our recommendations are incorporated into the plans, or shown as notes on the plans, we will review and geologically and geotechnically approve the plans by manual signatures, stamped with our professional seals, and date.

The firm should also be retained to perform on-site construction observation and testing to ascertain those conditions observed during grading and construction operations correspond to the findings and conclusions presented herein and that construction generally conforms to the recommendations presented herein. If variations in subsurface soil conditions become evident during construction, the recommendations presented herein may warrant revision.

The geotechnical and geological consultants should be commissioned to perform the testing and observation recommended in this report, including the following:

1. Observation of removal bottoms on which fill will be placed before scarifying and recompacting them.
2. Collection of vehicle pavement subgrade soils and R-value laboratory testing to confirm or update preliminary design pavement sections.
3. Laboratory testing and evaluation of all import fill soils prior to use.
4. Observation and testing of fill placement and compaction.

Please notify this office at least 48 hours in advance of any required sampling or observations, so that appropriate personnel can be made available.

10.0 CITY OF SANTA CLARITA LANDSLIDE/SETTLEMENT STATEMENT

It is the finding of this firm that the proposed grading designated on the attached Grading Plan, dated May 31, 2022 submitted with this report, will be safe against hazard from landslide, settlement, and slippage, for the use intended, and will not affect offsite property, provided that all our recommendations are incorporated in the remedial plans and implemented during construction.

11.0 GEOLOGIST/GEOTECHNICAL ENGINEER OF RECORD

This report has been prepared assuming that Allan E. Seward Engineering Geology, Inc. will perform all future additional geological and geotechnically-related field inspections and observations. If the recommendations contained in this report are to be utilized, and expansion of the geology/geotechnical work is performed by others, the party performing the work must review this report and assume full responsibility for recommendations contained herein. That party would then assume the title of responsibility as “Geologist/Geotechnical Engineer of Record” for the specific work.

A representative of the Geologist/Geotechnical Engineer of Record should be present to observe all grading operations. A report presenting the results of those observations and related testing should be issued upon completion of the operations using an As-Built Map as a base.

12.0 LIMITATIONS

This report has been prepared for the exclusive use of Sahika, Inc. and its design consultants for the specific site discussed herein. This report should not be considered transferable. Prior to use by others, this firm should be notified, as additional work may be required to update this report.

In the event that any modifications in the design or location of the proposed development, as discussed herein, are planned, the conclusions and recommendations contained in this report will require a written review by this firm with respect to the planned modifications.

The proposed development is located in southern California, which is in a geologically and seismically active region where large magnitude, potentially destructive earthquakes are common. Therefore, it is reasonable to assume that ground motions from moderate or large magnitude earthquakes could affect the site during the life of a given structure.

Typically, faulting is confined to the area adjacent to a known fault. However, absolute assurance against future fault displacement is not possible in tectonically active regions because new faults can form over time as the orientation and magnitude of deformational forces change in the earth's crust. Therefore, the location and magnitude of new ground surface ruptures during a seismic event cannot be anticipated.

In performing these professional services, this firm has used the degree of care and skill ordinarily exercised under similar circumstances by reputable geologists and geotechnical engineers practicing in this or similar localities. The data presented in this report are based on results of pertinent field and laboratory testing. It should be recognized that subsurface conditions can vary in time, and laterally, and with depth at a given site and that the conclusions and recommendations presented in this report are based on our observations and testing. Therefore, our **conclusions** and **recommendations** are **professional opinions** and are **not meant** to be a control of nature. We make no other **warranty**, either **expressed** or **implied**.

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This opportunity to be of service is appreciated. If you have any questions regarding this report, please contact us.

Respectfully submitted,

Eric J. Seward, CEG 2110
Principal Engineering Geologist
Vice President

Kevin P. Callahan, MS, GE 2989
Principal Geotechnical Engineer

PROFESSIONAL GEOLOGIST • ERIC J. SEWARD • NO. 2110 CERTIFIED ENGINEERING GEOLOGIST • STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER • KEVIN P. CALLAHAN • NO. 2989 EXP. 6/30/22 • GEOTECHNICAL • STATE OF CALIFORNIA

The following attachments and appendices complete this report.

Location Map following page 4
References

APPENDIX A – Subsurface Logs
Trench Logs (T-1 through T-5) & Key to Symbols

APPENDIX B – Laboratory Test Results

APPENDIX C – Slope Stability Analyses
- Gross Slope Stability Analyses Computer Output
- Infinite Slope Stability Calculations — Figure C1

APPENDIX D – Figures, Cross Section & Map
- Earthquake Zones of Required Investigations — Figure D1
- Recommended Earthwork Specifications
- Recommended Specifications for Placement of Trench Backfill
- Drainage and Erosion Control Recommendations

Cross Section 1-1'
Geotechnical Map (Sheet 3 of 4)

Distribution:

Sahika, Inc. (via email in PDF format)
Attn: Mr. Sudhir Sood

CRC Enterprises (via email in PDF format)
Attn: Mr. Ron Koester

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Appendix A

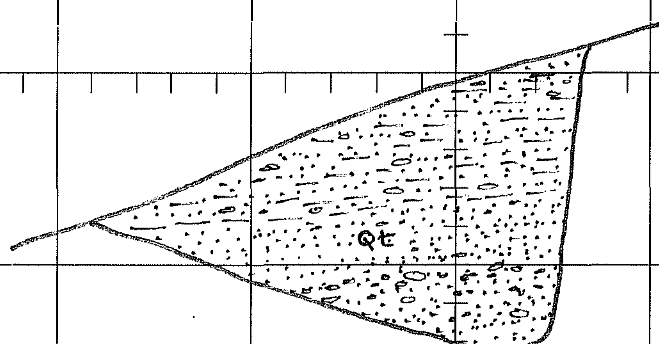
CLIENT: Sahika, Inc.	JOB NO: 22-2745-5	**TRENCH LOG NO. T-1**
PROJECT: Access Road College of the Canyons Santa Clarita, CA	DATE: 6/8/22 LOGGED BY: VCG EXCAVATED: 1/27/22	
EXCAVATION METHOD: CAT 306 Mini-Excavator	ELEVATION: 1,243'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**QUATERNARY TERRACE; Qt (0-7.5')** @0' Light yellowish-brown to reddish-brown, silty fine- to medium-grained sandstone with scattered gravel; loose; damp; slightly weathered @ 1.5' dense				
3							10.5	106	% fines=39.4
					@ 3.5' Fine- to coarse-grained sandstone with 2-3" thick gravel lenses; crude stratification; highly friable; not weathered	B: N25W, 6NW	6.4	107	% fines=12.6 Shear Test
6									
9									
12									

TOTAL DEPTH: 7.5 feet

←N21E

SCALE: 1 inch = 5 feet



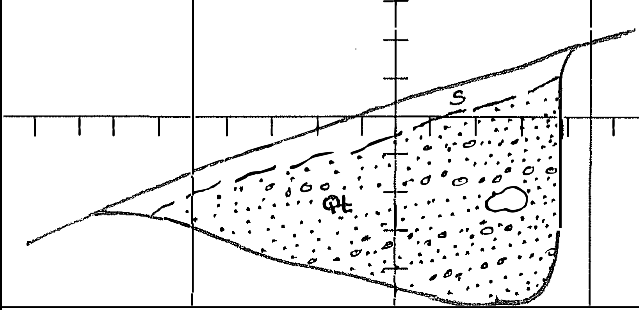
No Ground Water
No Caving

TRENCH LOG NO. T-2

CLIENT: Sahika, Inc.	JOB NO: 22-2745-5
PROJECT: Access Road College of the Canyons Santa Clarita, CA	DATE: 6/8/22 LOGGED BY: VCG EXCAVATED: 1/27/22
EXCAVATION METHOD: CAT 306 Mini-Excavator	ELEVATION: 1,232'

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL; s (0-0.5')** @ 0' Light reddish-brown, silty sand with scattered gravel; loose; damp; gradational contact with bedrock				
					QUATERNARY TERRACE; Qt (0.5'-6.25') @ 0.5' Light yellowish-brown to light reddish-brown, fine- to coarse-grained sandstone with 3" thick gravel lenses; one isolated cobble exposed in the sidewall; dense; damp; friable; stratified	B: N35E, 5NW B: N29E, 4NW			
3							5.1	115	% fines=5.2 Shear Test
6									
9									
12									

TOTAL DEPTH: 6 feet ←N18W SCALE: 1 inch = 5 feet

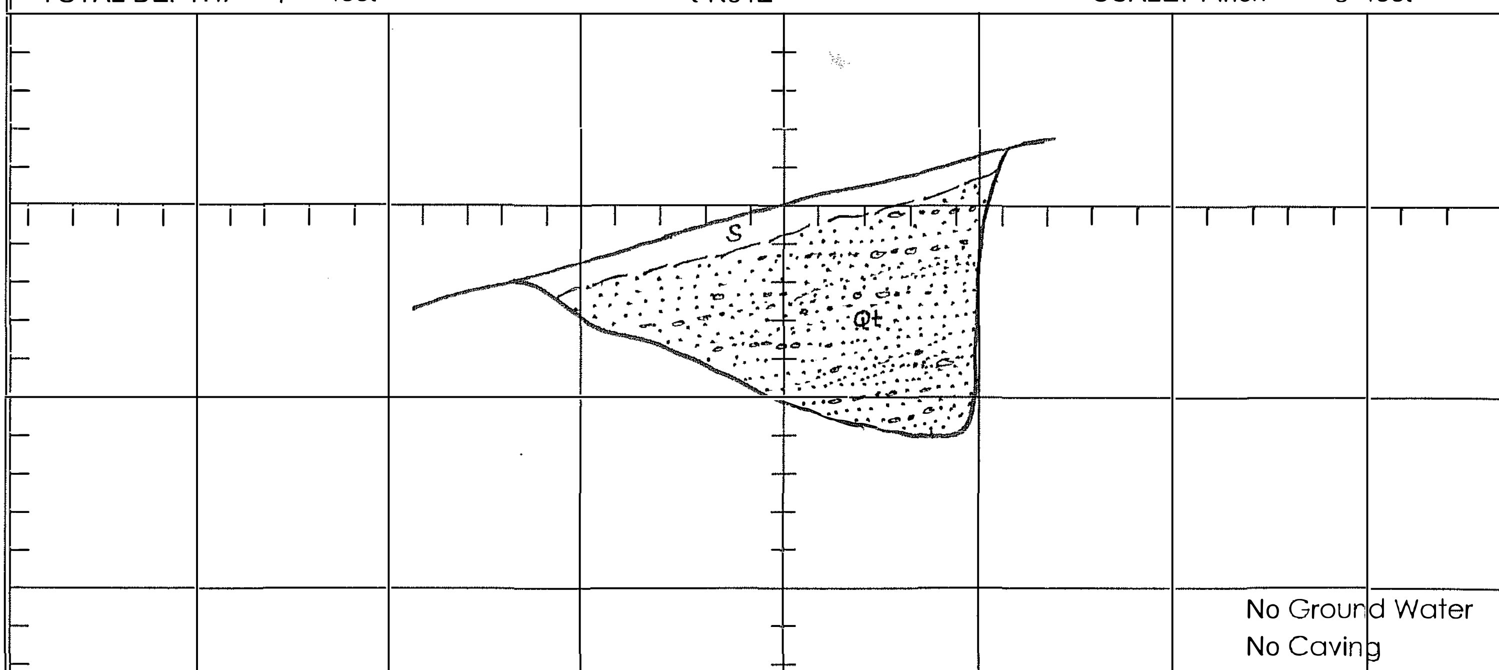


No Ground Water
No Caving

CLIENT: Sahika Inc.	JOB NO: 22-2745-5	TRENCH LOG NO. T-3
PROJECT: Access Road College of the Canyons Santa Clarita, CA	DATE: 6/8/22 LOGGED BY: VCG EXCAVATED: 1/27/22	
EXCAVATION METHOD: CAT 306 Mini-Excavator	ELEVATION: 1,224'	

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**SOIL; s (0-0.5')** @0' Light reddish-brown, silty sand with gravel; loose; damp; minor rootlets; gradational contact with underlying bedrock **QUATERNARY TERRACE; Qt (0.5-7')** @ 0.5' Light yellowish-brown to light reddish-brown to tan, fine- to coarse-grained sandstone with gravel lenses; dense; damp; highly friable; crude stratification with cross beds; roots to 4'	B: N81W, 2NE XB: N64E, 5NW			
3									
	■						3.0	106	
6									
9									
12									

TOTAL DEPTH: 7 feet ← N34E SCALE: 1 inch = 5 feet



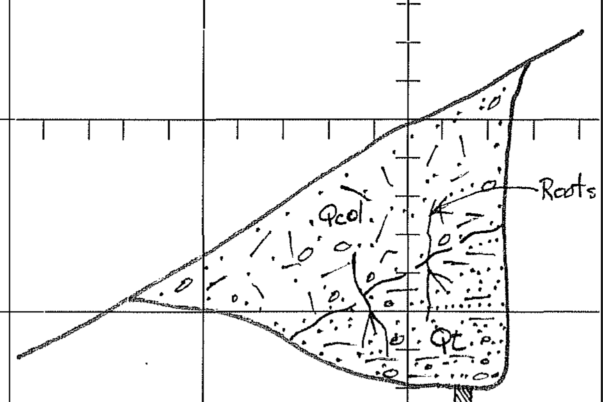
No Ground Water
No Caving

TRENCH LOG NO. T-4

CLIENT: Sahika, Inc.	JOB NO: 22-2745-5
PROJECT: Access Road College of the Canyons Santa Clarita, CA	DATE: 6/8/22
	LOGGED BY: VCG
	EXCAVATED: 1/27/22
EXCAVATION METHOD: CAT 306 Mini-Excavator	ELEVATION: 1,196'

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	Dry Density (pcf)	Other Tests
0					**COLLUVIUM; Qcol (0-4')** @ 0' Medium- to dark brown silty sand with gravel; loose; damp; few roots; gradational contact with underlying bedrock				
3					**QUATERNARY TERRACE; Qt (4-9')** Light yellowish-brown to light brown, silty sandstone with scattered pebbles; dense; dry to damp; massive; roots to 6.5'		12.9	105	% fines=42.5 Shear Test
6									
9							10.4	98	
12									

TOTAL DEPTH: 9 feet ←N87E SCALE: 1 inch = 5 feet



No Ground Water
No Caving

TRENCH LOG NO. T-5

CLIENT: Sahika, Inc.
PROJECT: Access Road
College of the Canyons
Santa Clarita, CA

EXCAVATION METHOD: CAT 306 Mini-Excavator

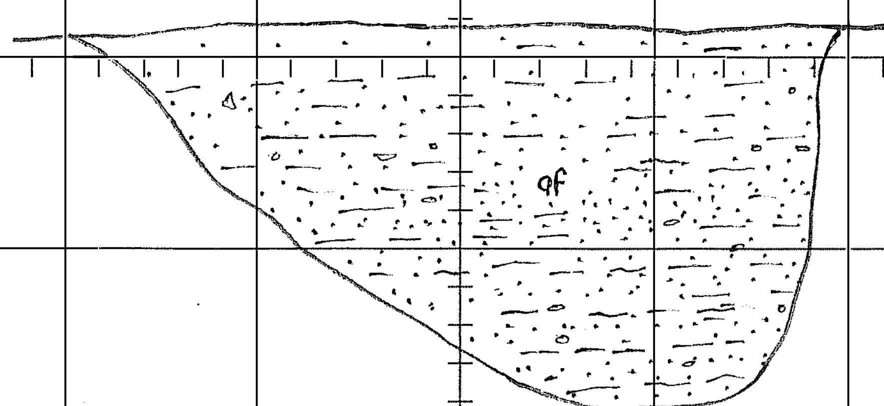
JOB NO: 22-2745-5
DATE: 6/8/22
LOGGED BY: VCG
EXCAVATED: 1/27/22
ELEVATION: 1,193'

DEPTH (feet)	SAMPLE TYPE	SAMPLE NUMBER	GRAPHIC LOG	USCS SYMBOL	DESCRIPTION	ATTITUDES	LABORATORY TESTS: Moisture Content (%)	LABORATORY TESTS: Dry Density (pcf)	LABORATORY TESTS: Other Tests
0					**ARTIFICIAL FILL; af (0-10')** @ 0' Light to medium yellowish-brown, silty sand with scattered gravel; loose; damp to moist; faint fill lifts				
3					@ 3' - loose to dense				
					@ 4.5' - grayish-brown fill lift; approximately 6" thick				
					@ 5' Medium- to yellowish-brown, silty sand with gravel; moist		15.2	110	
6									
9									
12									

TOTAL DEPTH: 10 feet

N12W→

SCALE: 1 inch = 5 feet



No Ground Water
No Caving

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE SIZE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	SAND AND SANDY SOILS	CLEAN SANDS (LITTLE OR NO FINES)		SW	Well-graded sands, gravelly sands, little or no fines
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE				SP	Poorly-graded sands, gravelly sands, little or no fines
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE SIZE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	Inorganic silts and very fine sands, clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	Inorganic silts, micaceous or diatomaceous fine, sandy or silty soils, elastic silts
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS				PT	Peat and other highly organic soils

Notes:
(1) Dual USCS symbols, such as SP-SM, denote 5 to 12% of minor constituent.
(2) Dual USCS symbols, such as SM/ML, denote borderline soil classifications.
(3) Subsurface information from boring and test pit logs depict conditions only at the specific locations. and dates indicated. Soil conditions and water levels at other locations may differ from conditions at these locations. Also, the conditions at these locations may change with time.
(4) Blow counts on logs are the number of blows to drive the sampler with the weight and drop height indicated on each log.
(5) Split-barrel sampler driving record applies only to hollow-stem-auger and rotary-wash borings.
(6) These logs are subject to the limitations, conclusions, and recommendations in this report.

HS: Hollow-stem-auger boring
RW: Rotary-wash boring
B: Bucket-auger boring

SAMPLE TYPE

STANDARD PENETRATION TEST
Split barrel sampler in accordance with ASTM D-1586 Test Method

CALIFORNIA DRIVE
Split-barrel sampler in accordance with ASTM D-3550 Test Method

DISTURBED CALIFORNIA DRIVE

SHELBY TUBE
Thin-walled sampler in accordance with ASTM D-1587 Test Method

BULK SAMPLE

NO RECOVERY

GROUND WATER DATA

GROUND WATER WHILE DRILLING

GROUND WATER AFTER DRILLING

DENSITY OF GRANULAR SOILS	
DESCRIPTION	SPT BLOWS PER FOOT
Very Loose	< 4
Loose	4 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

STRENGTH OF COHESIVE SOILS	
CONSISTENCY	SPT BLOWS PER FOOT
Very Soft	< 2
Soft	2 - 4
Firm	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	> 30

SPLIT-BARREL SAMPLER DRIVING RECORD	
BLOW COUNT	DESCRIPTION
25	25 blows drove the sampler 12 inches, after initial 6 inches of seating
50/7"	50 blows drove the sampler 7 inches, after initial 6 inches of seating
Ref/3"	50 blows drove the sampler 3 inches during initial 6-inch seating interval

LABORATORY TESTING ABBREVIATIONS			
Plasticity Index	PI	Compaction Curve	Curve=A
Liquid Limit	LL	Consolidation / Collapse	Consol
Hydrometer	%-5 micron	Direct Shear / Reshear / Remold	Shear Test
Expansion Index	EI		
Corrosivity Analysis	Cor		

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological and Geotechnical Consultants

USCS Soil Classification and Key to Boring Log Symbols

Version 2 (2/05)

Appendix B

APPENDIX B

GEOTECHNICAL LABORATORY INVESTIGATION

1. General

    a. The laboratory investigation used current, accepted test procedures of the American Society of Testing and Materials (ASTM) and/or California Test Standards, wherever practical.

    b. Bulk samples and ring samples were obtained during the investigation. Laboratory sample identification is by project name and number, trench number, and depth.

2. Index Parameters Tests

    The following Index Parameters tests were performed on site materials collected during the subsurface investigation.

Test Type	Number of Tests	Testing Standard
In-situ Moisture Content and Dry Density	8	ASTM D2216 and D7263
Percent-Finer Than #200 Sieve	4	ASTM D1140

The purpose of each test is briefly described below:

    a. In-Situ Moisture Content (ASTM D2216) and Dry Density (ASTM D7263) testing of soils provide an indication of the strength and compressibility of in-situ soils. These data aid in evaluation of soil consistency and in selection of samples for additional laboratory testing. Results of Moisture Content and Dry Density testing are recorded on the Trench Logs within **Appendix A**.

    b. Percent Finer than #200 Sieve (ASTM D1140) testing was performed on soil samples and drainage aggregate to aid in classification of the samples in accordance with the Unified Soil Classification System (USCS). Results of Percent Finer than #200 Sieve testing are recorded on the Trench Logs within **Appendix A** and on applicable laboratory test reports in this Appendix.

APPENDIX B

3. <u>Geotechnical Engineering Parameters Tests</u>

The following Geotechnical Engineering Parameter tests were performed on bulk and ring samples of soil collected during the investigation.

TEST TYPE	NUMBER OF TESTS	TESTING STANDARD
Direct Shear	3	ASTM D3080

The Geotechnical Engineering Parameters testing is briefly described below.

a. Direct Shear (ASTM D3080) testing was performed on California drive ring samples of Quaternary terrace deposits using a displacement-controlled Direct Shear machine. Prior to shearing, the samples were inundated and consolidated under normal pressures ranging from 300 psf to 4,000 psf. Thereafter, the samples were sheared horizontally at a controlled displacement rate until the horizontal shear force reduced to a stable value. Results of the Direct Shear testing, including interpreted peak strength and residual shear strength parameters, are presented on **Figures B1.1** through **B1.3** within this Appendix.

The following attachments complete this Appendix.

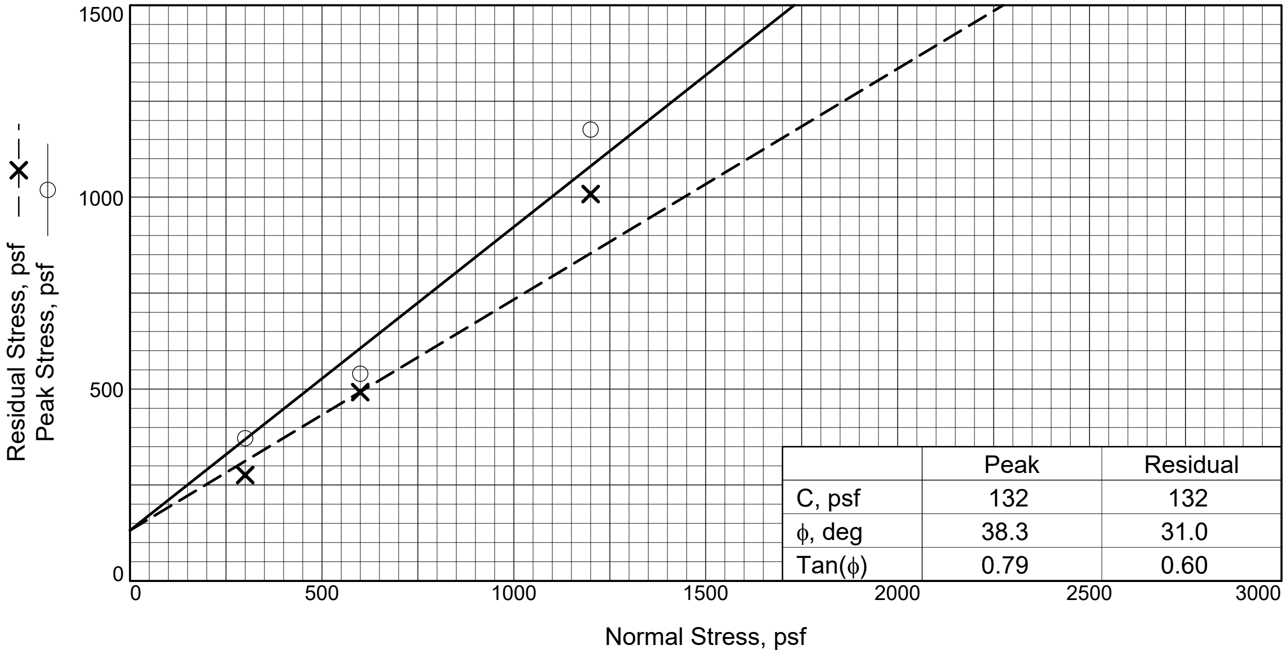
- Corrosivity Testing Summary — Table B1
- Direct Shear Test Reports — Figures B1.1 thru B1.3

APPENDIX B

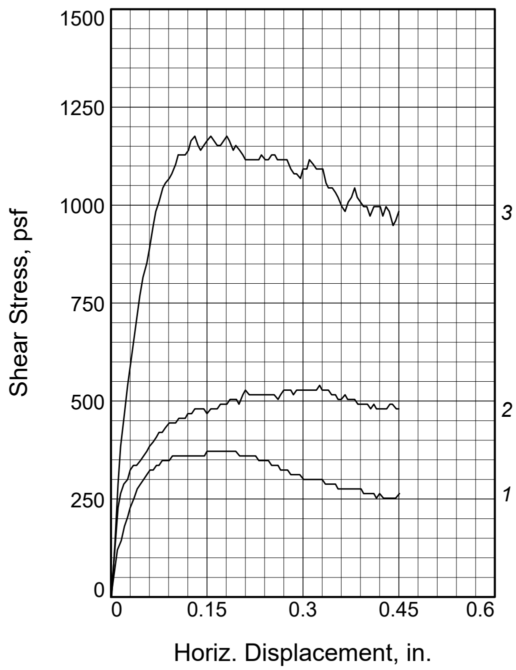
Table B1 – Summary of Corrosivity Test Results

Location	USCS	Resistivity		Chemical Analyses			
		Saturated (Ohm-cm)	Corrosion Characteristic[1]	pH	Chloride Cl (ppm)	Sulfate SO_4 (%)	Concrete exposure to sulfate[2]
T-4 (4.5-6′) bulk sample	SM	30,544	Mildly Corrosive	8.7	120	0.009	Negligible

[1] Per County of Los Angeles classification
[2] Per ACI 318



	Peak	Residual
C, psf	132	132
ϕ, deg	38.3	31.0
Tan(ϕ)	0.79	0.60



	Sample No.	1	2	3
Initial	Water Content, %	12.3	5.5	4.3
	Dry Density, pcf	101.6	107.6	112.7
	Saturation, %	51.9	27.3	24.3
	Void Ratio	0.6275	0.5377	0.4682
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	23.6	19.9	17.3
	Dry Density, pcf	101.9	108.4	113.5
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.6243	0.5267	0.4580
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.99
	Normal Stress, psf	300	600	1200
	Peak Stress, psf	372	540	1176
	Displacement, in.	0.15	0.33	0.13
	Residual Stress, psf	276	492	1008
	Displacement, in.	0.39	0.39	0.39
	Strain rate, in./min.	0.010	0.010	0.010

Sample Type: Modified California Drive
Description: silty, sand with gravel (SM)

Assumed Specific Gravity= 2.65
Remarks: Terrace Deposits (Qt)
Sample No. 1 T-1 @ 2.5' % Fines = 39.4.
Sample No. 2 & 3 T-1 @ 4.25' % Fines = 12.6

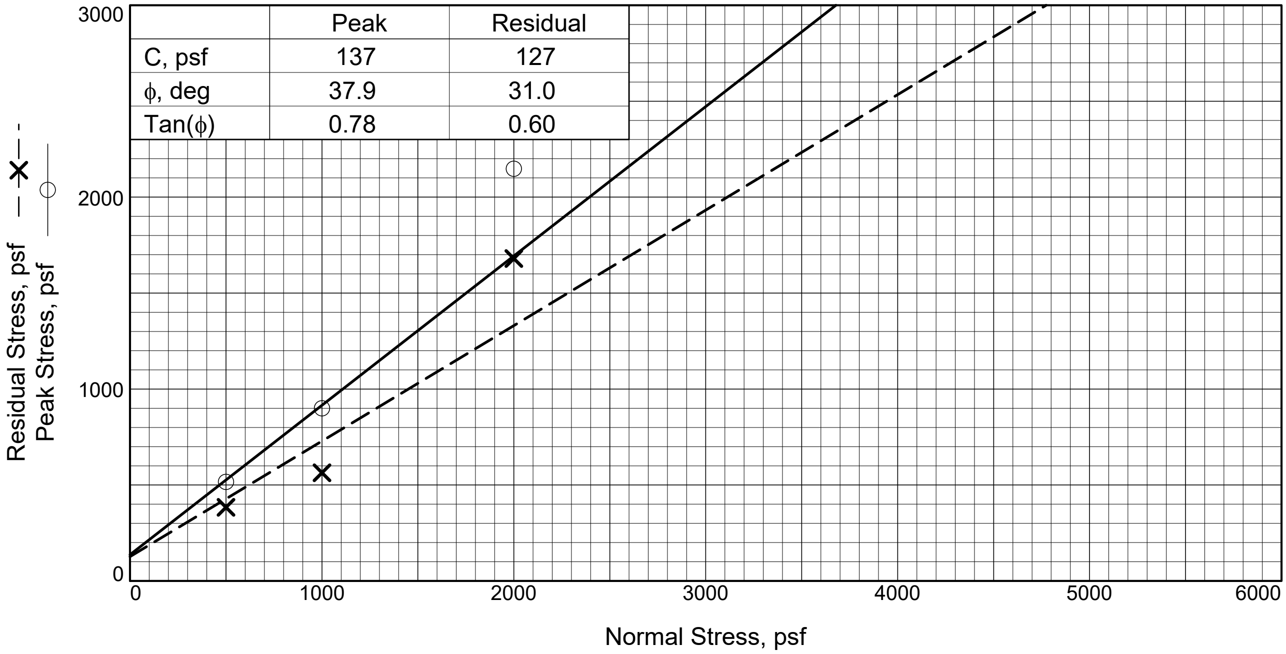
Figure B1.1

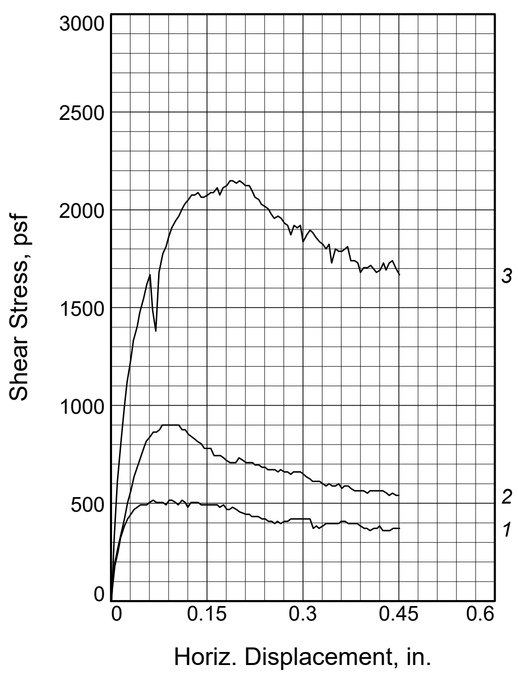
Client: Sahika, Inc.

Project: Gas Station Access Road and Driveway
College of the Canyons
Source of Sample: T-1 **Depth:** 4.25'

Proj. No.: 22-2745-5 **Date Sampled:** 1/21/22

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
Valencia, California





Sample No.		1	2	3
Initial	Water Content, %	4.9	4.8	4.4
	Dry Density, pcf	110.6	104.1	113.5
	Saturation, %	26.0	21.8	25.6
	Void Ratio	0.4964	0.5895	0.4578
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	18.5	21.7	16.6
	Dry Density, pcf	111.0	105.1	114.9
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.4904	0.5736	0.4396
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	0.99	0.99
Normal Stress, psf		500	1000	2000
Peak Stress, psf		516	900	2148
Displacement, in.		0.07	0.08	0.19
Residual Stress, psf		384	564	1680
Displacement, in.		0.39	0.39	0.39
Strain rate, in./min.		0.010	0.010	0.010

Sample Type: Modified California Drive
Description: Poorly grade sand with silt (SP-SM)

Assumed Specific Gravity= 2.65
Remarks: Terrace deposits (Qt)
% Fines = 5.2

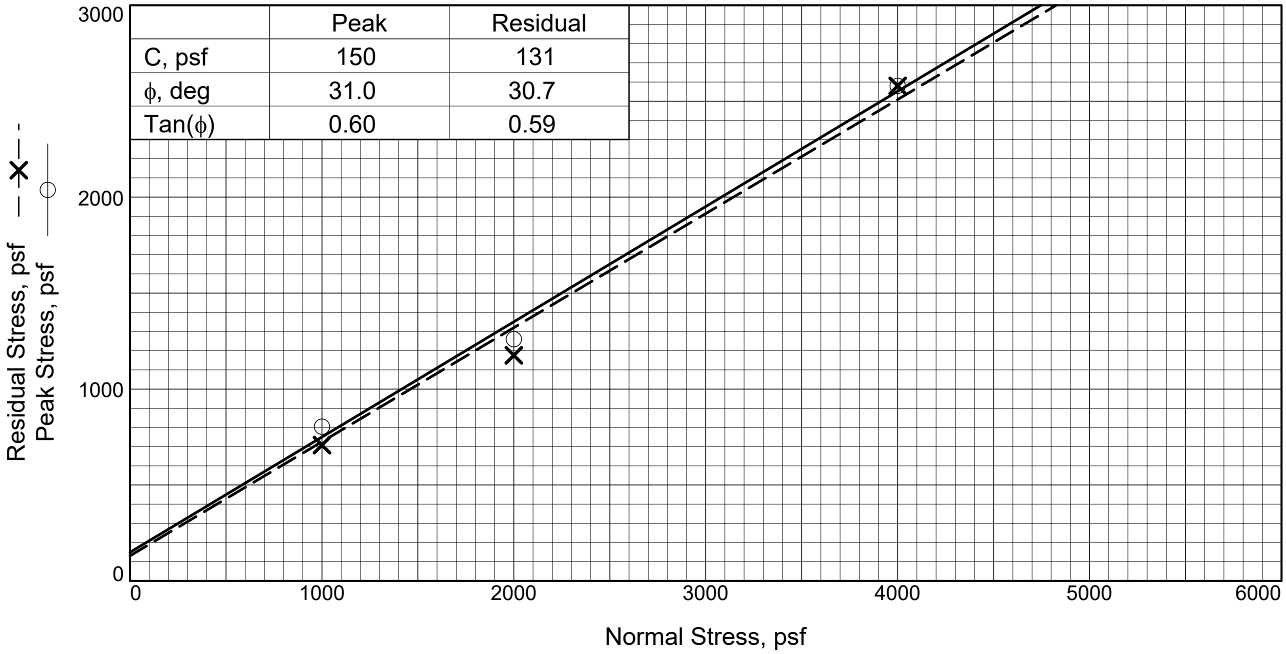
Figure B1.2

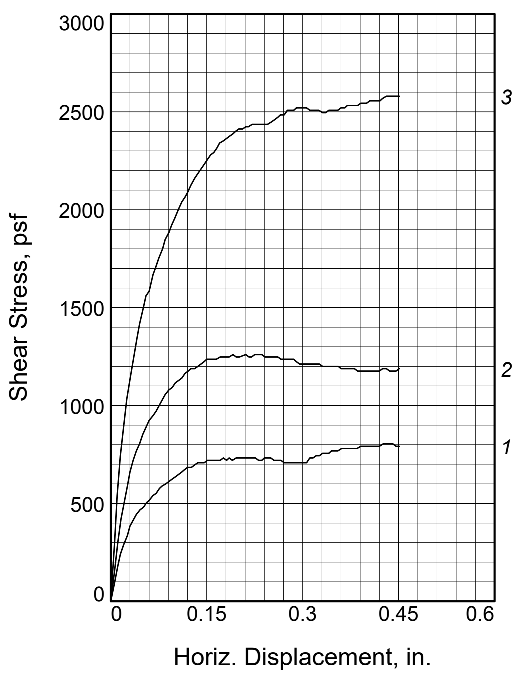
Client: Sahika, Inc.

Project: Gas Station Access Road and Driveway
College of the Canyons
Source of Sample: T-2 **Depth:** 3.5'

Proj. No.: 22-2745-5 **Date Sampled:** 1/27/22

DIRECT SHEAR TEST REPORT
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
Valencia, California





	Sample No.	1	2	3
Initial	Water Content, %	9.8	10.7	11.0
	Dry Density, pcf	107.0	106.4	107.9
	Saturation, %	47.6	51.4	54.5
	Void Ratio	0.5467	0.5544	0.5334
	Diameter, in.	2.42	2.42	2.42
	Height, in.	1.00	1.00	1.00
At Test	Water Content, %	19.8	19.5	18.3
	Dry Density, pcf	108.6	109.1	111.4
	Saturation, %	100.0	100.0	100.0
	Void Ratio	0.5235	0.5167	0.4848
	Diameter, in.	2.42	2.42	2.42
	Height, in.	0.98	0.98	0.97
	Normal Stress, psf	1000	2000	4000
	Peak Stress, psf	804	1260	2580
	Displacement, in.	0.43	0.19	0.43
	Residual Stress, psf	708	1176	2580
	Displacement, in.	0.30	0.39	0.45
	Strain rate, in./min.	0.010	0.010	0.010

Sample Type: Modified California Drive

Description:

Assumed Specific Gravity= 2.65

Remarks: Terrace Deposits (Qt)

% Fines = 42.5

Figure B1.3

Client: Sahika, Inc.

Project: Gas Station Access Road and Driveway
College of the Canyons

Source of Sample: T-4 **Depth:** 4.5'

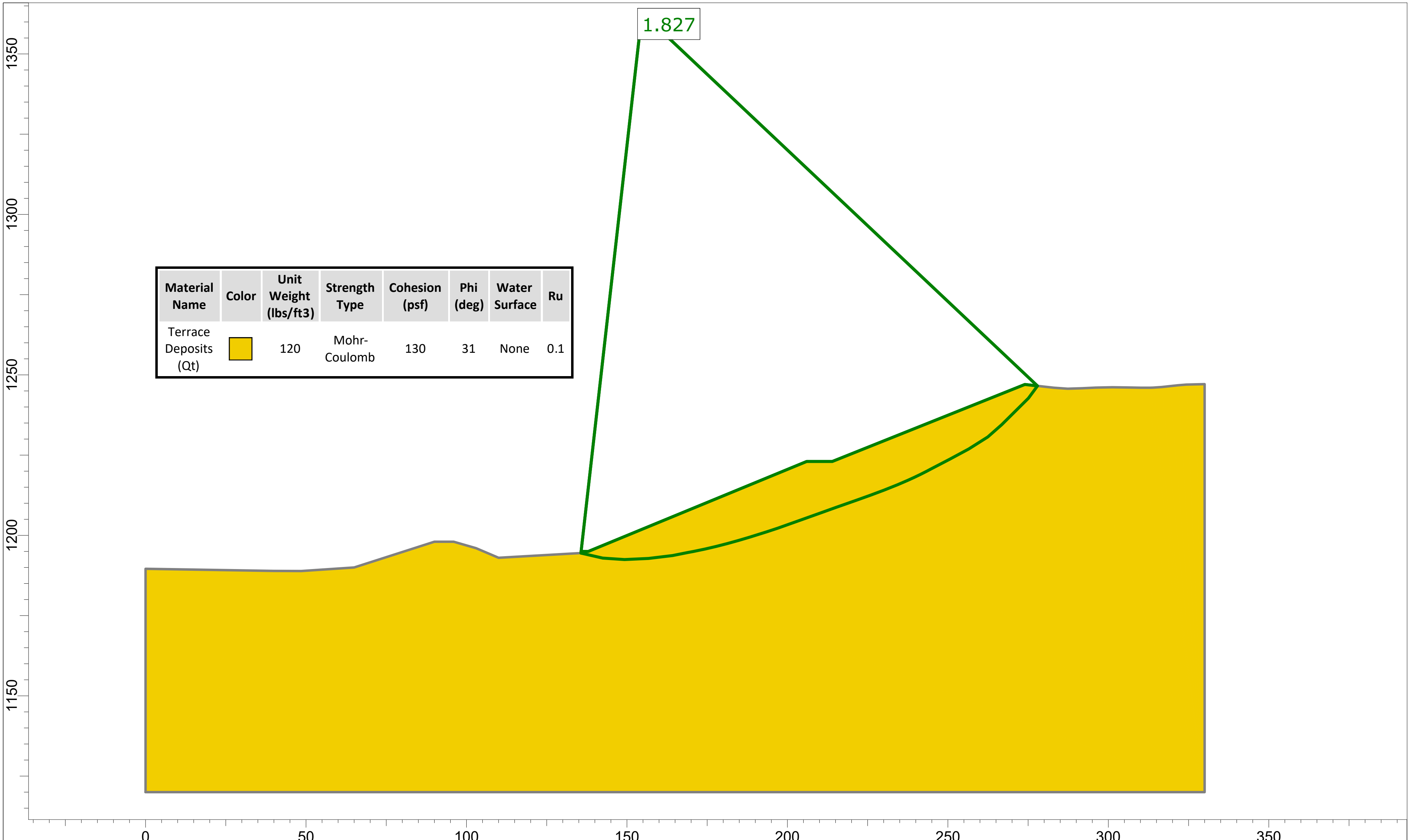
Proj. No.: 22-2745-5 **Date Sampled:**

DIRECT SHEAR TEST REPORT

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.

Valencia, California

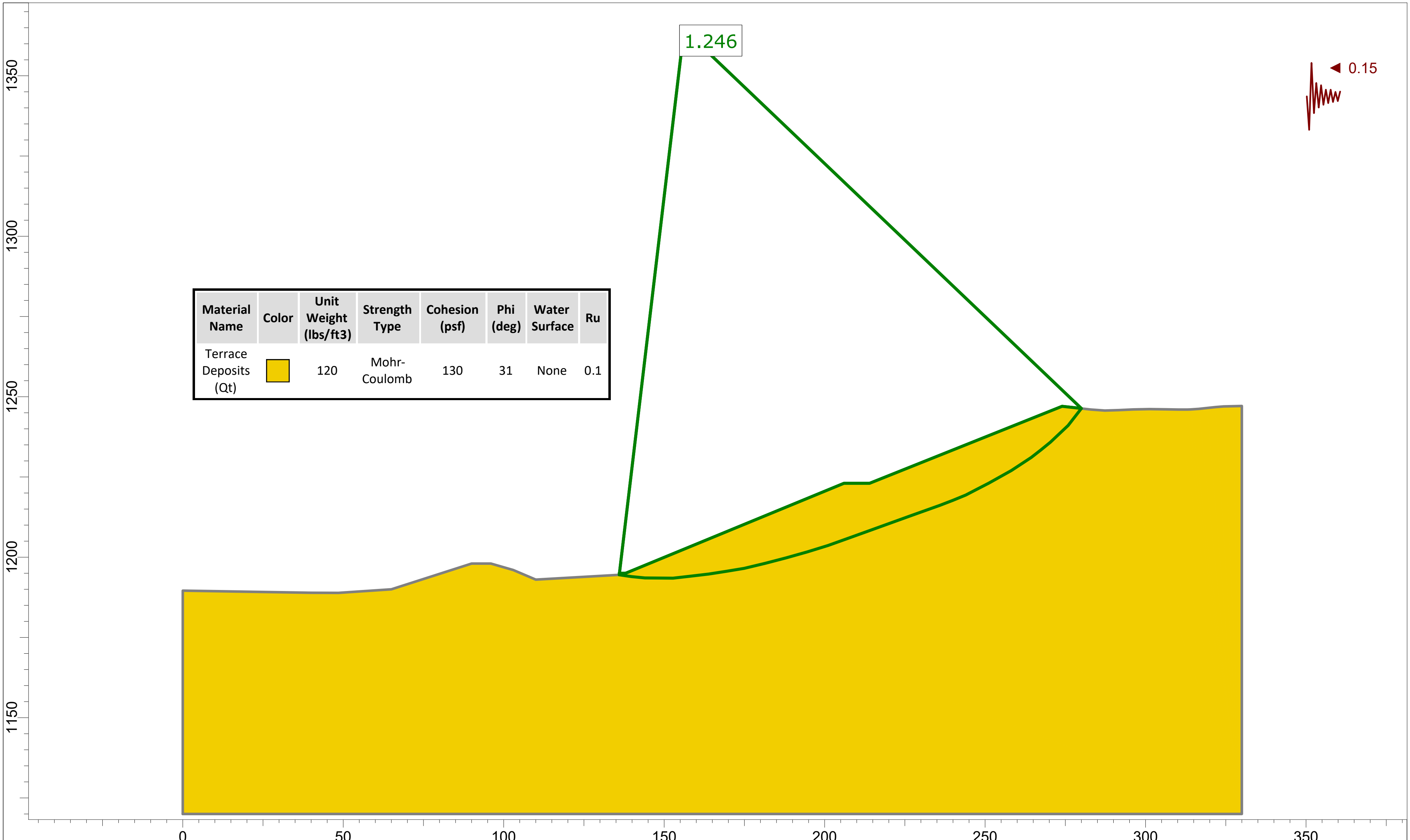
Appendix C



ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

SLIDEINTERPRET 9.008

Analysis Description	Cross Section 1-1'; Static; Non-Circular; Cuckoo Search		
Client	Sahika, Inc.	*Drawn By*	K. Callahan
Project	Fine Grading Plan for Access Road College of the Canyons	*File Name*	Section 1.slmd
		Scale	1:500
Project No.: 22-2745-5	*Date:* 6/8/2022	*Run Number*	



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Terrace Deposits (Qt)		120	Mohr-Coulomb	130	31	None	0.1

ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

SLIDEINTERPRET 9.008

Analysis Description	Cross Section 1-1'; Static; Non-Circular; Cuckoo Search		
Client	Sahika, Inc.	*Drawn By*	K. Callahan
Project	Fine Grading Plan for Access Road College of the Canyons	*File Name*	Section 1.slmd
		Scale	1:500
Project No.: 22-2745-5	*Date:* 6/8/2022	*Run Number*	

Project Summary

File Name:	Section 1.slmd
Slide Modeler Version:	9.008
Project Title:	Fine Grading Plan for Access Road
Analysis:	Cross Section 1-1'; Static; Non-Circular; Cuckoo Search
Author:	K. Callahan
Comments	
	Sahika, Inc. College of the Canyons 22-2745-5

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Static	Master Scenario	Spencer: 1.826830	00h:00m:05.494s
Seismic	Master Scenario	Spencer: 1.246440	00h:00m:05.155s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

All Open Scenarios

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Surface Options

All Open Scenarios

Search Method:	Cuckoo Search
Initial # of Surface Vertices:	8
Maximum Iterations:	500
Number of Nests:	50
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined
Convex Surfaces Only:	Enabled

Seismic Loading

Static

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Seismic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.15

Materials

Terrace Deposits (Qt)	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	120
Cohesion [psf]	130
Friction Angle [deg]	31
Water Surface	Assigned per scenario
Ru Value	0.1

Materials In Use

Material	Static	Seismic
Terrace Deposits (Qt)	✓	✓

Global Minimums

Static

Method: spencer

FS	1.826830
Axis Location:	154.699, 1362.788
Left Slip Surface Endpoint:	135.651, 1194.480
Right Slip Surface Endpoint:	277.916, 1246.565
Resisting Moment:	2.17274e+07 lb-ft
Driving Moment:	1.18988e+07 lb-ft
Resisting Horizontal Force:	120683 lb
Driving Horizontal Force:	66090.6 lb
Total Slice Area:	1786.04 ft2
Surface Horizontal Width:	142.265 ft
Surface Average Height:	12.5543 ft

Seismic

Method: spencer

FS	1.246440
Axis Location:	156.177, 1364.433
Left Slip Surface Endpoint:	136.000, 1194.500
Right Slip Surface Endpoint:	280.017, 1246.331
Left Slope Intercept:	136.000 1195.000
Right Slope Intercept:	280.017 1246.331
Resisting Moment:	2.10523e+07 lb-ft
Driving Moment:	1.689e+07 lb-ft
Resisting Horizontal Force:	116831 lb
Driving Horizontal Force:	93731.9 lb
Total Slice Area:	1800.05 ft2
Surface Horizontal Width:	144.017 ft
Surface Average Height:	12.4989 ft

Global Minimum Coordinates

Static

Method: spencer

X	Y
135.651	1194.48
142.452	1192.9
149.254	1192.47
156.751	1192.82
164.248	1193.7
168.927	1194.64
173.606	1195.59
178.342	1196.7
183.077	1197.92
190.01	1199.97
196.944	1202.22
203.878	1204.69
210.812	1207.15
217.746	1209.61
224.679	1212.07
231.612	1214.69
238.545	1217.59
244.56	1220.59
250.574	1223.72
256.493	1226.91
262.427	1230.65
266.774	1234.48
270.932	1238.6
275.09	1242.72
277.916	1246.56

Seismic

Method: spencer

X	Y
136	1194.5
139.819	1193.95
143.984	1193.53
148.39	1193.48
152.795	1193.45
158.279	1194.08
163.886	1194.76
169.482	1195.63
174.924	1196.52
181.459	1198.07
187.995	1199.79
194.53	1201.62
201.066	1203.64
207.258	1205.86
213.45	1208.09
220.179	1210.51
226.908	1212.93
231.388	1214.54
235.859	1216.14
239.921	1217.71
243.984	1219.35
247.558	1221.2
251.133	1223.04
254.674	1225.03
258.215	1227.01
264.389	1231.08
267.369	1233.39
270.348	1235.83
275.859	1241.04
280.017	1246.33

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Static

Method: spencer

Number of Valid Surfaces:	21590
Number of Invalid Surfaces:	3466
Error Codes	
Error Code -106 reported for 6 surfaces	
Error Code -108 reported for 149 surfaces	
Error Code -109 reported for 1 surface	
Error Code -111 reported for 567 surfaces	
Error Code -112 reported for 298 surfaces	
Error Code -114 reported for 72 surfaces	
Error Code -121 reported for 320 surfaces	
Error Code -124 reported for 18 surfaces	
Error Code -1000 reported for 2035 surfaces	

Seismic

Method: spencer

Number of Valid Surfaces:	21442
Number of Invalid Surfaces:	3613
Error Codes	
Error Code -106 reported for 2 surfaces	
Error Code -108 reported for 70 surfaces	
Error Code -111 reported for 601 surfaces	
Error Code -112 reported for 384 surfaces	
Error Code -114 reported for 74 surfaces	
Error Code -121 reported for 359 surfaces	
Error Code -124 reported for 21 surfaces	
Error Code -1000 reported for 2102 surfaces	

Error Code Descriptions

The following errors were encountered during the computation:

-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.

-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-109 = Soiltype for slice base not located. This error should occur very rarely, if at all. It may occur if a very low number of slices is combined with certain soil geometries, such that the midpoint of a slice base is actually outside the soil region,even though the slip surface is wholly within the soil region.

-111 = safety factor equation did not converge

-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

-114 = Surface with Reverse Curvature.

-121 = Concave failure surface, only convex surfaces have been defined as being allowed.

-124 = A slice has a width less than the minimum acceptable value.

-1000 = No valid slip surface is generated

Slice Data

Static

Global Minimum Query (spencer) - Safety Factor: 1.82683

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	3.40034	379.8	-13.1142	Terrace Deposits (Qt)	130	31	134.467	245.648	203.641	11.1695	192.471	172.314	161.145
2	3.40034	1159.39	-13.1142	Terrace Deposits (Qt)	130	31	227.432	415.48	509.214	34.0963	475.118	456.229	422.133
3	3.40112	1936.38	-3.59104	Terrace Deposits (Qt)	130	31	281.846	514.884	697.489	56.9337	640.555	679.801	622.867
4	3.40112	2595.07	-3.59104	Terrace Deposits (Qt)	130	31	349.731	638.899	923.25	76.3006	846.949	901.302	825.001
5	3.7485	3530.92	2.67156	Terrace Deposits (Qt)	130	31	381.6	697.118	1038.04	94.1955	943.843	1055.84	961.649
6	3.7485	4146.54	2.67156	Terrace Deposits (Qt)	130	31	434.415	793.602	1215.04	110.619	1104.42	1235.31	1124.69
7	2.49915	3079.8	6.73565	Terrace Deposits (Qt)	130	31	452.325	826.321	1282.11	123.234	1158.87	1335.53	1212.29
8	2.49915	3299.89	6.73565	Terrace Deposits (Qt)	130	31	479.176	875.373	1372.55	132.04	1240.51	1429.14	1297.1
9	2.49915	3519.99	6.73565	Terrace Deposits (Qt)	130	31	506.027	924.425	1462.99	140.847	1322.14	1522.75	1381.91
10	2.33949	3467.32	11.3674	Terrace Deposits (Qt)	130	31	500.322	914.003	1453.01	148.209	1304.8	1553.59	1405.38
11	2.33949	3605.72	11.3674	Terrace Deposits (Qt)	130	31	517.322	945.059	1510.61	154.124	1356.49	1614.62	1460.49
12	2.33923	3743.05	11.4756	Terrace Deposits (Qt)	130	31	533.563	974.729	1565.88	160.012	1405.87	1674.2	1514.19
13	2.33923	3880.13	11.4756	Terrace Deposits (Qt)	130	31	550.38	1005.45	1622.86	165.872	1456.99	1734.6	1568.72
14	2.36825	4057.68	13.1371	Terrace Deposits (Qt)	130	31	555.124	1014.12	1642.75	171.337	1471.42	1772.31	1600.98
15	2.36825	4177.74	13.1371	Terrace Deposits (Qt)	130	31	569.369	1040.14	1691.14	176.406	1514.73	1824.02	1647.62
16	2.36711	4287.16	14.5068	Terrace Deposits (Qt)	130	31	573.318	1047.36	1707.85	181.114	1526.74	1856.19	1675.08
17	2.36711	4390.05	14.5068	Terrace Deposits (Qt)	130	31	585.325	1069.29	1748.7	185.46	1563.24	1900.15	1714.69
18	3.46681	6588.71	16.4647	Terrace Deposits (Qt)	130	31	584.446	1067.68	1750.62	190.051	1560.57	1923.35	1733.3
19	3.46681	6756.33	16.4647	Terrace Deposits (Qt)	130	31	597.478	1091.49	1795.08	194.886	1600.19	1971.66	1776.77
20	2.31123	4588.09	17.9804	Terrace Deposits (Qt)	130	31	596.565	1089.82	1795.93	198.513	1597.41	1989.54	1791.03

21	2.31123	4644	17.9804	Terrace Deposits (Qt)	130	31	602.963	1101.51	1817.8	200.932	1616.87	2013.48	1812.55
22	2.31123	4699.91	17.9804	Terrace Deposits (Qt)	130	31	609.36	1113.2	1839.67	203.352	1636.31	2037.43	1834.08
23	3.46694	7132.93	19.5462	Terrace Deposits (Qt)	130	31	604.471	1104.26	1827.19	205.741	1621.45	2041.79	1836.05
24	3.46694	7214.77	19.5462	Terrace Deposits (Qt)	130	31	610.592	1115.45	1848.16	208.102	1640.06	2064.94	1856.84
25	2.31131	4854.45	19.5462	Terrace Deposits (Qt)	130	31	615.595	1124.59	1865.3	210.031	1655.27	2083.85	1873.82
26	2.31131	4738.14	19.5462	Terrace Deposits (Qt)	130	31	602.544	1100.75	1820.59	204.998	1615.59	2034.51	1829.51
27	2.31131	4510.55	19.5462	Terrace Deposits (Qt)	130	31	577.008	1054.1	1733.1	195.152	1537.95	1937.96	1742.8
28	2.3113	4282.95	19.5462	Terrace Deposits (Qt)	130	31	551.472	1007.45	1645.62	185.305	1460.32	1841.41	1656.1
29	2.3113	4104.72	19.5462	Terrace Deposits (Qt)	130	31	531.475	970.915	1577.11	177.594	1399.52	1765.8	1588.21
30	2.3113	4115.09	19.5462	Terrace Deposits (Qt)	130	31	532.639	973.04	1581.09	178.042	1403.05	1770.2	1592.15
31	3.46695	6226.69	19.5462	Terrace Deposits (Qt)	130	31	536.682	980.427	1594.95	179.601	1415.35	1785.49	1605.88
32	3.46695	6291.56	19.5462	Terrace Deposits (Qt)	130	31	541.534	989.291	1611.57	181.472	1430.1	1803.83	1622.36
33	3.46651	6339.11	20.7023	Terrace Deposits (Qt)	130	31	537.855	982.57	1601.78	182.867	1418.92	1805.05	1622.18
34	3.46651	6370.96	20.7023	Terrace Deposits (Qt)	130	31	540.204	986.86	1609.84	183.786	1426.05	1813.99	1630.21
35	2.31102	4252.32	22.6622	Terrace Deposits (Qt)	130	31	528.516	965.509	1574.52	184.002	1390.52	1795.2	1611.19
36	2.31102	4241.09	22.6622	Terrace Deposits (Qt)	130	31	527.304	963.294	1570.35	183.516	1386.83	1790.52	1607
37	2.31102	4229.85	22.6622	Terrace Deposits (Qt)	130	31	526.091	961.079	1566.18	183.03	1383.15	1785.84	1602.81
38	3.00708	5442.49	26.5483	Terrace Deposits (Qt)	130	31	497.734	909.276	1477.92	180.989	1296.93	1726.61	1545.62
39	3.00708	5334.37	26.5483	Terrace Deposits (Qt)	130	31	489.2	893.686	1448.38	177.394	1270.98	1692.8	1515.41
40	3.0071	5214.87	27.5044	Terrace Deposits (Qt)	130	31	474.37	866.593	1399.32	173.419	1225.9	1646.3	1472.88
41	3.0071	5083.93	27.5044	Terrace Deposits (Qt)	130	31	464.161	847.944	1363.92	169.065	1194.86	1605.6	1436.53
42	2.95948	4865.87	28.3318	Terrace Deposits (Qt)	130	31	448.846	819.966	1312.71	164.416	1148.3	1554.71	1390.3
43	2.95948	4719.61	28.3318	Terrace Deposits (Qt)	130	31	437.382	799.023	1272.92	159.474	1113.44	1508.74	1349.26
44	2.96722	4537.57	32.1769	Terrace Deposits (Qt)	130	31	403.256	736.68	1162.61	152.923	1009.68	1416.32	1263.4
45	2.96722	4295.45	32.1769	Terrace Deposits (Qt)	130	31	385.259	703.802	1099.73	144.763	954.969	1342.13	1197.36

46	2.17327	2920.65	41.4337	Terrace Deposits (Qt)	130	31	322.825	589.746	899.535	134.389	765.146	1184.48	1050.09
47	2.17327	2647.09	41.4337	Terrace Deposits (Qt)	130	31	298.436	545.191	812.795	121.802	690.993	1076.21	954.412
48	4.15804	4190.32	44.7265	Terrace Deposits (Qt)	130	31	246.874	450.997	635.005	100.776	534.229	879.533	778.757
49	4.15781	2928.66	44.7265	Terrace Deposits (Qt)	130	31	190.958	348.848	434.661	70.4375	364.224	623.805	553.367
50	2.82671	705.249	53.6721	Terrace Deposits (Qt)	130	31	99.3738	181.539	110.725	24.9495	85.7756	245.868	220.918

Seismic

Global Minimum Query (spencer) - Safety Factor: 1.24644

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	3.81936	437.725	-8.2423	Terrace Deposits (Qt)	130	31	229.315	285.828	270.803	11.4607	259.342	237.585	226.125
2	2.08238	583.278	-5.65254	Terrace Deposits (Qt)	130	31	316.649	394.684	468.519	28.0102	440.508	437.178	409.168
3	2.08238	849.044	-5.65254	Terrace Deposits (Qt)	130	31	393.23	490.138	640.142	40.7729	599.369	601.221	560.449
4	2.20281	1162.07	-0.682595	Terrace Deposits (Qt)	130	31	417.325	520.17	702.108	52.7539	649.354	697.136	644.382
5	2.20281	1408.77	-0.682595	Terrace Deposits (Qt)	130	31	476.669	594.139	836.409	63.9533	772.455	830.73	766.776
6	2.20281	1654.38	-0.466293	Terrace Deposits (Qt)	130	31	533.316	664.747	965.074	75.1028	889.971	960.734	885.631
7	2.20281	1898.88	-0.466293	Terrace Deposits (Qt)	130	31	591.834	737.686	1097.56	86.2025	1011.36	1092.74	1006.54
8	2.74173	2649.02	6.61444	Terrace Deposits (Qt)	130	31	561.818	700.273	1045.71	96.6184	949.095	1110.86	1014.24
9	2.74173	2915.85	6.61444	Terrace Deposits (Qt)	130	31	605.747	755.027	1146.57	106.351	1040.22	1216.81	1110.46
10	2.80335	3255.06	6.87937	Terrace Deposits (Qt)	130	31	646.581	805.924	1241.04	116.113	1124.93	1319.05	1202.94
11	2.80335	3529.6	6.87937	Terrace Deposits (Qt)	130	31	690.543	860.721	1342.03	125.907	1216.12	1425.34	1299.44
12	2.79811	3780.25	8.85748	Terrace Deposits (Qt)	130	31	705.225	879.021	1381.68	135.1	1246.58	1491.58	1356.48
13	2.79811	4020.7	8.85748	Terrace Deposits (Qt)	130	31	742.284	925.212	1467.15	143.693	1323.45	1582.82	1439.13
14	2.7211	4137.52	9.25149	Terrace Deposits (Qt)	130	31	772.671	963.088	1538.54	152.053	1386.49	1664.4	1512.35
15	2.7211	4358.66	9.25149	Terrace Deposits (Qt)	130	31	807.442	1006.43	1618.8	160.18	1458.62	1750.32	1590.14
16	3.26768	5478.18	13.3953	Terrace Deposits (Qt)	130	31	778.61	970.491	1566.46	167.647	1398.81	1751.88	1584.24
17	3.26768	5700.64	13.3953	Terrace Deposits (Qt)	130	31	805.478	1003.98	1629	174.455	1454.55	1820.83	1646.37
18	3.26767	5907.3	14.7234	Terrace Deposits (Qt)	130	31	811.146	1011.04	1647.08	180.78	1466.3	1860.24	1679.46
19	3.26767	6098.2	14.7234	Terrace Deposits (Qt)	130	31	833.627	1039.07	1699.56	186.622	1512.94	1918.62	1732
20	3.2678	6278.42	15.6322	Terrace Deposits (Qt)	130	31	841.267	1048.59	1720.92	192.13	1528.79	1956.31	1764.18
21	3.2678	6447.51	15.6322	Terrace Deposits (Qt)	130	31	860.84	1072.99	1766.7	197.305	1569.39	2007.57	1810.26
22	3.26781	6598.29	17.1423	Terrace Deposits (Qt)	130	31	855.413	1066.22	1760.05	201.918	1558.13	2023.9	1821.98

23	3.26781	6730.68	17.1423	Terrace Deposits (Qt)	130	31	870.312	1084.79	1795.01	205.969	1589.04	2063.45	1857.49
24	3.0961	6469.77	19.7748	Terrace Deposits (Qt)	130	31	842.131	1049.67	1739.55	208.965	1530.58	2042.32	1833.35
25	3.0961	6490.76	19.7748	Terrace Deposits (Qt)	130	31	844.506	1052.63	1745.15	209.643	1535.51	2048.77	1839.13
26	3.09604	6160.55	19.7748	Terrace Deposits (Qt)	130	31	807.16	1006.08	1657.02	198.981	1458.04	1947.21	1748.23
27	3.09604	5747	19.7748	Terrace Deposits (Qt)	130	31	760.371	947.757	1546.6	185.624	1360.98	1819.97	1634.35
28	3.3645	5966.57	19.7748	Terrace Deposits (Qt)	130	31	731.35	911.584	1478.11	177.339	1300.77	1741.05	1563.71
29	3.3645	6014.29	19.7748	Terrace Deposits (Qt)	130	31	736.319	917.777	1489.84	178.757	1311.08	1754.56	1575.81
30	2.24306	4040.18	19.7748	Terrace Deposits (Qt)	130	31	741.088	923.722	1501.09	180.119	1320.97	1767.53	1587.42
31	2.24306	4064.61	19.7748	Terrace Deposits (Qt)	130	31	744.905	928.479	1510.1	181.208	1328.89	1777.91	1596.71
32	2.24306	4089.05	19.7748	Terrace Deposits (Qt)	130	31	748.72	933.235	1519.1	182.298	1336.81	1788.29	1605.99
33	2.23959	4107.11	19.7748	Terrace Deposits (Qt)	130	31	752.534	937.988	1528.1	183.386	1344.72	1798.66	1615.27
34	2.23959	4131.47	19.7748	Terrace Deposits (Qt)	130	31	756.344	942.737	1537.1	184.474	1352.62	1809.02	1624.55
35	2.23556	4148.32	19.7748	Terrace Deposits (Qt)	130	31	760.151	947.482	1546.08	185.561	1360.52	1819.38	1633.81
36	2.23556	4172.6	19.7748	Terrace Deposits (Qt)	130	31	763.953	952.222	1555.06	186.647	1368.41	1829.72	1643.07
37	4.06248	7620.01	21.0254	Terrace Deposits (Qt)	130	31	751.058	936.149	1529.23	187.57	1341.66	1817.92	1630.35
38	4.06248	7630.95	22.0273	Terrace Deposits (Qt)	130	31	739.341	921.544	1505.19	187.84	1317.35	1804.31	1616.47
39	3.57446	6620.72	27.3302	Terrace Deposits (Qt)	130	31	668.292	832.986	1355.19	185.223	1169.96	1700.57	1515.34
40	3.57446	6441.63	27.3302	Terrace Deposits (Qt)	130	31	653.006	813.933	1318.47	180.213	1138.26	1655.95	1475.73
41	3.5411	6172.15	29.2643	Terrace Deposits (Qt)	130	31	614.771	766.275	1233.24	174.301	1058.94	1577.73	1403.43
42	3.5411	5930.86	29.2643	Terrace Deposits (Qt)	130	31	594.708	741.268	1184.81	167.487	1017.32	1518.05	1350.57
43	3.0871	4917.4	33.3707	Terrace Deposits (Qt)	130	31	532.708	663.989	1048	159.289	888.707	1398.86	1239.57
44	3.0871	4621.61	33.3707	Terrace Deposits (Qt)	130	31	506.574	631.414	984.202	149.707	834.495	1317.85	1168.15
45	2.97975	4118.82	37.7461	Terrace Deposits (Qt)	130	31	441.485	550.284	837.697	138.227	699.47	1179.48	1041.26
46	2.97979	3695.01	39.4012	Terrace Deposits (Qt)	130	31	394.543	491.774	726.097	124.002	602.095	1050.19	926.19
47	2.75523	2960.85	43.3712	Terrace Deposits (Qt)	130	31	331.055	412.64	577.855	107.463	470.392	890.603	783.14

48	2.75523	2358.68	43.3712	Terrace Deposits (Qt)	130	31	282.169	351.707	454.59	85.6075	368.982	721.155	635.548
49	2.07904	1076.65	51.842	Terrace Deposits (Qt)	130	31	179.989	224.346	208.804	51.7857	157.018	437.874	386.089
50	2.07904	358.883	51.842	Terrace Deposits (Qt)	130	31	116.403	145.089	42.3746	17.2619	25.1127	190.519	173.257

Interslice Data

Static

Global Minimum Query (spencer) - Safety Factor: 1.82683

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	135.651	1194.48	0	0	0
2	139.051	1193.69	618.736	212.891	18.987
3	142.452	1192.9	1795.78	617.882	18.987
4	145.853	1192.68	2903.63	999.065	18.987
5	149.254	1192.47	4290.65	1476.3	18.987
6	153.002	1192.64	5540.08	1906.2	18.987
7	156.751	1192.82	6956.62	2393.59	18.987
8	159.25	1193.11	7709.07	2652.49	18.987
9	161.749	1193.41	8501.97	2925.31	18.987
10	164.248	1193.7	9335.29	3212.03	18.987
11	166.588	1194.17	9822.86	3379.79	18.987
12	168.927	1194.64	10323.1	3551.92	18.9871
13	171.267	1195.12	10828.1	3725.68	18.9871
14	173.606	1195.59	11345.4	3903.67	18.9871
15	175.974	1196.15	11752.6	4043.78	18.9871
16	178.342	1196.7	12166.8	4186.3	18.9871
17	180.709	1197.31	12478.5	4293.52	18.987
18	183.077	1197.92	12793.5	4401.93	18.9871
19	186.543	1198.95	13026.8	4482.2	18.9871
20	190.01	1199.97	13259.8	4562.35	18.987
21	192.321	1200.72	13292	4573.45	18.9871
22	194.633	1201.47	13322.7	4583.99	18.987
23	196.944	1202.22	13351.7	4593.97	18.987
24	200.411	1203.46	13199.2	4541.5	18.987
25	203.878	1204.69	13042.1	4487.45	18.987
26	206.189	1205.51	12934.9	4450.55	18.987
27	208.5	1206.33	12834.2	4415.9	18.987
28	210.812	1207.15	12746.2	4385.63	18.987
29	213.123	1207.97	12671	4359.75	18.987
30	215.434	1208.79	12605.7	4337.3	18.987
31	217.746	1209.61	12539.9	4314.65	18.987
32	221.212	1210.84	12438.1	4279.64	18.9871
33	224.679	1212.07	12332.7	4243.38	18.9871
34	228.146	1213.38	12099.6	4163.14	18.9869
35	231.612	1214.69	11864	4082.08	18.9869
36	233.923	1215.66	11566.6	3979.75	18.9869
37	236.234	1216.62	11270.4	3877.85	18.987
38	238.545	1217.59	10975.4	3776.36	18.9871
39	241.553	1219.09	10252.3	3527.54	18.987
40	244.56	1220.59	9547.79	3285.15	18.987
41	247.567	1222.16	8783.95	3022.33	18.987
42	250.574	1223.72	8044.81	2768.01	18.987
43	253.533	1225.32	7279.08	2504.54	18.987
44	256.493	1226.91	6542.91	2251.25	18.987
45	259.46	1228.78	5569.48	1916.32	18.9871
46	262.427	1230.65	4660.01	1603.39	18.987
47	264.601	1232.57	3636.32	1251.17	18.9871
48	266.774	1234.48	2726	937.947	18.987
49	270.932	1238.6	1137.63	391.431	18.9871
50	275.09	1242.72	141.85	48.8071	18.9871
51	277.916	1246.56	0	0	0

Seismic

Global Minimum Query (spencer) - Safety Factor: 1.24644

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	136	1194.5	0	0	0
2	139.819	1193.95	960.007	469.803	26.0759
3	141.902	1193.74	1628.47	796.929	26.0759
4	143.984	1193.53	2451.9	1199.9	26.076
5	146.187	1193.51	3215.31	1573.49	26.0759
6	148.39	1193.48	4075.96	1994.67	26.0759
7	150.593	1193.46	5019.91	2456.62	26.076
8	152.795	1193.45	6058.46	2964.86	26.076
9	155.537	1193.76	6869.01	3361.52	26.076
10	158.279	1194.08	7727.91	3781.84	26.0759
11	161.082	1194.42	8632.51	4224.53	26.0759
12	163.886	1194.76	9585.01	4690.66	26.0759
13	166.684	1195.19	10388.8	5084.02	26.076
14	169.482	1195.63	11223	5492.23	26.0759
15	172.203	1196.07	12022.9	5883.71	26.076
16	174.924	1196.52	12848.8	6287.86	26.0759
17	178.192	1197.3	13352.3	6534.27	26.0759
18	181.459	1198.07	13861.6	6783.51	26.0759
19	184.727	1198.93	14211.7	6954.86	26.076
20	187.995	1199.79	14561.7	7126.1	26.0759
21	191.262	1200.71	14795.5	7240.51	26.0759
22	194.53	1201.62	15026	7353.33	26.0759
23	197.798	1202.63	15057.5	7368.77	26.076
24	201.066	1203.64	15082.7	7381.08	26.0759
25	204.162	1204.75	14783.2	7234.53	26.076
26	207.258	1205.86	14481.7	7086.98	26.076
27	210.354	1206.97	14212.2	6955.09	26.076
28	213.45	1208.09	13982.8	6842.81	26.0759
29	216.815	1209.3	13760.5	6734.02	26.0759
30	220.179	1210.51	13533.5	6622.96	26.076
31	222.422	1211.31	13379.3	6547.48	26.0759
32	224.665	1212.12	13222.7	6470.83	26.0759
33	226.908	1212.93	13063.7	6393.02	26.0759
34	229.148	1213.73	12902.6	6314.18	26.0759
35	231.388	1214.54	12739.1	6234.18	26.0759
36	233.623	1215.34	12573.6	6153.18	26.0759
37	235.859	1216.14	12405.7	6071.02	26.0759
38	239.921	1217.71	11926	5836.25	26.0758
39	243.984	1219.35	11311	5535.29	26.0758
40	247.558	1221.2	10203.2	4993.18	26.0759
41	251.133	1223.04	9135.49	4470.67	26.0759
42	254.674	1225.03	7939.56	3885.42	26.076
43	258.215	1227.01	6804.89	3330.14	26.0759
44	261.302	1229.05	5580.92	2731.16	26.0759
45	264.389	1231.08	4450.35	2177.89	26.076
46	267.369	1233.39	3215.62	1573.64	26.0759
47	270.348	1235.83	2059.74	1007.98	26.0759
48	273.104	1238.44	1023.67	500.956	26.0759
49	275.859	1241.04	264.071	129.229	26.0758
50	277.938	1243.69	-75.7091	-37.0501	26.0759
51	280.017	1246.33	0	0	0

Entity Information

Static

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 1120 330, 1120 330, 1247.1 327.147, 1247.05 324.293, 1246.95 321.727, 1246.76 319.16, 1246.48 316.594, 1246.21 314.028, 1246.04 313.062, 1246.01 312.097, 1245.99 310.167, 1245.99 306.306, 1246.06 301.234, 1246.14 296.162, 1246.02 291.743, 1245.83 287.325, 1245.7 283, 1246 274, 1247 214, 1223 206, 1223 138, 1195 136, 1195 136, 1194.5 110, 1193 103, 1196 96, 1198 90, 1198 65, 1190 48.5179, 1188.88 39.9344, 1188.9 0, 1189.57

Seismic

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 1120 330, 1120 330, 1247.1 327.147, 1247.05 324.293, 1246.95 321.727, 1246.76 319.16, 1246.48 316.594, 1246.21 314.028, 1246.04 313.062, 1246.01 312.097, 1245.99 310.167, 1245.99 306.306, 1246.06 301.234, 1246.14 296.162, 1246.02 291.743, 1245.83 287.325, 1245.7 283, 1246 274, 1247 214, 1223 206, 1223 138, 1195 136, 1195 136, 1194.5 110, 1193 103, 1196 96, 1198 90, 1198 65, 1190 48.5179, 1188.88 39.9344, 1188.9 0, 1189.57

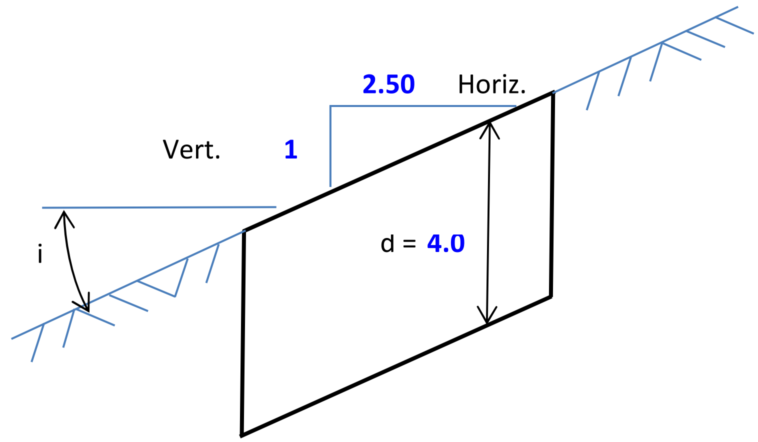
SOIL DESCRIPTION:

SOIL PROPERTIES: Terrace Deposits

Φ' =	**31.0**	Drained friction angle [degrees]
c' =	**130**	Drained cohesion [psf]
γ_t =	**120**	Total density [pcf]
γ_b =	**57.6**	Buoyant density [pcf]

SLOPE CONDITIONS: Steady-state seepage parallel to ground surface

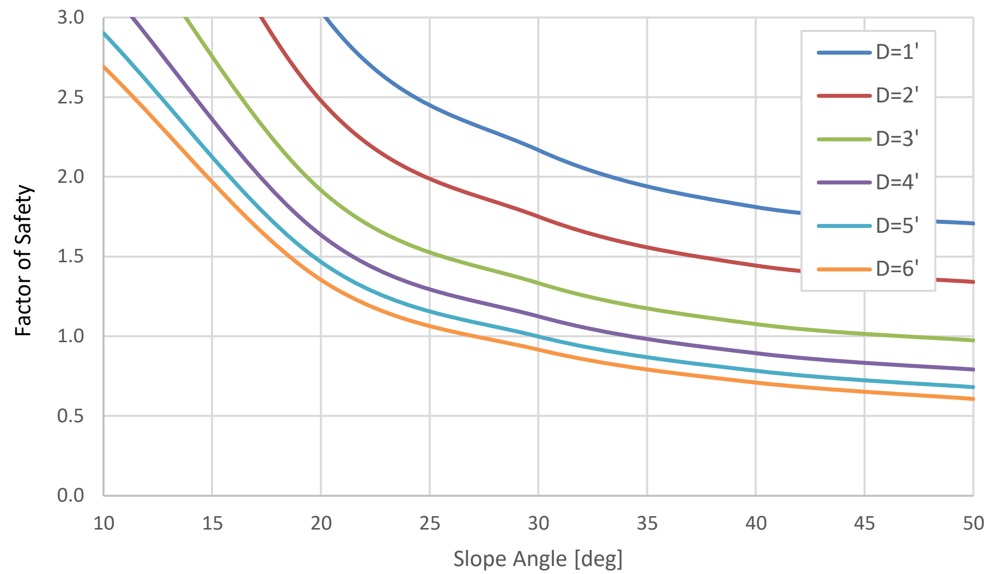
i =	**21.8**	Slope inclination [degrees]
d =	**4**	Depth of interest [feet]



CALCULATIONS:

$$FS = \frac{c' + \gamma_b\, d \cos^2(i) \tan(\Phi')}{\gamma_t\, d \sin(i) \cos(i)}$$

FS = 1.51



Reference: Lambe and Whitman, *Soil Mechanics* , John Wiley and Sons, Inc., 1969

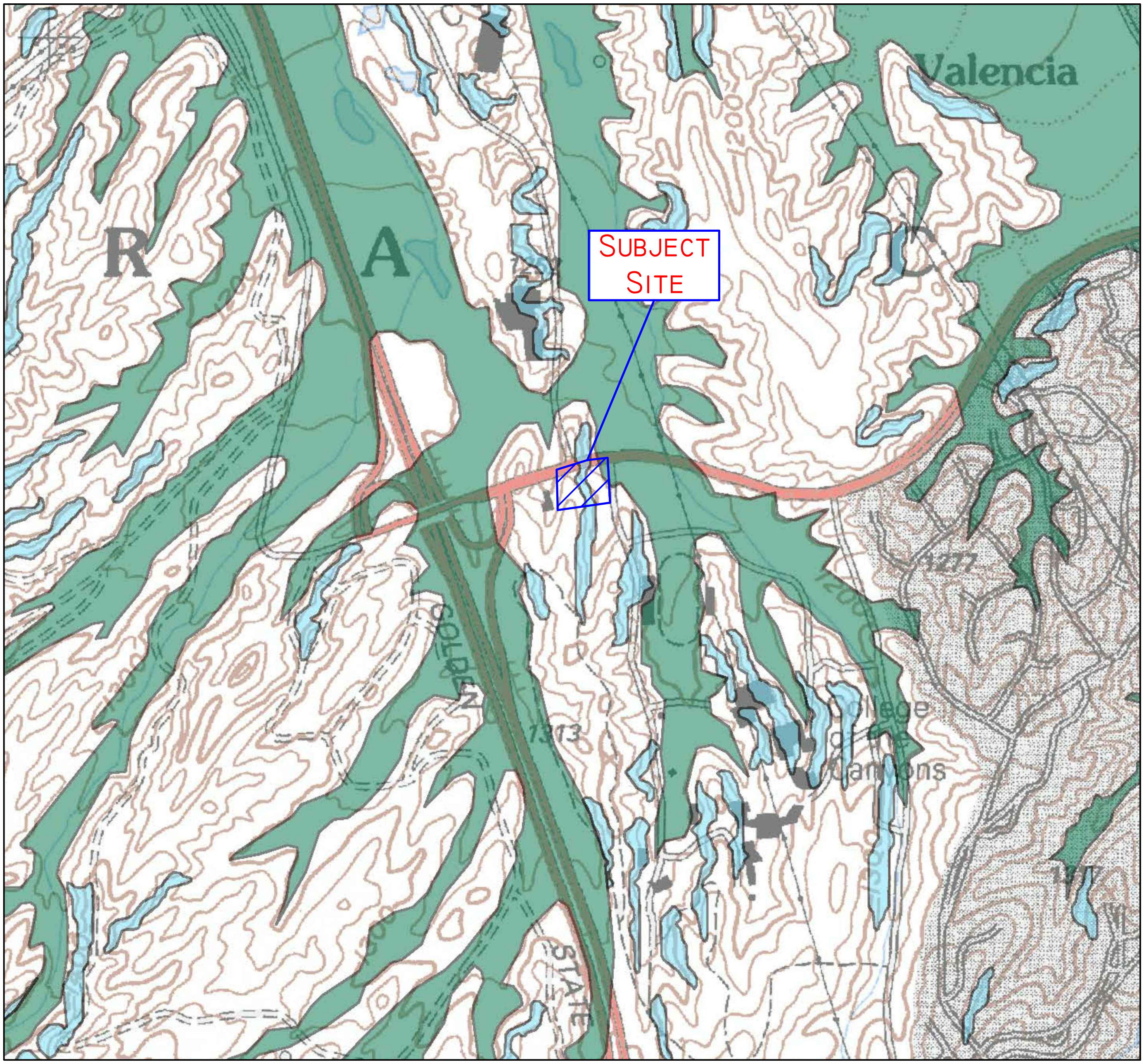
ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
Geological and Geotechnical Consultants

Infinite Slope Stability Analysis

Client:	Sahika Inc	Project No.:	22-2745-5
Project:	Fine Grading Plan for Access Road	Date:	6/8/2022
	College of the Canyons	Figure No:	C1

Appendix D

ALLAN E. SEWARD
ENGINEERING GEOLOGY



0 1000 FT

500 FT

APPROXIMATE SCALE

LEGEND

SEISMIC HAZARD ZONES

Liquefaction Zones
Areas where historical occurrence of liquefaction, or local geological, geotechnical and ground water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslide Zones
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

SOURCE; CALIFORNIA GEOLOGIC SURVEY EARTHQUAKE ZONES OF REQUIRED INVESTIGATION NEWHALL QUADRANGLE, EARTHQUAKE FAULT ZONES REVISED OFFICIAL MAP RELEASED JUNE 1, 1995, SEISMIC HAZARD ZONES OFFICIAL MAP RELEASED FEBRUARY 1, 1998

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ALLAN E. SEWARD
ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

EARTHQUAKE ZONES OF REQUIRED INVESTIGATION

JOB NO.: 22-2745-5

DATE: 6/8/22

FIGURE: D1

APPENDIX D

RECOMMENDED EARTHWORK SPECIFICATIONS

The following specifications are recommended to provide a basis for quality control during the placement of compacted fill or backfill, as applicable.

1. Areas on which compacted fill will be placed shall be observed by Allan E. Seward Engineering Geology, Inc. (AESEGI) prior to the placement of fill.

2. All drainage devices shall be properly installed and observed by AESEGI and/or the owner's representative(s) prior to placement of backfill.

3. Fill soils shall consist of imported soils or on-site soils which are free of organics, cobbles, and deleterious material, provided that each material is approved by AESEGI. AESEGI shall evaluate and/or test the import material for its conformance with the report recommendations prior to its delivery to the site. The contractor shall notify AESEGI at least 72 hours prior to importing material to the site

4. The thickness of the controlled lifts in which Fill is placed shall be compatible with the type of compaction equipment used. The fill materials shall be brought to Optimum Moisture Content or above, thoroughly mixed during spreading to obtain a near uniform water content and a uniform blend of materials, and then placed in lifts with a pre-compaction thickness not exceeding 8 inches. Each lift shall be compacted to the specified percentage of Maximum Dry Density determined in accordance with ASTM Test Method D1557. Density testing shall be performed by AESEGI to verify relative compaction. The contractor shall provide proper access and level areas for testing.

5. Rocks or rock fragments less than eight (8) inches in the largest dimension may be utilized in the fill, provided they are not placed in concentrated pockets. However, rocks larger than four (4) inches in dimension shall not be placed within three (3) ft of finish grade.

6. Rocks greater than eight (8) inches in largest dimension shall be taken offsite, or placed in areas designated by the Geotechnical Engineer to be suitable for rock disposal.

7. Where space limitations do not allow for conventional fill compaction operations, special backfill materials and procedures may be required. Pea gravel or other select fill can be used in areas of limited space. A sand and Portland Cement slurry (2 sacks per cubic-yard of slurry mix) shall be used in limited space areas for shallow backfill near final pad grade, and pea gravel shall be placed in deeper backfill near drainage systems.

8. AESEGI shall observe the placement of fill and conduct in-place field density tests on the compacted fill in order to check adequacy of in-situ water content and relative compaction. Where measured in-situ density of compacted fill soil is lower than the required relative

APPENDIX D

compaction, the soil shall be water-conditioned and recompacted until adequate relative compaction is achieved.

9. The Contractor shall achieve with the specified relative compaction out to the finish slope face of fill slopes, buttresses, and stabilization fills, as set forth in the specifications for compacted fill. This may be achieved either by overbuilding the slope and cutting back as necessary, by direct compaction of the slope face with suitable equipment, or by other procedures which produce the required result.

10. Any abandoned underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines, or others not discovered prior to grading are to be removed or treated to the satisfaction of the Geotechnical Engineer and/or the controlling agency for the project.

11. The Contractor shall have suitable and sufficient equipment during a particular operation to handle the volume of fill being placed. When necessary, fill placement equipment shall be shut down temporarily in order to permit proper compaction of fill, correction of deficient areas, or to facilitate required field testing.

12. The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications.

13. Final reports shall be submitted after completion of earthwork and after the Geotechnical Engineer and Engineering Geologist have finished their observations of the work. No additional excavation or filling shall be performed without prior notification to the Geotechnical Engineer and/or Engineering Geologist.

14. Whenever the words “supervision”, “inspection”, or “control” are used, they shall mean observation of the work and/or testing of the compacted fill by AESEGI to assess whether substantial compliance with plans, specifications and design concepts has been achieved. However, these words do not refer to direction by AESEGI of the actual work of the Contractor or the Contractor’s workers.

APPENDIX D

RECOMMENDED SPECIFICATIONS FOR PLACEMENT OF TRENCH BACKFILL

1. Trench excavations in which backfill will be placed shall be free of trash, debris or other deleterious materials prior to backfill placement, and shall be observed by a representative of Allan E. Seward Engineering Geology, Inc. (AESEGI).

2. Except as stipulated herein, soils obtained from the excavation may be used as backfill if they are free of organics and other deleterious materials.

3. Rocks generated by trench excavation operations that do not exceed three (3) inches in largest dimension may be used as trench backfill material. However, material larger than 3-inches in dimension may not be placed within 12 inches of the top of pipes. No more than 30 percent of the backfill volume shall contain particles larger than 1-½ inches in dimension, and particles larger than 1-½ inches in dimension shall be well mixed with finer soil.

4. Clean aggregates with a Sand Equivalent (SE) greater than or equal to 30 (as determined by ASTM Standard Test Method D2419) or other soils authorized by the Geotechnical Engineer or his representative in the field, may be used for bedding and shading material in pipe trenches.

5. Trench backfill other than bedding and shading shall be compacted by mechanical methods as tamping sheepsfoot, vibrating or pneumatic rollers, or other mechanical tampers to achieve the specified density. The backfill materials shall be brought to Optimum Moisture Content or above, thoroughly mixed during spreading to obtain a near uniform water content and uniform blend of materials, and then placed in horizontal lifts with a pre-compaction thickness not exceeding 8 inches. Trench backfills shall be compacted to the specified percentage of Maximum Dry Density determined in accordance with ASTM Test Method D1557.

6. The Contractor shall select the equipment and procedure for achieving the specified density without damage to the pipe, the adjacent ground, existing improvements, or completed work.

7. Observations and field tests shall be performed during construction by AESEGI to confirm that the required degree of compaction has been achieved. Where achieved compaction is less than that specified value, the water content shall be adjusted as necessary and additional compactive effort shall be made until the specified compaction is achieved. Field density tests may be omitted at the discretion of the Geotechnical Engineer or his representative in the field.

APPENDIX D

8. Whenever, in the opinion of AESEGI or the Owner's Representative(s), an unstable condition is being created either by cutting or filling, the work shall not proceed until an investigation has been made and the excavation plan has been revised, if deemed necessary.

9. Fill material shall not be placed, spread, or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by AESEGI indicate the water content and density of the fill materials and of the fill surface over which they are to be compacted satisfy the requirements of the specifications.

10. Whenever the words "supervision", "inspection", or "control" are used, they shall mean observation of the work and/or testing of the compacted fill by AESEGI to assess whether substantial compliance with plans, specifications and design concepts has been achieved.

APPENDIX D

DRAINAGE AND EROSION CONTROL RECOMMENDATIONS

Slopes and pads for this project shall be designed to direct surficial runoff away from structures and to reduce water-induced surficial erosion/sloughing. Permanent erosion control measures shall be initiated immediately following completion of grading. All constructed slopes will undergo some erosion when subjected to sustained water influx. To maintain appropriate long-term drainage and erosion control, the following points shall be incorporated in slope protection, landscaping, irrigation, and modifications to slopes, pads and structures:

1. All interceptor ditches, drainage terraces, down-drains and any other drainage devices shall be maintained and kept clear of debris. A qualified Engineer should review any proposed additions or revisions to these systems in order to evaluate their impact on slope erosion.

2. Retaining walls shall have adequate freeboard to provide a catchment area for minor slope erosion. Periodic inspection, and if necessary, cleanout of deposited soil and debris shall be performed, particularly during and after periods of rainfall.

3. The future developers shall be made aware of the **potential problems**, which may develop **when drainage is altered** by landscaping and/or by construction of retaining walls and paved walkways. Ponded water, water directed over slope faces, leaking irrigation systems, **over-watering,** or other conditions which could lead to excessive soil moisture, **must be avoided**.

4. Surficial slope soils may be subject to water-induced mass erosion. Therefore, a suitable proportion of slope planting shall have root systems which will extend well below three feet. We suggest consideration of drought-resistant shrubs and low trees for this purpose. Intervening areas can then be planted with lightweight surface plants with shallower root systems. All plants shall be lightweight and require low moisture. Any loose slough generated during planting of shrubs, trees, and other surface plants shall be removed from slope faces.

5. Construction delays, climate/weather conditions, and plant growth rates may necessitate additional short-term, non-plant erosion control measures such as matting, netting, plastic sheets, deep (5-ft) staking, etc.

6. Significant erosion can be initiated by seemingly insignificant events such as rodent burrowing, human trespass (footprints, etc.), small concentrations of uncontrolled surface/subsurface water, or poor compaction of utility trench backfill on slopes.

7. High and/or fluctuating water content in slope materials is a major factor in slope erosion

APPENDIX D

and/or slope failures. Therefore, all possible precautions shall be taken to maintain moderate and uniform soil moisture in soil and rock slopes. Slope irrigation systems shall be properly operated and maintained and irrigation system controls shall be placed under strict control.

EROSION CONTROL REFERENCES

1. "Slope Protection for Residential Developments", National Academy of Sciences, Washington D.C. (1969).

2. "Guide for Erosion and Debris Control in Hillside Areas", Department of Building and Safety, City of Los Angeles. (1970).

3. "Slope Stability Report", Orange County Department of Building and Safety (1973).

4. "Guides for Erosion and Sediment Control", Soil Conservation Service, Davis, California, U.S. Department of Agriculture (1977).

5. "Rain-Care and Protection of Hillside Homes", brochure undated, published by Building and Safety Division, Los Angeles County Engineer.

6. "Guidelines for Erosion and Sediment Control Planning and Implementation: Office of Research and Monitoring", U.S. Environmental Protection Agency (1972).

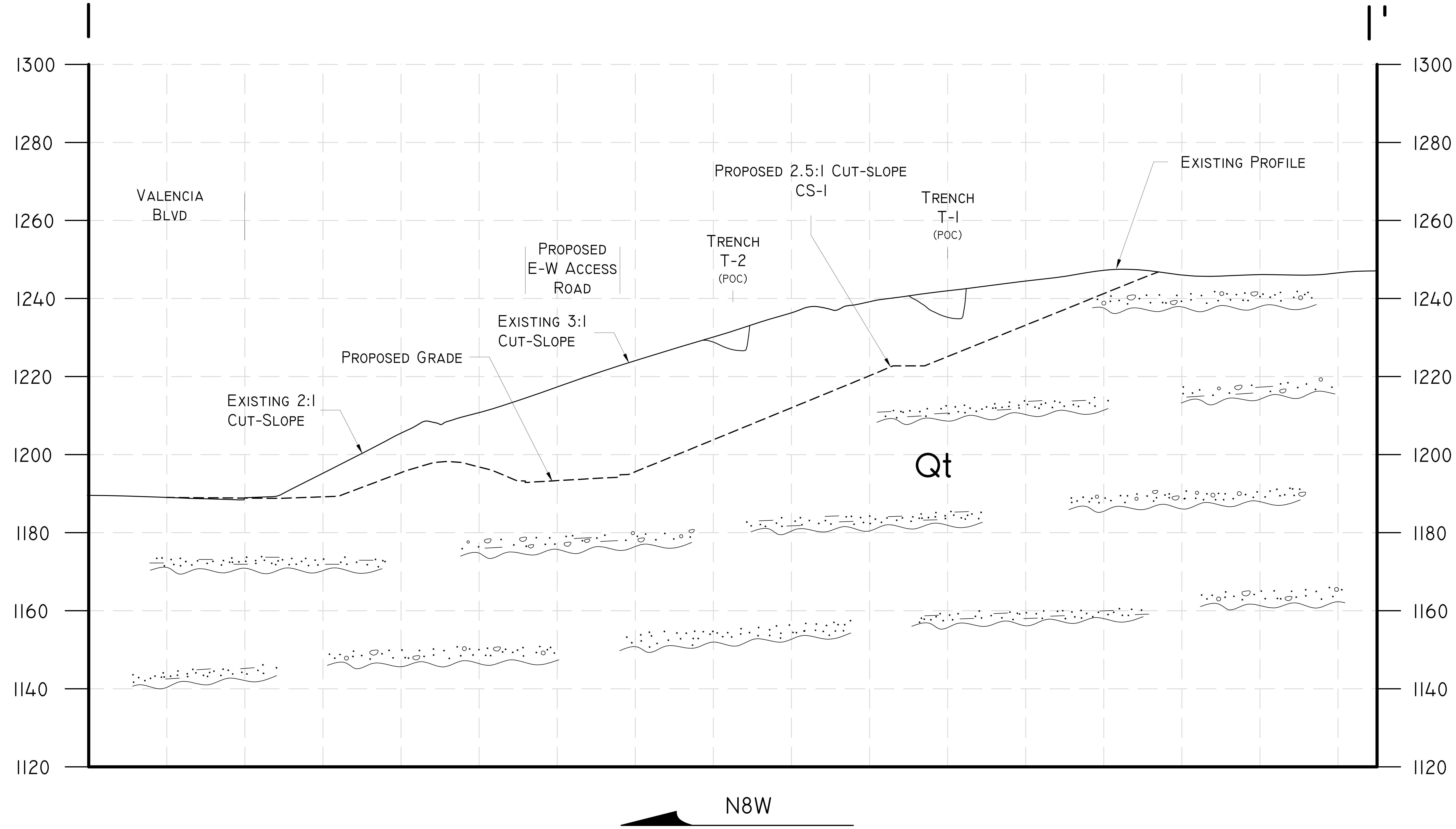
7. "Resource Conservation Glossary", Soil Conservation Society of America (1970).

8. "Standards and Specifications for Soil Erosion and Sediment Control Developing Areas", Soil Conservation Service, U.S. Department of Agriculture (1975).

9. "Homeowners Guide for Debris and Erosion Control", Los Angeles County Flood Control District (undated).

10. "Grading Guidelines (8 pages, stapled sheets)", Building and Safety Division, Department of County Engineer, County of Los Angeles (undated, but probably about 1977).

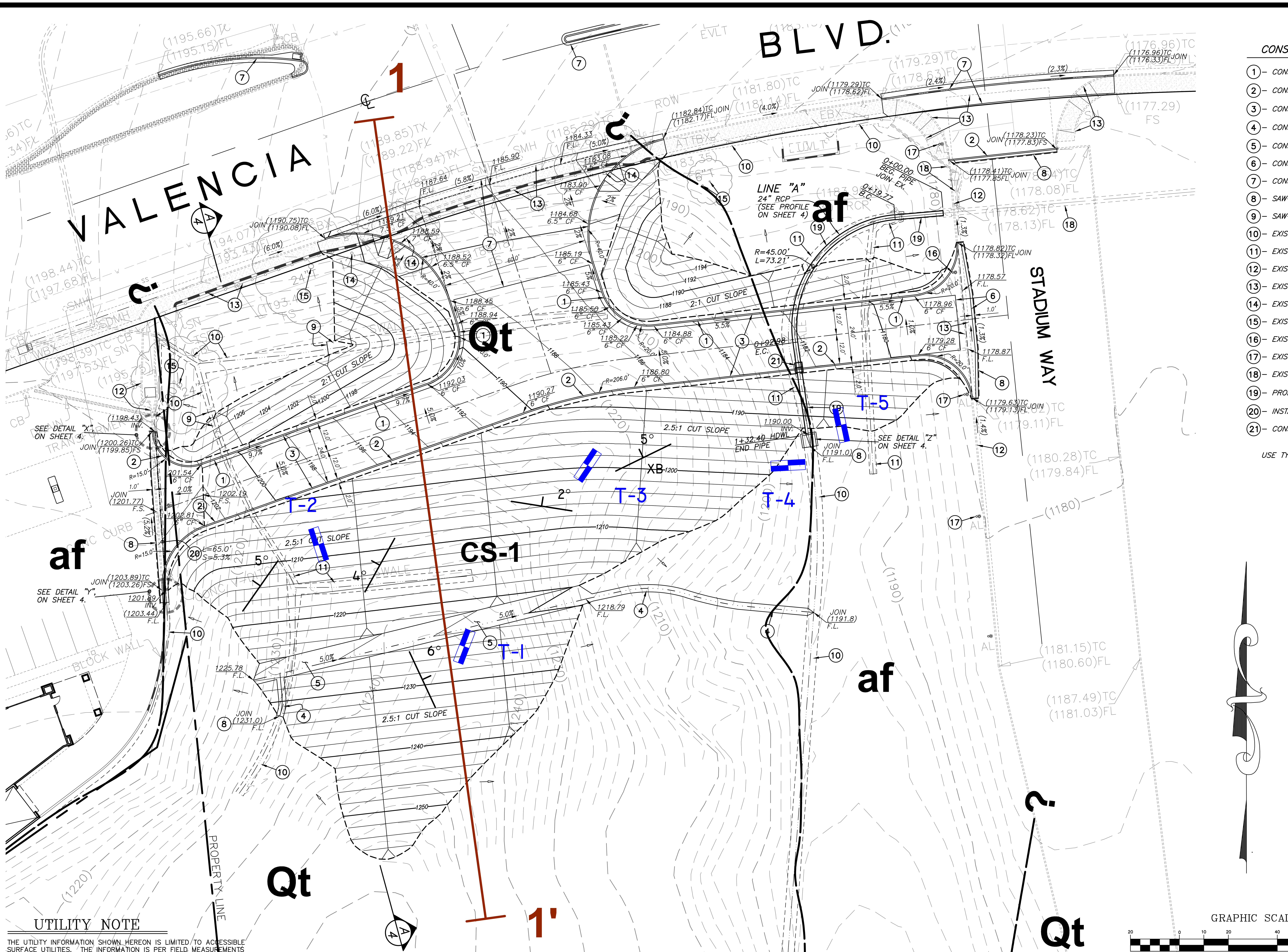
"Biotechnical Slope Protection and Erosion Control", Donald H. Gray and Andrew T. Leiser, Robert E. Krieger Publishing Company, Malabuv, Florida, 1989.



Allan E. Seward Engineering Geology, Inc.
Geological and Geotechnical Consultants

Cross Section 1-1'

Job No.: 22-2745-5	
Date: 6/8/22	Scale: 1"=20' (H=V)



CONSTRUCTION NOTES:

1 – CONSTRUCT 6" CONC. CURB AND
2 – CONSTRUCT 6" CONC. CURB PER
3 – CONSTRUCT 24' WIDE PRIVATE R
4 – CONS
5 – CONS
6 – CONS
7 – CONS
8 – SAW–
9 – SAW–
10 – EXIST
11 – EXIST
12 – EXIST
13 – EXIST
14 – EXIST
15 – EXIST
16 – EXIST
17 – EXIST
18 – EXIST
19 – PROP
20 – INSTA
21 – CONS

USE TYP

ALLAN E. SEWARD ENGINEERING GEOLOGY, INC.
Geological And Geotechnical Consultants

Geotechnical Map

DATE: 6/8/22	JOB NO.: 22-2745-5
SCALE: 1" = 20'	FILE: AES_06.08.22_GEOTECHNICAL MAP
PLATE I	GEOLOGY BY: VCG; DRAWN BY: VCG; REVISED:

GRA22-00000

LEGEND

af	Artificial Fill
Qt	Terrace Deposits
	Geologic Contact; Dotted where concealed
T-5	Location of Exploratory Trench Excavation
6°	Strike and Dip of Bedding
6° XB	Strike and Dip of Cross Bedding
1 1'	Geologic Cross Section
CS-1	Cut-Slope Designation

UTILITY NOTE

THE UTILITY INFORMATION SHOWN HEREON IS LIMITED TO ACCESSIBLE SURFACE UTILITIES. THE INFORMATION IS PER FIELD MEASUREMENTS AND AVAILABLE RECORDS ONLY. NO LIABILITY IS ASSUMED OR INFERRED BY CRC ENTERPRISES INC. AS TO THE EXISTENCE OF ANY UNDERGROUND, OR INACCESSIBLE UTILITY STRUCTURES.

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

CITY OF SANTA CLARITA
APPROVED
FOR
GRADING AND DRAINAGE
UNDER TITLE 17
UNIFIED DEVELOPMENT CODE

BY: ______

DATE: ______

THIS SET OF PLANS AND SPECIFICATION MUST BE KEPT ON THE JOB AT ALL TIMES. IT IS UNLAWFUL TO MAKE ANY CHANGES OR ALTERNATIONS ON SAME WITHOUT WRITTEN PERMISSION FROM THE ENGINEERING SERVICES DIVISION.

THE STAMPING OF THESE PLANS AND SPECIFICATIONS SHALL NOT BE USED AS A SUBSTITUTE FOR PERMIT OR MEANS AS AN APPROVAL OF ANY VIOLATION OF THE PROVISIONS OF ANY CITY OR COUNTRY ORDINANCE OR STATE LAW.

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XXX DATE

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RON KOESTER RCE # 42399 31 MAY 2022 DATE

REGISTERED PROFESSIONAL ENGINEER
RONALD N. KOESTER
NO. 42399
CIVIL
STATE OF CALIFORNIA

NO.	REVISION	REVISED BY (SIGNATURE/PRINT NAME & NUMBER)	CITY APPROVALS	APPROVAL DATE
1				

CITY OF SANTA CLARITA
GRADING PLAN
FINE GRADING PLAN

SCALE:	1"=20'
DATE:	05/31/22
JOB NO.	3547
CASE NO:	GRA22-00000
SHEET:	3 OF 4