Appendix 1

Project Development Plans

MONTE VISTA RANCH II

WILDOMAR, CA

Monte Vista Ranch II, LLC

06/14/2021

Kevin L. Crook Architect Inc #20073
PLANNING + ARCHITECTURE

A-1	601 - (6 - PLEX) First Floor Plan
A-2	601 - (6 - PLEX) Second Floor Plan
A-3	601 - (6 - PLEX) Colonial Revival Elevation (Front/Rear)
A-4	601 - (6 - PLEX) Colonial Revival Elevation (Left/Right)
A-5	601 - (6 - PLEX) Roof Plan
A-6	Color Boards - Colonial Revival
A-7	Written Color Schemes
L-1	Conceptual Site Plan
L-2	Enlargement Plan
L-3	Concept Planting Plan
L-4	Concept Planting Plan
L-5	Concept Planting Plan
L-6	Hydrozone Plan
L-7	Conceptual Wall & Fence Plan
C-1	Site Plan & Conceptual Grading for TTM No.38155
C-2	Site Plan & Conceptual Grading for TTM No.38155
C-3	Easement Exhibit Tentative Tract Map No.38155
C-4	Condominium Tract Map No.38155
C-5	Condominium Tract Map No.38155

Monte Vista Ranch II, LLC

Developer:
Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220 | Newport
Beach, CA | 92660

Contact: Erik W. Lunde
Business: 916-746-8539
ErikLunde@msn.com

Kevin L. Crook Architect Inc
PLANNING + ARCHITECTURE

Architect:
Kevin L. Crook Architect, Inc.
1360 Reynolds Ave. Suite 110
Irvine, Ca 92614

Contact: Jeff Addison
Business: (949) 660-1587
jaddison@klcarch.com

bmla
LANDSCAPE ARCHITECTURE

Landscape Architect:
BMLA
1310 North Joy Street
Corona, CA 92879

Contact: Steve Shirrel
Business: (951)737-1124 x.116
steve@bmla.net

K&A Engineering Land Planning Surveying

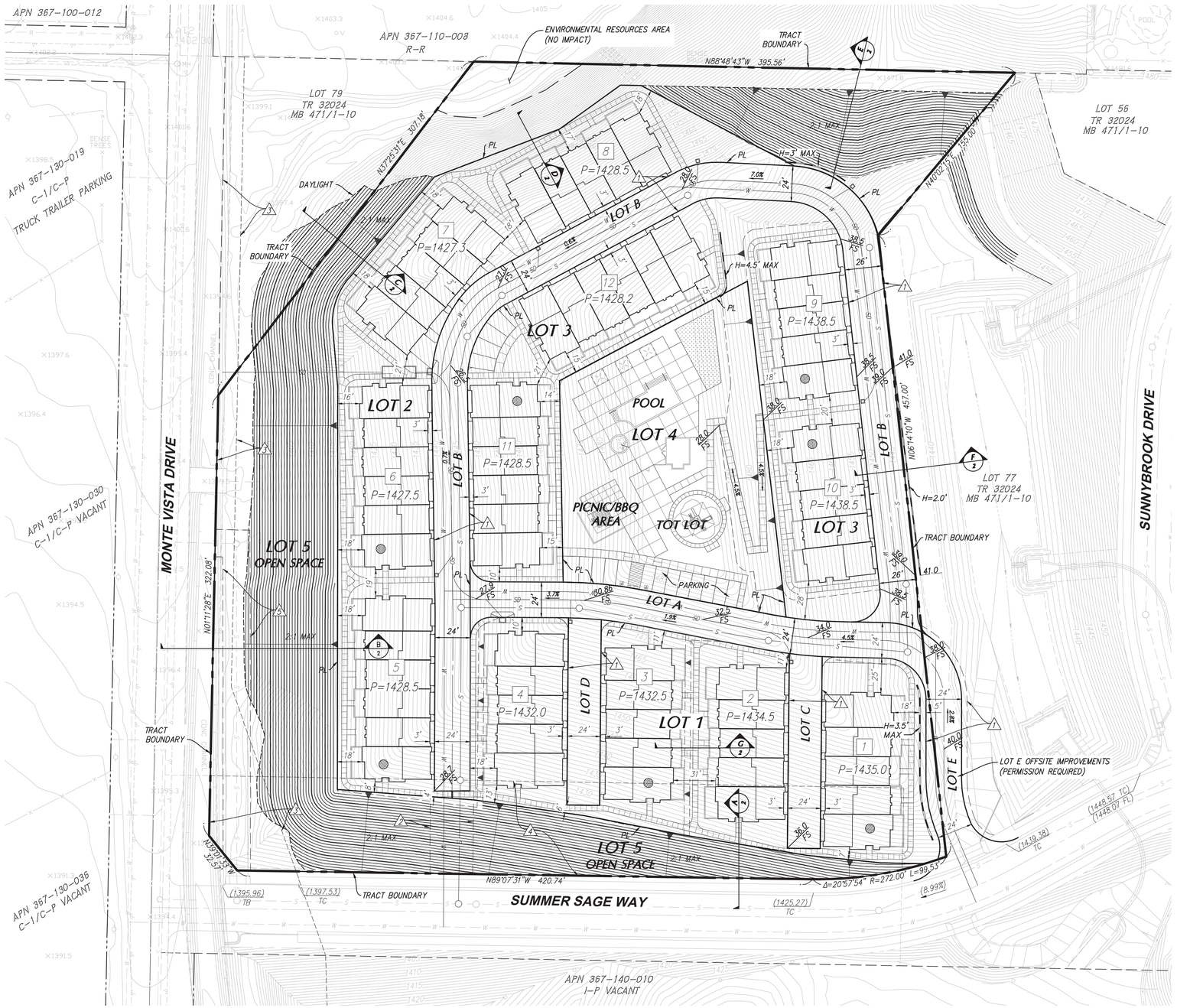
Civil Engineer:
K&A Engineering, Inc.
357 N. Sheridan Street, Suite 117
Corona, CA 92878

Contact: Justin Sakakura
Business: (951) 279-1800 ext. 119
JustinS@kaengineering.com

CITY OF WILDOMAR

SITE PLAN & CONCEPTUAL GRADING FOR TTM NO. 38155

COUNTY OF RIVERSIDE, STATE OF CALIFORNIA



SCALE: 1"=40'

0 40 80 120 160

ENGINEER

K&A ENGINEERING, INC
357 N. SHERIDAN STREET, SUITE 117
CORONA, CA 92878
PHONE: (951) 279-1800

OWNER / APPLICANT

MONTE VISTA RANCH II, LLC
1200 QUAIL STREET, SUITE 220
NEWPORT BEACH, CA 92660
EMAIL: ERIKWLUNDE@GMAIL.COM
PHONE: (714)318-3500

LEGAL DESCRIPTION

IN THE CITY OF WILDOMAR, COUNTY OF SAN RIVERSIDE, STATE OF CALIFORNIA, BEING A SUBDIVISION OF NUMBERED LOT 71 OF TRACT MAP NO. 32024 AS SHOWN ON A MAP FILED IN BOOK 471, PAGES 1 TITHROUGH 10 TRACT MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

UTILITIES

	AGENCY SERVING THE AREA	FACILITIES PRESENT
SEWER:	ELSINORE VALLEY MUNICIPAL WATER DISTRICT	YES
WATER:	ELSINORE VALLEY MUNICIPAL WATER DISTRICT	YES
GAS:	SOUTHERN CALIFORNIA GAS COMPANY	YES
ELECTRIC:	SOUTHERN CALIFORNIA EDISON	YES
TELEPHONE:	PACIFIC BELL	YES
CABLE TV:	NONE	NO
SCHOOL DISTRICT:	LAKE ELSINORE UNIFIED SCHOOL DISTRICT	--

PROJECT INFORMATION

THOMAS BROS. MAP (2002):	PAGE 897,GRID D4
PROPOSED USE:	RESIDENTIAL
EXISTING ZONING:	C-O (COMMERCIAL OFFICE)
EXISTING GENERAL PLAN DESIGNATIONS:	BP (BUSINESS PARK)
PROPOSED ZONING:	R-3 (GENERAL RESIDENTIAL)
PROPOSED GENERAL PLAN DESIGNATIONS:	HDR (HIGH DENSITY RESIDENTIAL)
GROSS ACREAGE:	6.47 ACRES
BUILDINGS ACREAGE:	1.64 ACRES
RESIDENTIAL LOTS ACREAGE (LOT 1-3)	3.04 ACRES
TOTAL NUMBERED LOTS:	5 LOTS
TOTAL LETTERED LOTS:	5 LOTS
TOTAL GROSS DENSITY:	0.46 DU/ACRE

ASSESSOR'S PARCEL NUMBER

367-502-002

GENERAL NOTES

1. ALL SLOPES ARE TO BE 2:1 UNLESS INDICATED OTHERWISE.
2. THERE ARE NO EXISTING STRUCTURES ON THE PROPERTY.
3. THIS PROJECT INCLUDES THE ENTIRE CONTIGUOUS OWNERSHIP OF THE LAND DIVIDER.
4. THIS PROJECT IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARDS.
5. THIS PROJECT HAS NO SUBSURFACE SEPTIC DISPOSAL.
6. THIS PROJECT IS NOT SUBJECT TO LIQUEFATION GEOLOGIC HAZARDS: ALQUIST-PRIOLO OR SPECIAL STUDIES ZONE.
7. THIS PROJECT IS NOT WITHIN A CSD.
8. THIS PROJECT IS IN FLOOD ZONE "C", SANTA MARGARITA WATERSHED DRAINAGE AREA.
9. THIS PROJECT HAS NO TRANSMISSION LINES.
10. THERE ARE NO KNOWN EXISTING WELLS ON SITE OR WITHIN 200 FEET OF PROPERTY.
11. THERE ARE NO DESIGNATED MOBILE HOME OR R.V. PARKING FACILITIES PROPOSED FOR THIS PROJECT.

EXISTING EASEMENT NOTES

3 INDICATES AN EXISTING EASEMENT IN FAVOR OF THE CITY OF WILDOMAR, FOR DRAINAGE AND INCIDENTAL PURPOSES, RECORDED JUNE 5, 1979 AS INSTRUMENT NO. 114593, O.R. (TO REMAIN)

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5 INDICATES AN EXISTING EASEMENT IN FAVOR OF ELSINORE VALLEY MUNICIPAL WATER DISTRICT, FOR SEWER AND INCIDENTAL PURPOSES, RECORDED JULY 8, 2019, AS INSTRUMENT NO. 2019-0248558, O.R. (TO REMAIN)

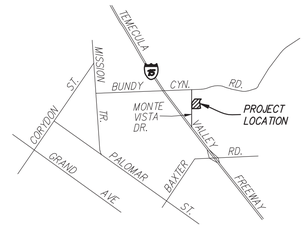
PROPOSED EASEMENT NOTES

1 EASEMENT FOR ACCESS, PUBLIC UTILITY, AND DRAINAGE PURPOSES

2 EASEMENT FOR PUBLIC UTILITY PURPOSES

LEGEND:

PARCEL BOUNDARY
PROPOSED EASEMENT
EXISTING EASEMENT
PROPOSED CONTOUR 1400
EXISTING CONTOUR 1400
LOT NUMBER LOT 1
ADA UNITS
BUILDING NUMBER 1



VICINITY MAP

N.T.S.

DATE: JUNE 1, 2021

REVISIONS			
DESCRIPTION	APD	REV	DATE

AERIAL PHOTOGRAPHY BY:
ARROWHEAD MAPPING CO.
673 S. COOLEY DRIVE
SUITE 102
COLTON, CA 92324
(909) 887-5969

K&A Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

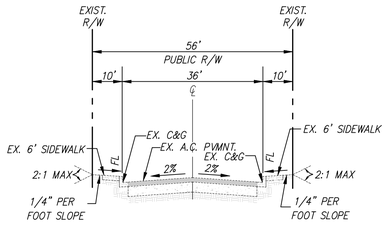
CITY OF WILDOMAR
COUNTY OF RIVERSIDE

PLOT PLAN FOR
TENTATIVE TRACT MAP NO. 38155
SCHEDULE "A"

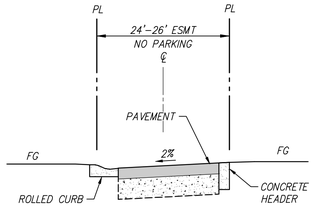
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Checked By: JS
Scale:

SHEET 1 OF 2 SHEETS

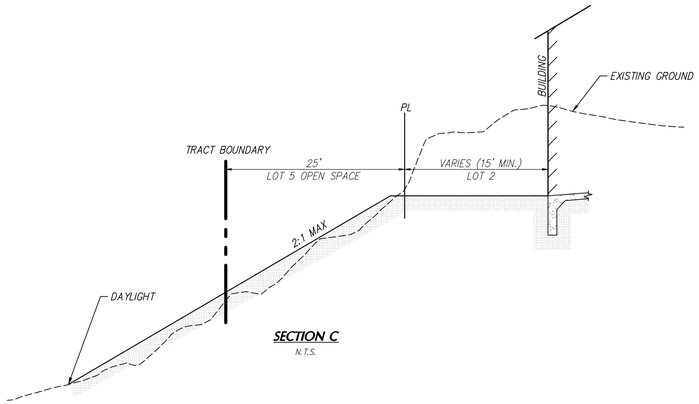
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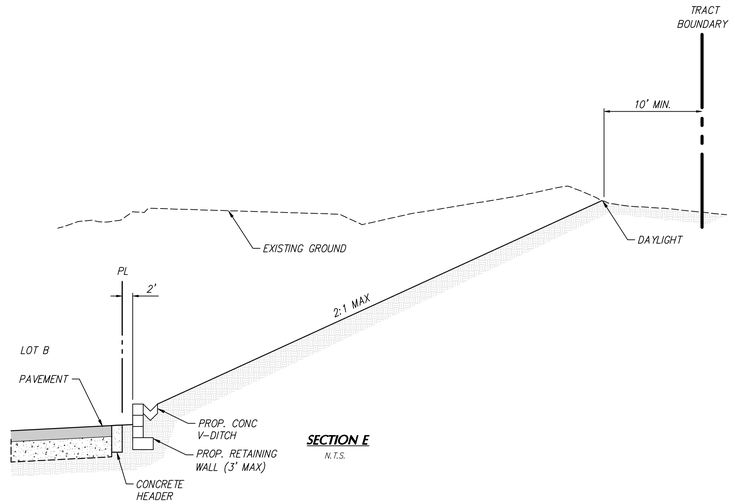
EXISTING SUMMER SAGE WAY
N.T.S.



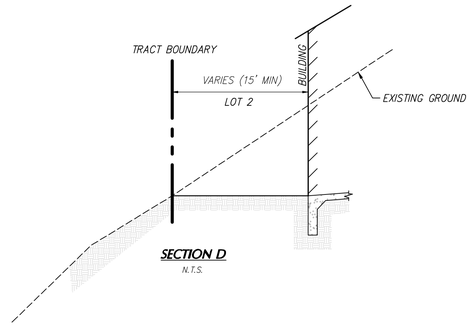
ALL PRIVATE DRIVES
N.T.S.



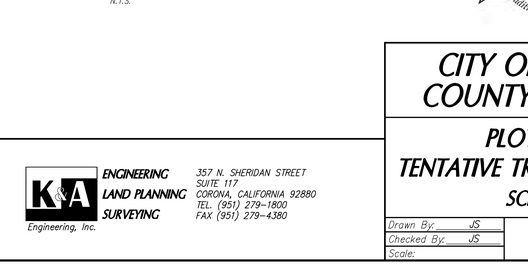
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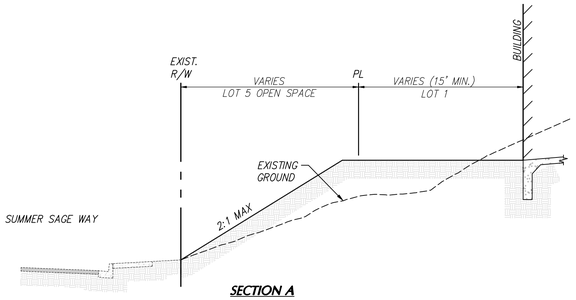
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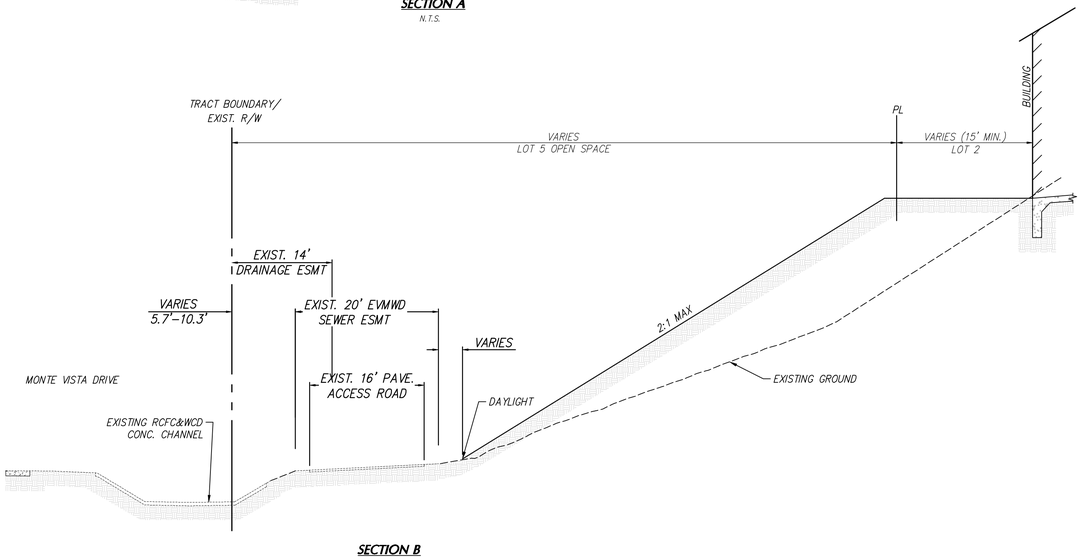
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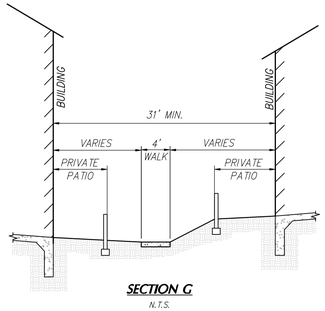
SECTION F
N.T.S.



SECTION A
N.T.S.



SECTION B
N.T.S.



SECTION G
N.T.S.

REVISIONS			
DESCRIPTION	APD	REV	DATE

AERIAL PHOTOGRAPHY BY:
ARROWHEAD MAPPING CO.
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(909) 887-5969

K&A Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
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CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

CITY OF WILDOMAR
COUNTY OF RIVERSIDE

PLOT PLAN FOR TENTATIVE TRACT MAP NO. 38155

SCHEDULE "A"

Drawn By: JS
Checked By: JS
Scale:

SHEET 2 OF 2 SHEETS

Drawing: R:\453915\Preliminary\Conceptual Grading Plan\915 - TTM 38155 - CGP - 002.dwg Layout: SHEET 2 - 24x36 L Saved: 6/4/2021 11:25 AM Plotted: 6/4/2021 11:26 AM By: Drone

CITY OF WILDOMAR

CONDOMINIUM TRACT MAP NO. 38155

COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

BEING A PORTION OF SEC. 26, T6S, R4W, S.B.M.

LEGAL DESCRIPTION

IN THE CITY OF WILDOMAR, COUNTY OF SAN RIVERSIDE, STATE OF CALIFORNIA, BEING A SUBDIVISION OF NUMBERED LOT 71 OF TRACT MAP NO. 32024 AS SHOWN ON A MAP FILED IN BOOK 471, PAGES 1 THROUGH 10 TRACT MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

UTILITIES

	AGENCY SERVING THE AREA	FACILITIES PRESENT
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WATER:	ELSINORE VALLEY MUNICIPAL WATER DISTRICT	YES
GAS:	SOUTHERN CALIFORNIA GAS COMPANY	YES
ELECTRIC:	SOUTHERN CALIFORNIA EDISON	YES
TELEPHONE:	PACIFIC BELL	YES
CABLE TV:	NONE	NO
SCHOOL DISTRICT:	LAKE ELSINORE UNIFIED SCHOOL DISTRICT	---

PROJECT INFORMATION

THOMAS BROS. MAP (2002):	PAGE 897,GRID D4
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EXISTING ZONING:	C-O (COMMERCIAL OFFICE)
EXISTING GENERAL PLAN DESIGNATIONS:	BP (BUSINESS PARK)
PROPOSED ZONING:	R-3 (GENERAL RESIDENTIAL)
PROPOSED GENERAL PLAN DESIGNATIONS:	HDR (HIGH DENSITY RESIDENTIAL)
GROSS ACREAGE:	6.47 ACRES
NET ACREAGE:	6.47 ACRES
TOTAL NUMBERED LOTS:	5 LOTS
TOTAL LETTERED LOTS:	5 LOTS
TOTAL GROSS DENSITY:	0.46 DU/ACRE

LEGEND:

PARCEL BOUNDARY
PROPOSED EASEMENT
EXISTING EASEMENT
PROPOSED CONTOUR
EXISTING CONTOUR
LOT NUMBER

1400
1400

LOT 1

ASSESSOR'S PARCEL NUMBER

367-502-002

GENERAL NOTES

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4. THIS PROJECT IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARDS.
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PROPOSED EASEMENT NOTES

1 EASEMENT FOR ACCESS, PUBLIC UTILITY, AND DRAINAGE PURPOSES

2 EASEMENT FOR PUBLIC UTILITY PURPOSES

EARTHWORK QUANTITY ESTIMATE

50,000 CY CUT (RAW)
50,000 CY FILL (RAW)

COMMON AREA MAINTENANCE

ALL COMMON AREAS AND SLOPES SHALL BE MAINTAINED BY HOA

HAZARDOUS FIRE AREA

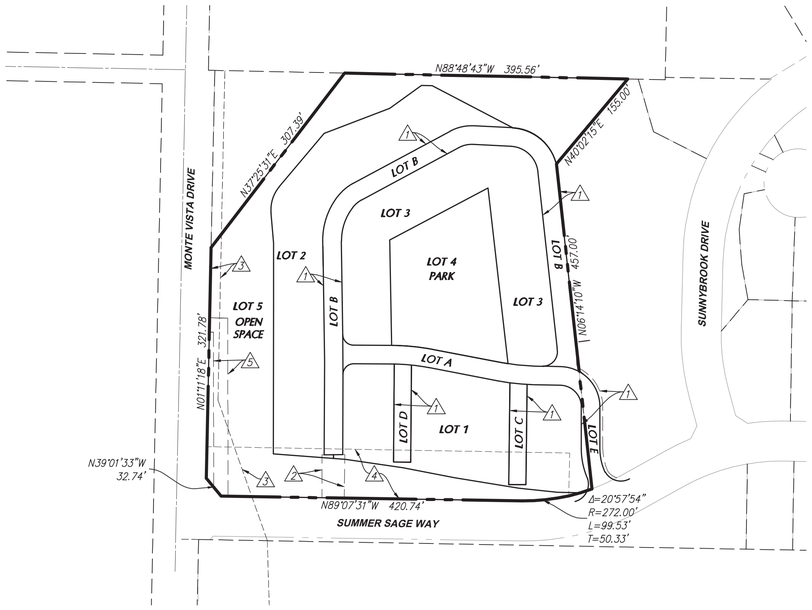
THIS PROJECT IS IN A VERY HIGH FIRE HAZARD SEVERITY ZONE

ENGINEER

K&A ENGINEERING, INC
357 N. SHERIDAN STREET, SUITE 117
CORONA, CA 92878
PHONE: (951) 279-1800

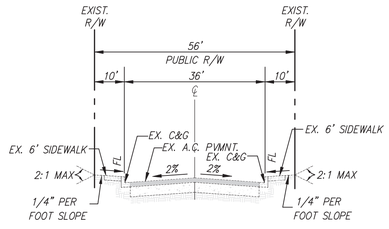
OWNER / APPLICANT

MONTE VISTA RANCH II, LLC
1200 QUAIL STREET, SUITE 220
NEWPORT BEACH, CA 92660
EMAIL: ERIKWLUNDE@GMAIL.COM
PHONE: (714)318-3500

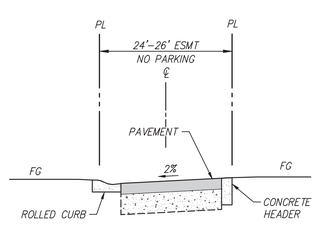


INDEX MAP

1" = 100'

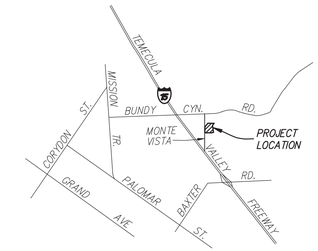


SUMMER SAGE WAY & SUNNYBROOK DRIVE
N.T.S.

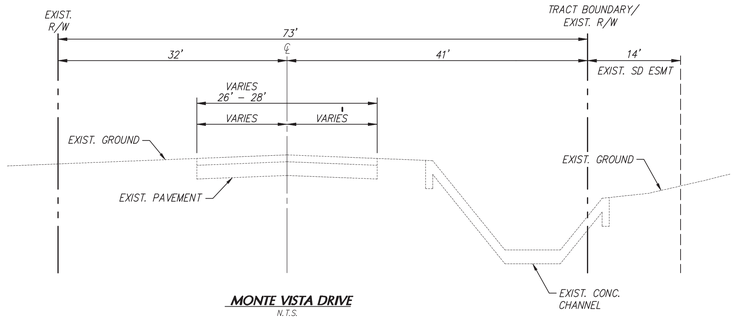


ALL PRIVATE DRIVES
N.T.S.

LOT AREA TABLE	
NO.	AREA (SQUARE FEET)
LOT A	10,555
LOT B	24,634
LOT C	3,385
LOT D	3,272
LOT E	3,164
LOT 1	41,763
LOT 2	45,450
LOT 3	45,411
LOT 4	29,518
LOT 5	77,843



VICINITY MAP
N.T.S.



MONTE VISTA DRIVE
N.T.S.

SCALE: 1"=100'
0 100 200 300

DATE: JUNE 1, 2021

CITY OF WILDOMAR COUNTY OF RIVERSIDE

TENTATIVE TRACT MAP NO. 38155 SCHEDULE "A"

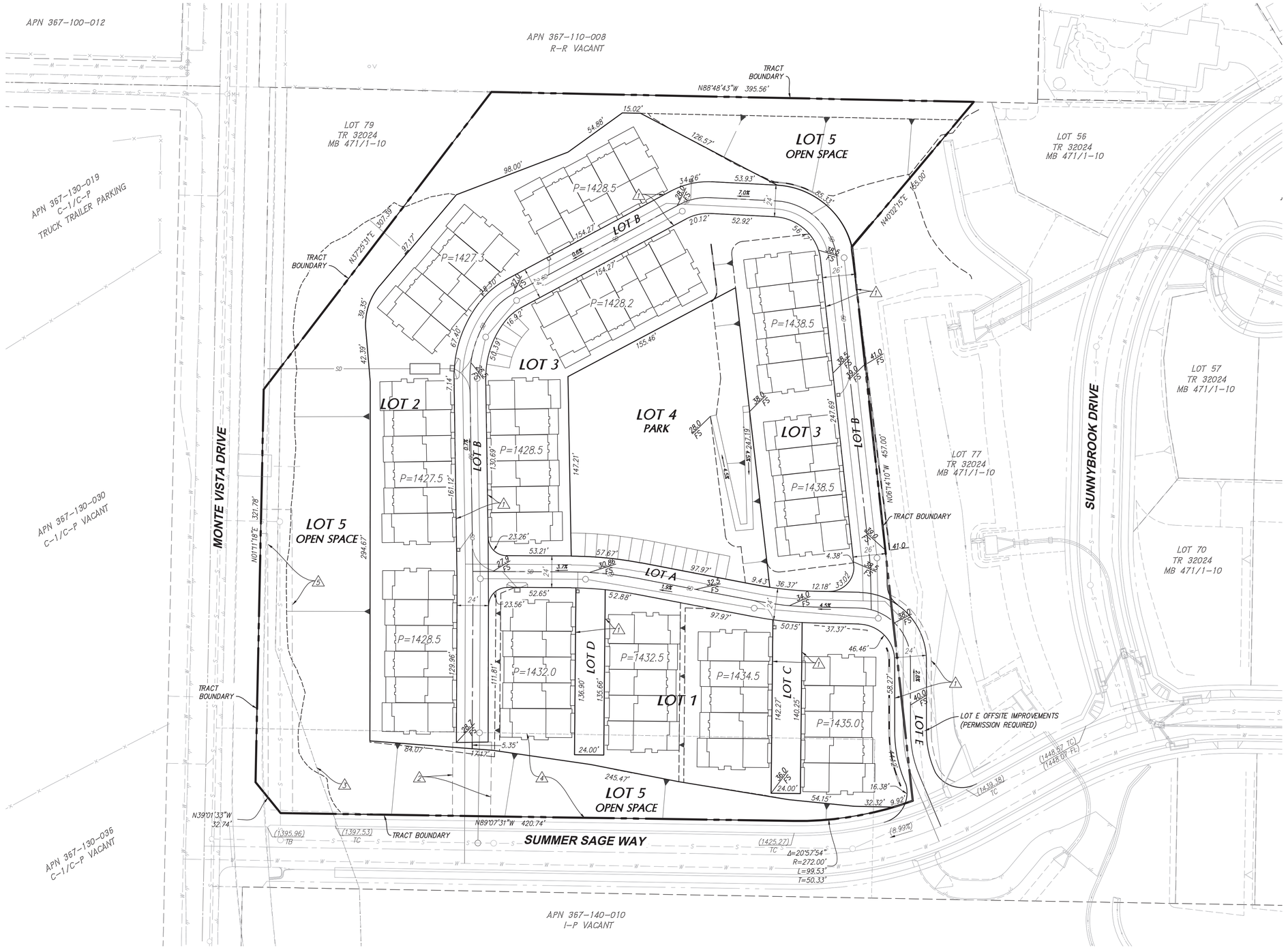
REVISIONS			
DESCRIPTION	APD	REV	DATE

AERIAL PHOTOGRAPHY BY:
ARROWHEAD MAPPING CO.
673 S. COOLEY DRIVE
SUITE 102
COLTON, CA 92324
(909) 887-5969

K&A Engineering, Inc.
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LAND PLANNING
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357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

Drawn By: BM/BB		SHEET 1
Checked By: BB/JS/AF		OF 2 SHEETS
Scale:		

Drawing: R:\453915\Preliminary\Tentative Tract Map\1915 - TTM 38155 - 01.dwg Layout: SHEET 1 - 24x36 L Saved: 6/4/2021 11:25 AM Plotted: 6/4/2021 11:27 AM By: Drone



REVISIONS			
DESCRIPTION	APD	REV	DATE

AERIAL PHOTOGRAPHY BY:
ARROWHEAD MAPPING CO.
673 S. COOLEY DRIVE
SUITE 102
COLTON, CA 92324
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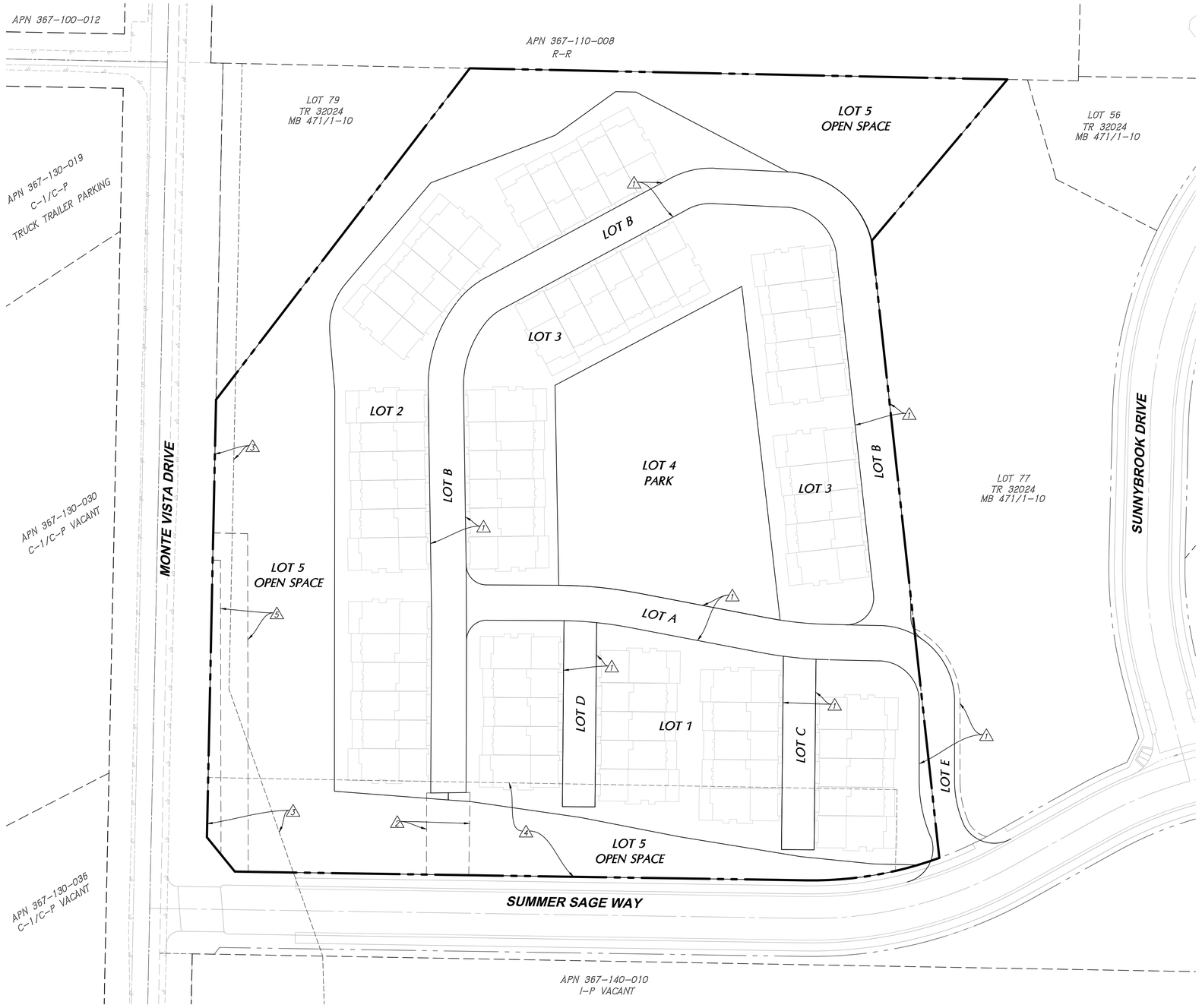
K&A Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

CITY OF WILDOMAR
COUNTY OF RIVERSIDE

TENTATIVE TRACT MAP NO. 38155
SCHEDULE "A"

Drawn By: BM/BB		
Checked By: BB/JS/AF		SHEET 2 OF 2 SHEETS
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PROPOSED EASEMENT NOTES

1. EASEMENT FOR ACCESS, PUBLIC UTILITY, AND DRAINAGE PURPOSES
2. EASEMENT FOR PUBLIC UTILITY PURPOSES

EXISTING EASEMENT NOTES

3. INDICATES AN EXISTING EASEMENT IN FAVOR OF THE CITY OF WILDOMAR, FOR DRAINAGE AND INCIDENTAL PURPOSES, RECORDED JUNE 5, 1979 AS INSTRUMENT NO. 114593, O.R. (TO REMAIN)
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N

SCALE: 1"=40'

0 40 80 120 160

DATE: JUNE 1, 2021

REVISIONS			
DESCRIPTION	APD	REV	DATE

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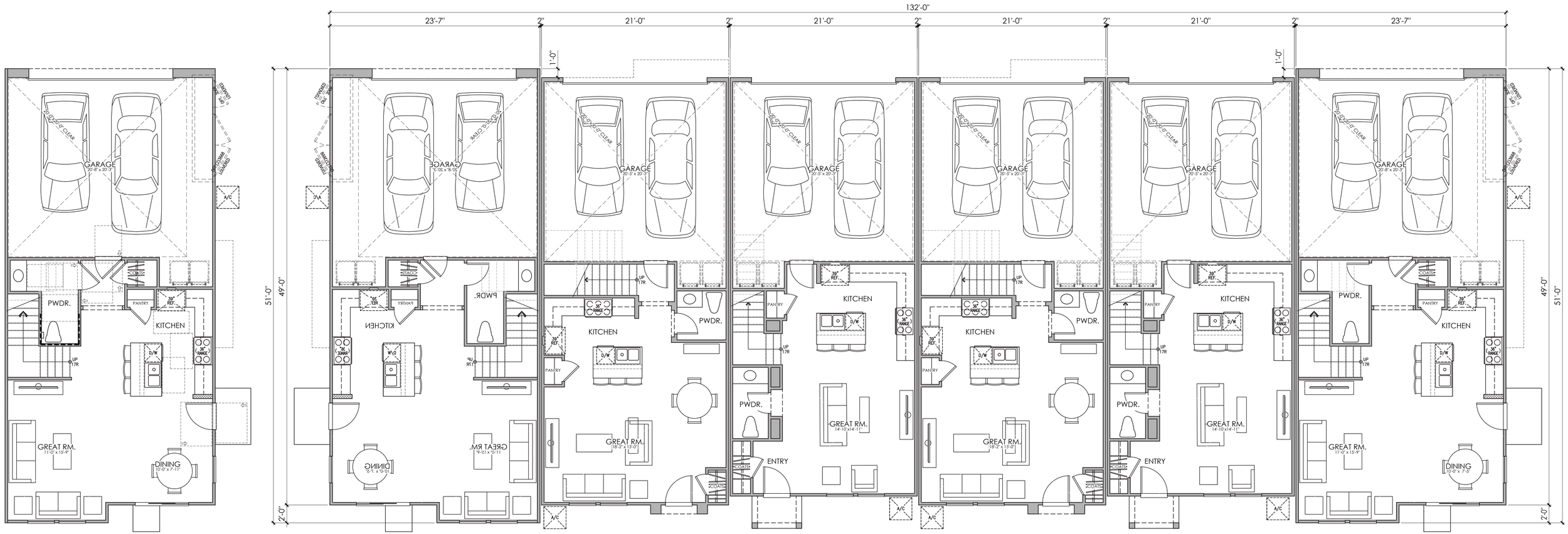
CITY OF WILDOMAR
COUNTY OF RIVERSIDE

EASEMENT EXHIBIT
TENTATIVE TRACT MAP NO. 38155
SCHEDULE "A"

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Checked By:	BB/JS/AF
Scale:	

SHEET OF SHEETS

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PLAN 3 - ADAPTABLE
1,726 S.F.
4 BEDROOM, 2.5 BATH

PLAN 3
1,726 S.F.
4 BEDROOM, 2.5 BATH

PLAN 2
1,459 S.F.
3 BEDROOM, 2.5 BATH

PLAN 1
1,406S.F.
3 BEDROOM, 2.5 BATH

PLAN 2
1,459 S.F.
3 BEDROOM, 2.5 BATH

PLAN 1
1,406 S.F.
3 BEDROOM, 2.5 BATH

PLAN 3
1,726 S.F.
4 BEDROOM, 2.5 BATH

OCCUPANCY: R3 TOWNHOME/U
SPRINKLER SYSTEM: NFPA 13D
CONSTRUCTION: VB

0 2 4 8 12

FIRST FLOOR PLAN

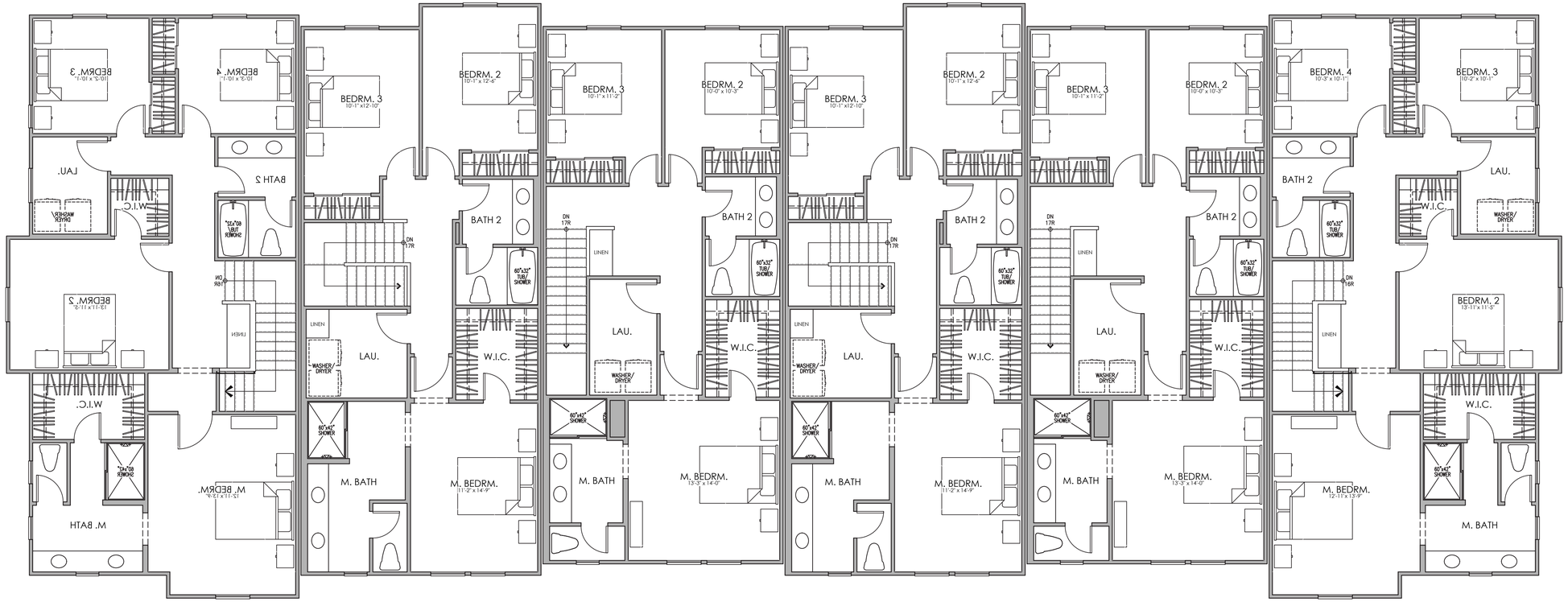
BUILDING - 601 (6-PLEX)

Monte Vista Ranch II, LLC

MONTE VISTA RANCH II
WILDOMAR, CA

06/14/2021
A-1

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PLAN 3R | PLAN 2 | PLAN 1 | PLAN 2 | PLAN 1 | PLAN 3

SECOND FLOOR PLAN

BUILDING - 601 (6-PLEX)

OCCUPANCY: R3 TOWNHOME/U
SPRINKLER SYSTEM: NFPA 13D
CONSTRUCTION: VB

0 2 4 8 12

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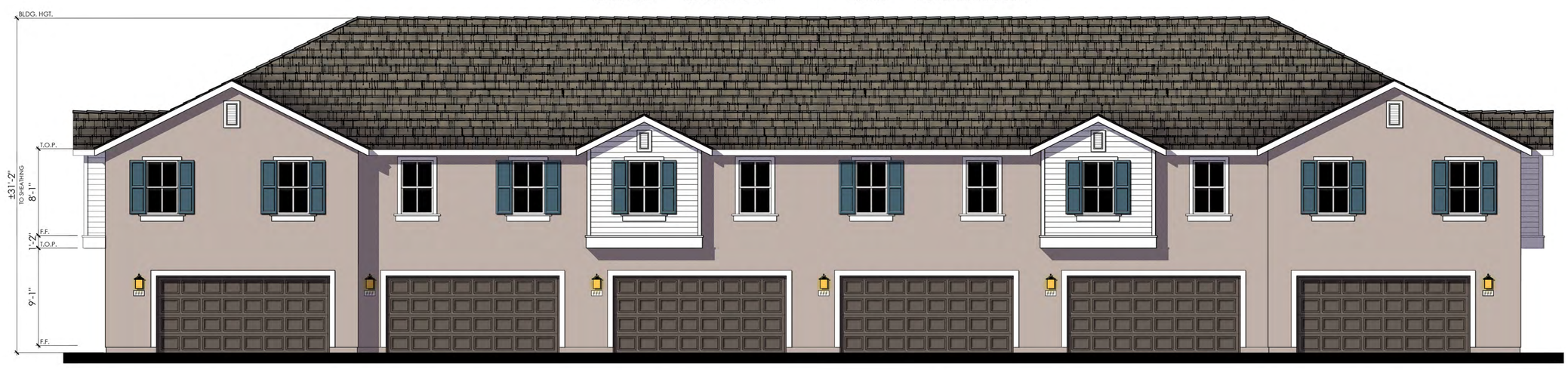
Refer to landscape drawings for wall, tree, and shrub locations

PLAN 3R | PLAN 2 | PLAN 1 | PLAN 2 | PLAN 1 | PLAN 3

FRONT

MATERIALS LEGEND
(WHERE OCCURS)

FRONT DOOR:	FIBERGLASS	WALL:	STUCCO/ LAP SIDING
GARAGE DOOR:	METAL SECTIONAL	WINDOWS:	VINYL W/ GRIDS
ROOF:	COMPOSITION SHINGLE	SHUTTERS:	SIMULATED WOOD
FASCIA:	2x6 WOOD	POT SHELF	SIMULATED WOOD
BARGE:	2x6 WOOD	TRIM:	STUCCO OVER RIGID FOAM
GABLE END:	DECORATIVE VENT	PORCH:	WOOD POST AND BEAM



PLAN 3 | PLAN 1 | PLAN 2 | PLAN 1 | PLAN 2 | PLAN 3R

REAR

COLOR SCHEME 1

COLONIAL REVIVAL

BUILDING - 601 (6-PLEX)

OCCUPANCY: R3 TOWNHOME/U
SPRINKLER SYSTEM: NFPA 13D
CONSTRUCTION: VB

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Refer to landscape drawings for wall, tree, and shrub locations

PLAN 3
RIGHT



PLAN 3R
LEFT
COLOR SCHEME 1

COLONIAL REVIVAL
BUILDING - 601 (6-PLEX)

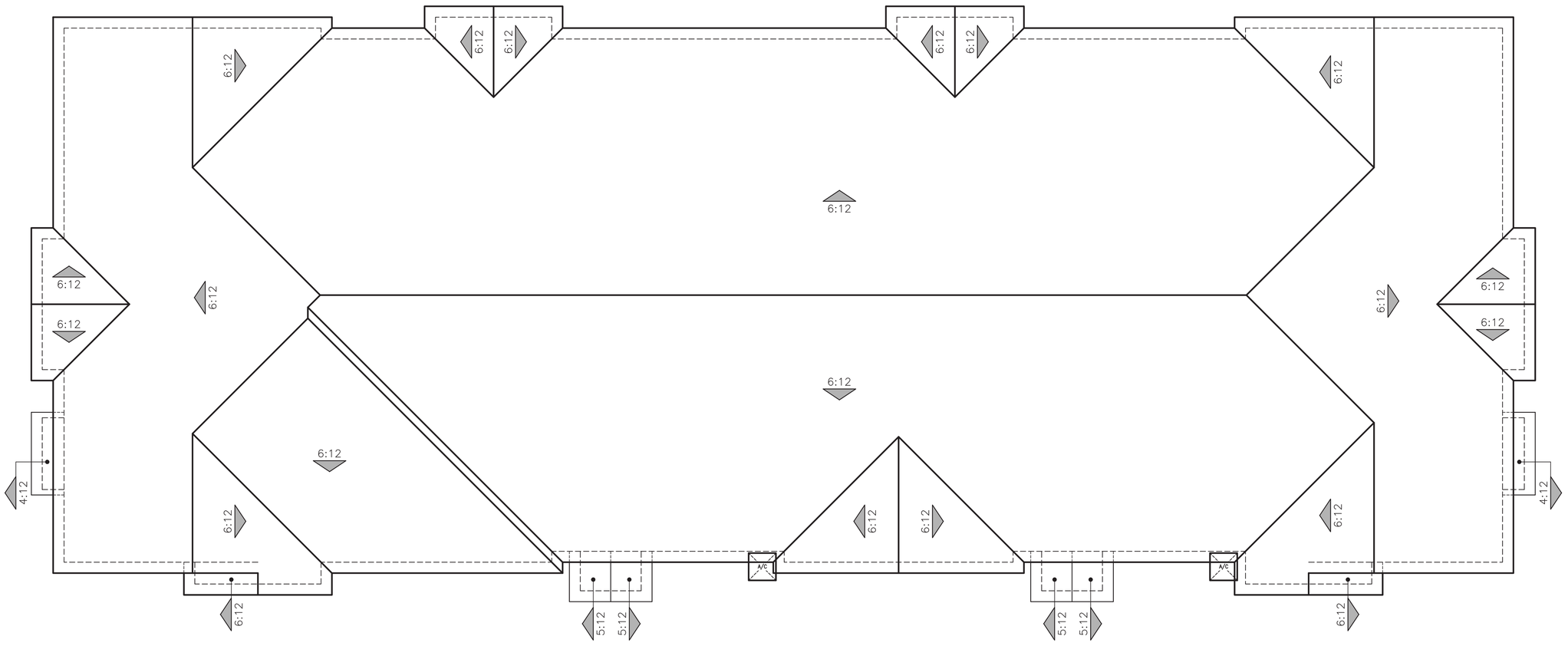
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COLONIAL REVIVAL - ROOF PLAN

BUILDING - 601 (6-PLEX)

OCCUPANCY: R3 TOWNHOME/U
SPRINKLER SYSTEM: NFPA 13D
CONSTRUCTION: VB

0 2 4 8 12

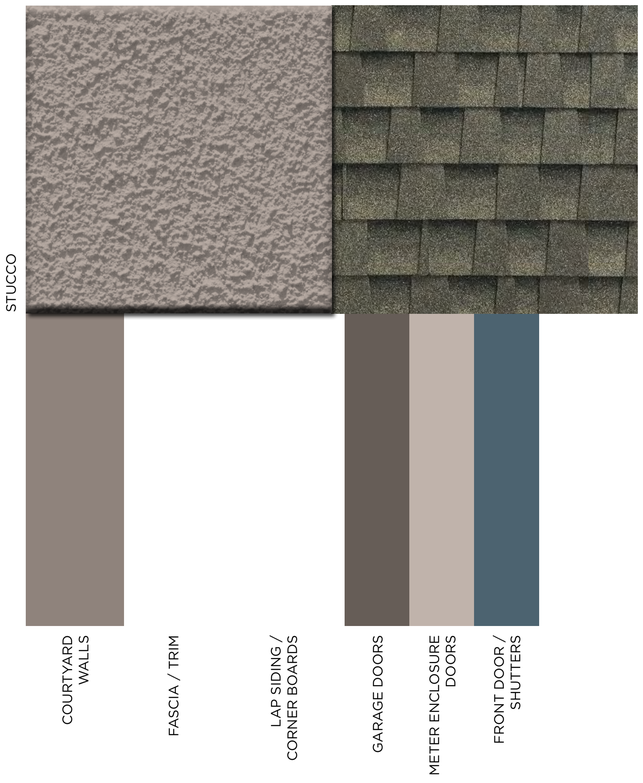
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WILDOMAR, CA

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COLONIAL REVIVAL
SCHEME #1



MONTE VISTA RANCH II

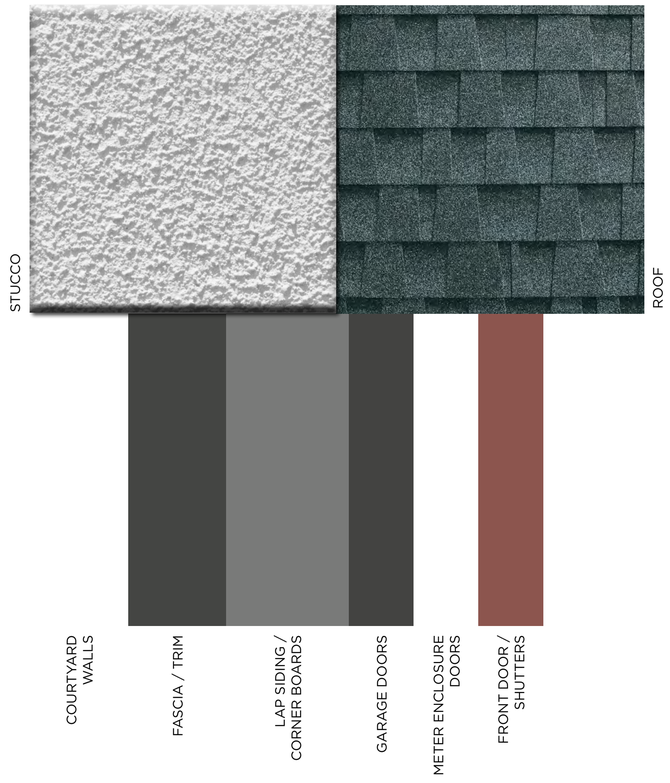
MONTE VISTA RANCH II, LLC

WILDOMAR, CA

#20073
MAY 21, 2021

Kevin L. Crook Architect Inc
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COLONIAL REVIVAL
SCHEME #2



MONTE VISTA RANCH II

MONTE VISTA RANCH II, LLC

WILDOMAR, CA

#20073
MAY 21, 2021

Kevin L. Crook Architect Inc
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COLONIAL REVIVAL
SCHEME #3



MONTE VISTA RANCH II

MONTE VISTA RANCH II, LLC

WILDOMAR, CA

#20073
MAY 21, 2021

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COLOR BOARDS - COLONIAL REVIVAL

*COLORS MAY VARY DUE TO SCREEN AND PRINTER CALIBRATION. REFER TO PAINT CHIPS AND MATERIAL BOARDS FOR ACTUAL COLORS.

MONTE VISTA RANCH

WILDOMAR, CA

PROJECT	20073
CREATED	5/21/2021

COLONIAL REVIVAL	SCHEME 1	SCHEME 2	SCHEME 3
STUCCO	1567	1572	1511
STUCCO PAINT MATCH***	SW6037 TEMPERATE TAUPE	SW7757 HIGH REFLECTV WT	SW7024 FUNCTIONAL GRAY
COURTYARD WALLS	SW6039 POISED TAUPE	SW7757 HIGH REFLECTIVE WHITE	SW9168 CHATURA GRAY
FASCIA / TRIM	SW7757 HIGH REFLECTIVE WHITE	SW7069 IRON ORE	SW7757 HIGH REFLECTIVE WHITE
LAP SIDING / CORNER BOARDS	SW7757 HIGH REFLECTIVE WHITE	SW2849 WESTCHESTER GRAY	SW0006 TOILE RED
GARAGE DOORS	SW7505 MANOR HOUSE	SW7069 IRON ORE	SW7757 HIGH REFLECTIVE WHITE
METER ENCLOSURE DOORS	SW6037 TEMPERATE TAUPE	SW7757 HIGH REFLECTIVE WHITE	SW7024 FUNCTIONAL GRAY
FRONT DOOR / SHUTTERS	SW0048 BUNGLEHOUSE BLUE	SW0006 TOILE RED	SW7757 HIGH REFLECTIVE WHITE
COMPOSITION SHINGLES	GAF REFLECTOR SERIES SAGEWOOD	GAF REFLECTOR SERIES STONE GRAY	GAF REFLECTOR SERIES HICKORY

STUCCO:	OMEGA
PAINT:	SHERWIN WILLIAMS
ROOF:	GAF TIMBERLINE

MONTE VISTA RANCH II, LLC

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ALL FLASHING, GUTTERS, DOWNSPOUTS ETC. TO BE PAINTED TO **MATCH** ADJACENT SURFACE. ALL PAINT BREAKS TO BE CUT AT INSIDE CORNERS.

** FOR PHOTOSHOP & RENDERING PURPOSES ONLY, DO NOT USE IN THE FIELD

TODAS LAS TAPAJUNTAS, CAñALERAS, CAñALONES, ETC.SERAN PINTADOS PARA **IGUALAR** A LA SUPERFICIE DE JUNTO

TODAS LAS RESTAURAS DE PINTURA SE CORTARAN EN LAS ESQUINAS INTERIORES

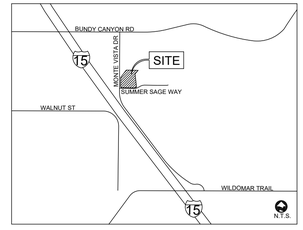
**SOLO PARA FINES DE PHOTOSHOP Y REPRESENTACIONES, NO USAR EN EL CAMPO

WRITTEN COLOR SCHEMES



SHEET INDEX

SHEET	DESCRIPTION
L-1	CONCEPTUAL SITE PLAN
L-2	ENLARGEMENT PLAN
L-3	CONCEPTUAL PLANTING PLAN
L-4	CONCEPTUAL PLANTING PLAN
L-5	CONCEPTUAL PLANTING PLAN
L-6	HYDROZONE PLAN
L-7	CONCEPTUAL WALL & FENCE PLAN



VICINITY MAP

MONTE VISTA RANCH II

CONCEPTUAL SITE PLAN

NORTH 0' 40' 80' 120'

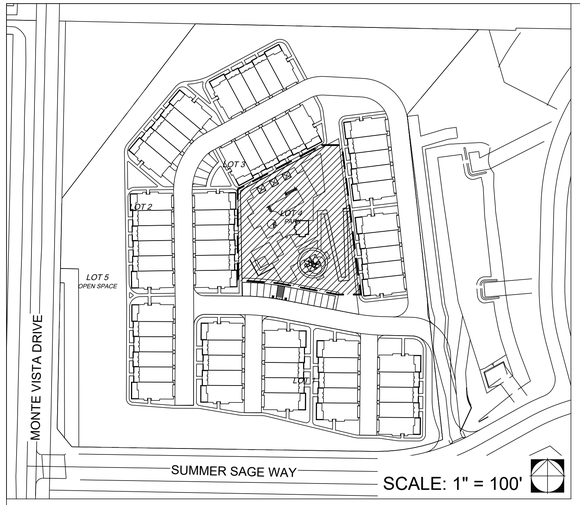
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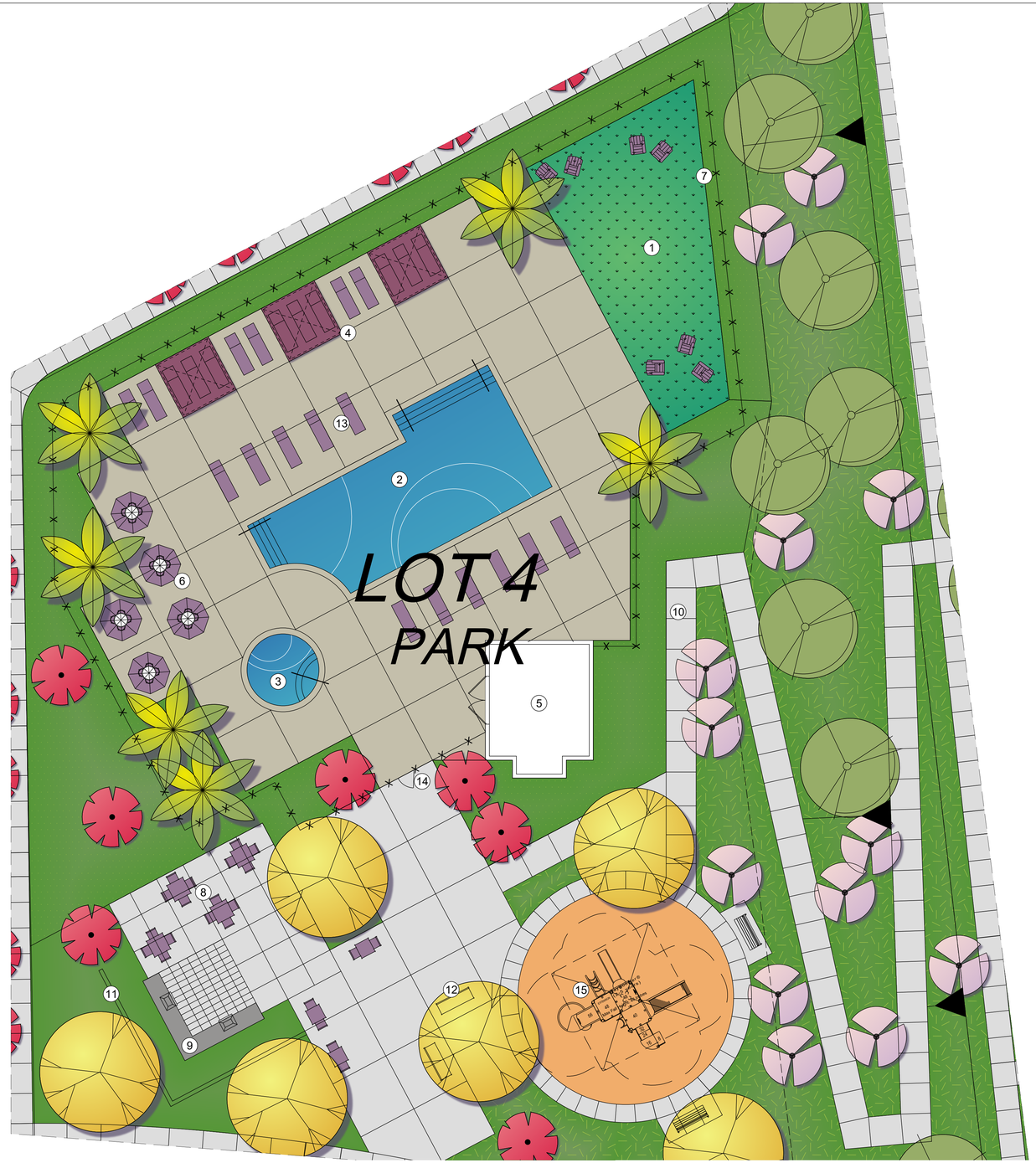
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KEY MAP

ENLARGEMENT LEGEND

1. TURF AREA W/ INFORMAL ADIRONDACK SEATING
2. POOL
3. SPA
4. CABANAS
5. POOL EQUIPMENT ROOM
6. SHADED BISTRO SEATING
7. TUBULAR STEEL POOL FENCE
8. PICNIC TABLES - 4 TOTAL, 1 ADA ACCESSIBLE
9. BBQ AREA
10. WALKING PATH
11. ACCENT WALL
12. BENCH SEATING, TYP.
13. CHAISE LOUNGE, TYP.
14. POOL AREA ENTRY GATE
15. TOT LOT W/ SHADED PLAY EQUIPMENT



RECREATION CENTER PLANT PALETTE

SYMBOL	BOTANICAL / COMMON NAME	WATER USE
	TREES	
	CERCIS CANADENSIS 'FOREST PANSY' FOREST PANSY EASTERN REDBUD	Medium
	LAGERSTROEMIA INDICA 'TUSCARORA' TUSCARORA CRAPE MYRTLE	Medium
	PHOENIX DACTYLIFERA DATE PALM	Low
	PLATANUS X ACERIFOLIA LONDON PLANE TREE	Medium
	TRISTANIA CONFERTA BRISBANE BOX	Medium
	WASHINGTONIA ROBUSTA MEXICAN FAN PALM	Low
	SHRUBS	
	ALOE BAINESII TREE ALOE	Medium
	ALOE STRIATA CORAL ALOE	Low
	ANIGOZANTHOS FLAVIDUS KANGAROO PAW	Medium
	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	Low
	CARISSA MACROCARPA 'NANA' DWARF NATAL PLUM	Medium
	DIANELLA TASMANICA 'SILVER STREAK' SILVER STREAK FLAX LILY	Medium
	DIETES BICOLOR FORTNIGHT LILY	Medium
	HELICTOTRICHON SEMPERVIRENS BLUE OAT GRASS	Low
	JUNCUS PATENS CALIFORNIA GRAY RUSH	Low
	KNIPHOFIA UVARIA RED HOT POKER	Low
	LAURUS NOBILIS SWEET BAY	Low
	LIGUSTRUM JAPONICUM 'TEXANUM' TEXAS JAPANESE PRIVET	Low - Medium
	MYOPORUM PARVIFOLIUM 'PINK' TRAILING MYOPORUM	Low - Medium
	PHORMIUM X 'YELLOW WAVE' YELLOW WAVE NEW ZEALAND FLAX	Medium
	PODOCARPUS MACROPHYLLUS 'MAKI' MAKI PODOCARPUS	Medium
	POLYGALA FRUTICOSA SWEET PEA	Medium
	ROSA FLORIBUNDA 'ICEBERG' ICEBERG ROSE	Medium
	STRELITZIA REGINAE BIRD OF PARADISE	Low - Medium
	TRACHELOSPERMUM JASMINOIDES CHINESE STAR JASMINE	Medium

SEE SHEET L-3 FOR HOA & COMMON AREA PRELIMINARY PLANTING PALETTE

NORTH 0' 10' 20' 30'

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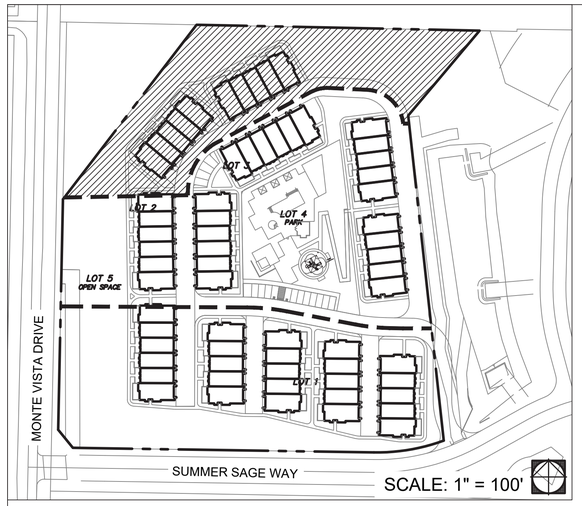
ENLARGEMENT PLAN

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KEY MAP

HOA AND COMMON AREA PLANT PALETTE

SYMBOL	BOTANICAL / COMMON NAME	WATER USE
	TREES	
	CERCIS CANADENSIS 'FOREST PANSY' FOREST PANSY EASTERN REDBUD	Medium
	LAGERSTROEMIA INDICA 'TUSCARORA' TUSCARORA CRAPE MYRTLE	Medium
	PLATANUS X ACERIFOLIA LONDON PLANE TREE	Medium
	QUERCUS AGRIFOLIA COAST LIVE OAK	Low
	TRISTANIA CONFERTA BRISBANE BOX	Medium

UPRIGHT ACCENTS		
	CUPRESSUS SEMPERVIRENS `MONSHEL` TINY TOWER ITALIAN CYPRESS	Medium
	DODONAEA VISCOSA `PURPUREA` PURPLE LEAFED HOPSEED BUSH	Low
	LAURUS NOBILIS SWEET BAY	Low
	PODOCARPUS ELONGATUS 'MONMAL' TM ICEE BLUE YELLOW WOOD	Medium
	PRUNUS CAROLINIANA 'MONUS' TM BRIGHT 'N TIGHT CAROLINA LAUREL CHERRY	Medium

SHRUBS- LARGE		
	ALOE BAINESII TREE ALOE	Medium
	ALYOGYNE HUEGELII BLUE HIBISCUS	Low
	DODONAEA VISCOSA 'PURPUREA' PURPLE HOPSEED BUSH	Low
	GREVILLEA X 'LONG JOHN' LONG JOHN GREVILLEA	Low
	KNIPHOFIA UVARIA RED HOT POKER	Low
	LAURUS NOBILIS SWEET BAY	Low
	LIGUSTRUM JAPONICUM 'TEXANUM' TEXAS JAPANESE PRIVET	Low - Medium
	MELALEUCA NESOPHILA PINK MELALEUCA MULTI-TRUNK	Low

SHRUBS- MEDIUM		
	ALOE STRIATA CORAL ALOE	Low
	ANIGOZANTHOS FLAVIDUS KANGAROO PAW	Medium
	BACCHARIS PILULARIS 'PIGEON POINT' PIGEON POINT COYOTE BRUSH	Very low - Low
	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	Low
	BUXUS MICROPHYLLA JAPONICA 'GREEN BEAUTY' GREEN BEAUTY JAPANESE BOXWOOD	Medium
	CISTUS X PURPUREUS ORCHID ROCKROSE	Low
	DIANELLA TASMANICA 'SILVER STREAK' SILVER STREAK FLAX LILY	Medium
	HELICTOTRICHON SEMPERVIRENS BLUE OAT GRASS	Low
	JUNCUS PATENS CALIFORNIA GRAY RUSH	Low
	LEYMUS CONDENSATUS 'CANYON PRINCE' CANYON PRINCE GIANT WILD RYE	Low
	MUHLENBERGIA RIGENS DEER GRASS	Low
	ROSA FLORIBUNDA 'ICEBERG' ICEBERG ROSE	Medium
	ROSA X 'NOAMEL' TM FLOWER CARPET APPLEBLOSSOM GROUNDCOVER ROSE	Medium
	ROSMARINUS OFFICINALIS 'TUSCAN BLUE' TUSCAN BLUE ROSEMARY	Low - Medium
	SALVIA CLEVELANDII CLEVELAND SAGE	Low
	SALVIA LEUCANTHA MEXICAN BUSH SAGE	Low
	SALVIA X 'BEE'S BLISS' BEE'S BLISS SAGE	Low
	STRELITZIA REGINAE BIRD OF PARADISE	Low - Medium
	WESTRINGIA FRUTICOSA 'WYNABBIE GEM' WYNABBIE GEM COAST ROSEMARY	Low

SHRUBS- SMALL		
	CARISSA MACROCARPA 'NANA' DWARF NATAL PLUM	Medium
	LANTANA MONTEVIDENSIS TRAILING LANTANA	Low - Medium
	MYOPORUM PARVIFOLIUM 'PINK' TRAILING MYOPORUM	Low - Medium
	PASPALUM VAGINATUM SEASHORE PASPALUM	Low
	ROSMARINUS PROSTRATUS PROSTRATE ROSEMARY	Low
	TRACHELOSPERMUM JASMINOIDES CHINESE STAR JASMINE	Medium



MONTE VISTA RANCH II

CONCEPT PLANTING PLAN

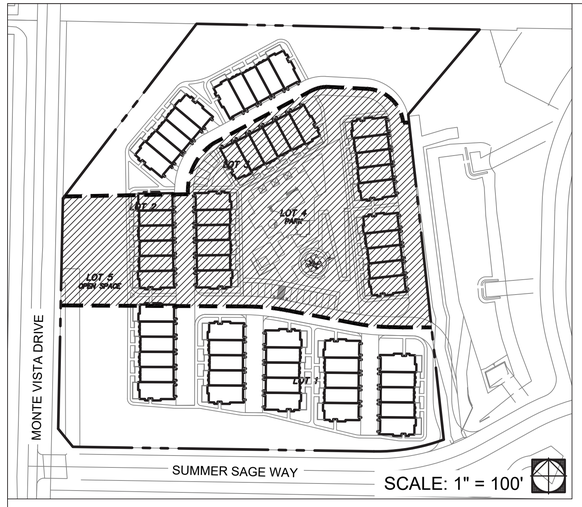
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KEY MAP

SEE SHEET L-3 FOR HOA & COMMON AREA PRELIMINARY PLANTING PALETTE

MATCHLINE - SEE SHEET L-4

LOT 3

LOT 2

LOT B

LOT B

SEE SHEET L-2 FOR RECREATION CENTER PLANTING

MONTE VISTA DRIVE

LOT 5
OPEN SPACE

LOT A

MATCHLINE - SEE SHEET L-6

NORTH 0' 20' 40' 60'

MONTE VISTA RANCH II

CONCEPT PLANTING PLAN

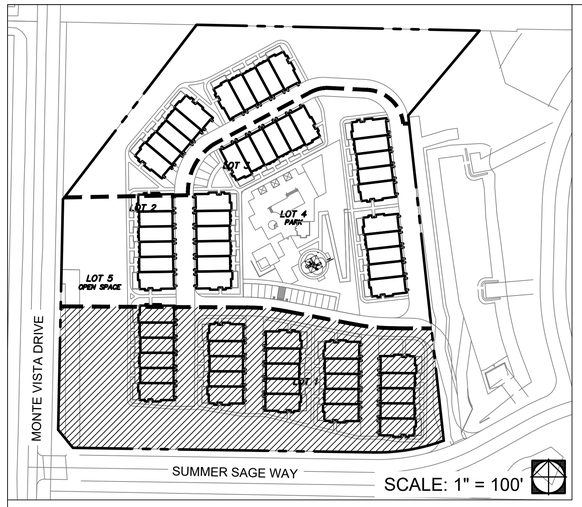
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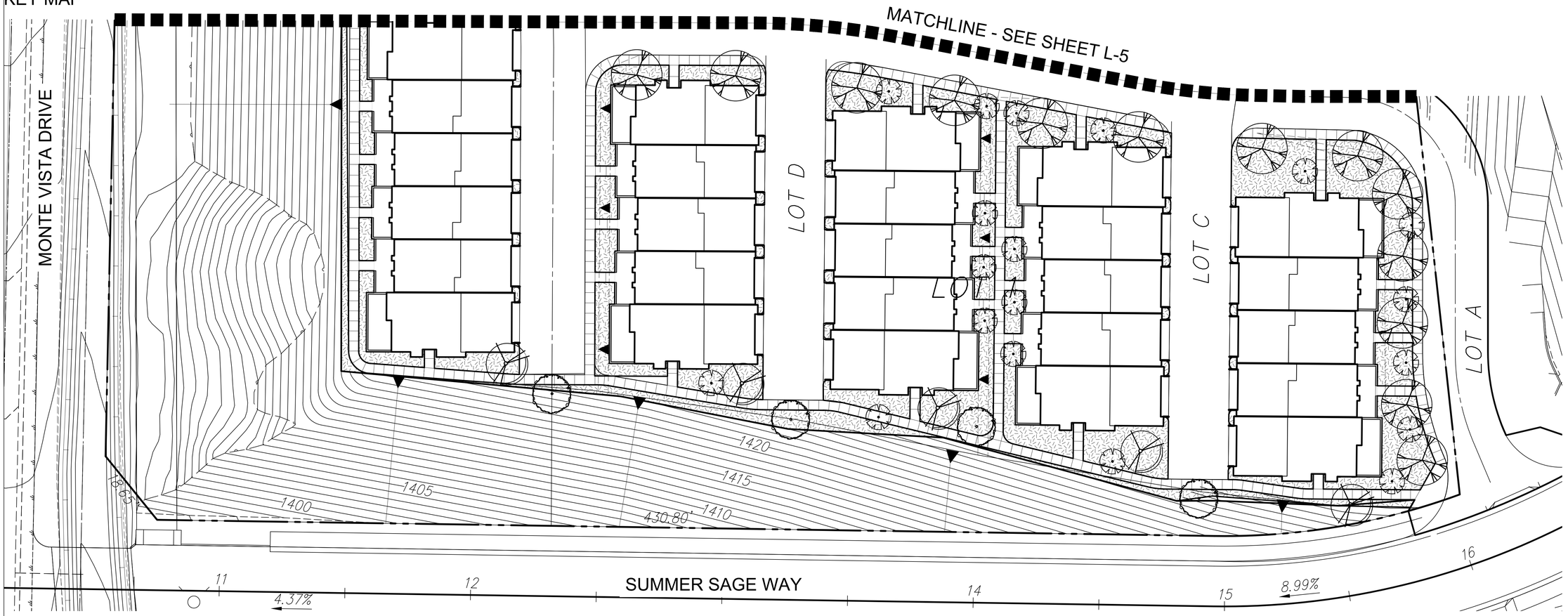
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PRELIMINARY
NOT FOR CONSTRUCTION



KEY MAP

SEE SHEET L-3 FOR HOA & COMMON AREA PRELIMINARY PLANTING PALETTE



NORTH 0' 20' 40' 60'

MONTE VISTA RANCH II

CONCEPT PLANTING PLAN

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WATER EFFICIENT LANDSCAPE WORKSHEET

PROJECT: MONTE VISTA RANCH II DATE: 06.14.21

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.

Reference Evapotranspiration (ETo) **55**

Conversion Factor **0.62**

Hydrozone # /Planting Description[a]	Plant Factor (PF)	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Area	Estimated Total Water Use (ETWU)[d]
Regular Landscape Areas							
Low water use plantings	0.3	Drip	0.81	0.37	53110	19670	670,760
Medium water use plantings	0.5	Drip	0.81	0.62	4737	2924	99,711
High water use turf	0.7	Drip	0.81	0.86		0	0
Low use plantings	0.3	Rotary Nozzles or Rotors	0.75	0.40	0	0	0
Med use plantings	0.5	Rotary Nozzles or Rotors	0.75	0.67	0	0	0
High water use turf	0.7	Rotary Nozzles or Rotors	0.75	0.93	1641	1532	52,228
				TOTALS	**59,488**	**24126**	**822,698**
Special Landscape Areas							
Turf areas parks				1	1,089	1,089	37,135
Irrigated w/ recycled water				1	0	0	0
Water features				1	0	0	0
				TOTALS	**1,089**	***1,089***	**37,135**
						ETWU Total	**859,833**
						Maximum Allowed Water Allowance (MAWA)[e]	**1,051,405**

MAWA

ETAF for residential areas is .55 or .45 for commercial areas

MAWA =	ETO *	Conv Factor *	((ETAF	*	LA)	+	(1-ETAF)	*	SLA))
	55	0.62	0.50		60,577		0.50		1,089
MAWA=	**1,051,405**								

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	24,126
Total Area	59,488
Average ETAF	**0.41**

All Landscape Areas

Total ETAF x Area	25,215
Total Area	60,577
Sitewide ETAF	**0.42**

Average ETAF for Regular Landscape Aeas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

PROJECT HYDROZONES

- 1 - LOW WATER USE PLANTING AREA
- 2 - MODERATE WATER USE PLANTING AREA
- 3 - HIGH WATER USE TURF AREA

MONTE VISTA RANCH II

HYDROZONE PLAN

NORTH 0' 40' 80' 120'

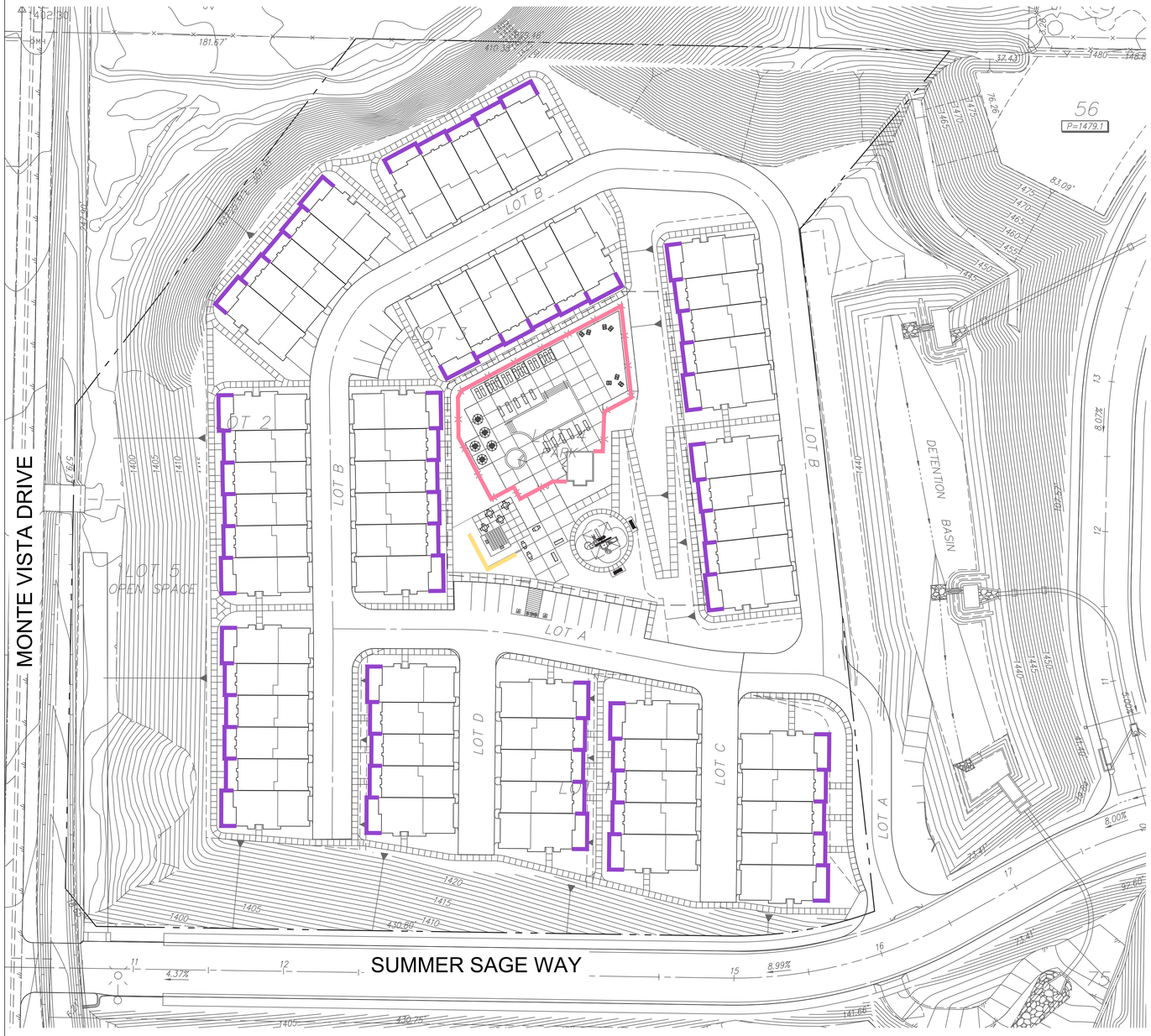
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VARIATION 1: BLOCK WALL



POTENTIAL COLORS

EXAMPLES SHOWN IN ORCO PRECISION BLOCK

BROWN



PORTOLA



NOTES:
1. COLOR AND FINISH TO MATCH OR COMPLEMENT ADJACENT ARCHITECTURAL STYLE
2. SINGLE PRECISION FACE BLOCK WALL WITH PRECISION CAP

VARIATION 2: CMU WALL W/ STUCCO FINISH



NOTES:
1. COLOR AND FINISH TO MATCH OR COMPLEMENT ADJACENT ARCHITECTURAL STYLE
2. THIS CONDITION TO BE USED AT RECREATION AREA ACCENT WALL

VARIATION 3: BRICK WALL



POTENTIAL COLORS

EXAMPLES SHOWN IN MERIDIAN BRICK

CAP: MANHATTAN



BODY: REGIMENT

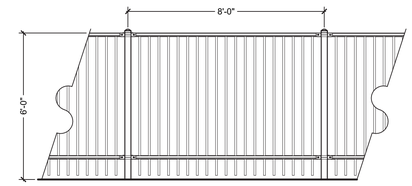


NOTES:
1. COLOR AND FINISH TO MATCH OR COMPLEMENT ADJACENT ARCHITECTURAL STYLE

3'-6" TALL COURTYARD AND 4'-0" ACCENT WALLS



NOTES:
1. ALL MATERIAL TO BE PRE-GALVANIZED. PAINT W/ ONE COAT EPOXY PRIMER & ONE COAT EXTERIOR ENAMEL FINISH IN BLACK.
2. ALL SURFACE WELDS TO BE FIELD GALVANIZED AND GROUND SMOOTH. ALL WELDS TO BE CONTINUOUS.
3. MAXIMUM 4" O.C. SPACING OF PICKETS.



6'-0" TALL TUBULAR STEEL FENCE N.T.S.

LEGEND

- 3'-6" TALL COURTYARD WALLS
- 4'-0" PIP CONCRETE ACCENT WALL
- 6'-0" TUBE STEEL FENCE

MONTE VISTA RANCH II

CONCEPTUAL WALL & FENCE PLAN

NORTH 0' 40' 80' 120'

REVISION 3 _____
REVISION 2: _____
REVISION 1: _____
ORIGINAL DATE: 06-14-2021
SHEET _____ OF 6

bmla LANDSCAPE ARCHITECTURE
310 NORTH JOY STREET | CORONA, CA 92879
T: 951.737.1124 | F: 951.737.6551

NAME 06-14-2021 DATE

PREPARED FOR MONTE VISTA RANCH II, LLC

PRELIMINARY
NOT FOR CONSTRUCTION

Appendix 2

Monte Vista Ranch Air Quality Impact Analysis

Monte Vista Ranch

AIR QUALITY IMPACT ANALYSIS

CITY OF WILDOMAR

PREPARED BY:

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MAY 27, 2021

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LIST OF ABBREVIATED TERMS

%	Percent
°F	Degrees Fahrenheit
(1)	Reference
µg/m^3	Microgram per Cubic Meter
AB 2595	California Clean Air Act
AQIA	Air Quality Impact Analysis
AQMP	Air Quality Management Plan
BAAQMD	Bay Area Air Quality Management District
BACT	Best Available Control Technology
Brief	*Brief of Amicus Curiae by the SCAQMD in the Friant Ranch Case*
C_2H_3Cl	Vinyl Chloride
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CALGreen	California Green Building Standards Code
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEC	California Energy Commission
CEQA	California Environmental Quality Act
City	City of Wildomar
CO	Carbon Monoxide
COHb	carboxyhemoglobin
DU	Dwelling Units
EIR	Environmental Impact Reports
EMFAC	EMissions FACtor Model
EPA	Environmental Protection Agency
g/L	Grams Per Liter
GHG	Greenhouse Gas
HI	Hazard Index
I-15	Interstate 15
lbs	Pounds
lbs/day	Pounds Per Day
LST	Localized Significance Threshold

LST Methodology	*Final Localized Significance Threshold Methodology*
ITE	Institute of Transportation Engineers
MICR	Maximum Individual Cancer Risk
MM	Mitigation Measures
N_2	Nitrogen
N_2O	Nitrous Oxide
NAAQS	National Ambient Air Quality Standards
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_X	Nitrogen Oxides
O_2	Oxygen
O_3	Ozone
ODC	Ozone Depleting Compounds
Pb	Lead
PM_{10}	Particulate Matter 10 microns in diameter or less
$PM_{2.5}$	Particulate Matter 2.5 microns in diameter or less
ppm	Parts Per Million
Project	Monte Vista Ranch
ROG	Reactive Organic Gases
RTP/SCS	Regional Transportation Plan/ Sustainable Communities Strategy
Rule 403	Fugitive Dust
Rule 1113	Architectural Coating
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SIP	State Implementation Plans
SO_2	Sulfur Dioxide
SO_4	Sulfates
SO_X	Sulfur Oxides
SRA	Source Receptor Area
TAC	Toxic Air Contaminant
TA	*Monte Vista Ranch (Tract No. 32024, Lot 71) Traffic Analysis*
TITLE I	Non-Attainment Provisions
TITLE II	Mobile Sources Provisions
U.S.	United States

VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
vph	Vehicles Per Hour

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Monte Vista Ranch Air Quality Impact Analysis* (AQIA) are summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the *California Environmental Quality Act (CEQA) Guidelines* (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for each potential air quality impact under CEQA before and after any required mitigation measures (MM) described below.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Regional Construction Emissions	3.4	*Less Than Significant*	*n/a*
Localized Construction Emissions	3.7	*Less Than Significant*	*n/a*
Regional Operational Emissions	3.5	*Less Than Significant*	*n/a*
Localized Operational Emissions	3.8	*Less Than Significant*	*n/a*
CO "Hot Spot" Analysis	3.9	*Less Than Significant*	*n/a*
Air Quality Management Plan	3.10	*Less Than Significant*	*n/a*
Sensitive Receptors	3.11	*Less Than Significant*	*n/a*
Odors	3.12	*Less Than Significant*	*n/a*
Cumulative Impacts	3.13	*Less Than Significant*	*n/a*

ES.2 REGULATORY REQUIREMENTS

There are numerous requirements that development projects must comply with by law, and that were put in place by federal, State, and local regulatory agencies for the improvement of air quality.

Any operation or activity that might cause the emission of any smoke, fly ash, dust, fumes, vapors, gases, or other forms of air pollution, which can cause damage to human health, vegetation, or

other forms of property, or can cause excessive soiling on any other parcel shall conform to the requirements of the South Coast Air Quality Management District (SCAQMD).

SCAQMD RULES

SCAQMD Rules that are currently applicable during construction activity for this Project are described below.

SCAQMD RULE 403

This rule is intended to reduce the amount of particulate matter (PM) entrained in the ambient air as a result of anthropogenic (human-made) fugitive dust sources by requiring actions to prevent and reduce fugitive dust emissions. Rule 403 applies to any activity or human-made condition capable of generating fugitive dust and requires best available control measures to be applied to earth moving and grading activities.

Dust Control, Operations. Any operation or activity that might cause the emission of any smoke, fly ash, dust, fumes, vapors, gases, or other forms of air pollution, which can cause damage to human health, vegetation, or other forms of property, or can cause excessive soiling on any other parcel, shall conform to the requirements of the SCAQMD.

SCAQMD RULE 1113

This rule serves to limit the Volatile Organic Compound (VOC) content of architectural coatings used on projects in the SCAQMD. Any person who supplies, sells, offers for sale, or manufactures any architectural coating for use on projects.

SCAQMD RULE 402

A person shall not discharge from any source whatsoever 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. The provisions of this rule do not apply to odors emanating from agricultural operations necessary for the growing of crops or the raising of fowl or animals.

Odor Emissions. All uses shall be operated in a manner such that no offensive odor is perceptible at or beyond the property line of that use.

SCAQMD RULE 1301

This rule is intended to provide that pre-construction review requirements to ensure that new or relocated facilities do not interfere with progress in attainment of the National Ambient Air Quality Standards (NAAQS), while future economic growth within the SCAQMD is not unnecessarily restricted. The specific air quality goal is to achieve no net increases from new or modified permitted sources of nonattainment air contaminants or their precursors. Rule 1301 also limits emission increases of ammonia, and Ozone (O_3) Depleting Compounds (ODCs) from new, modified or relocated facilities by requiring the use of Best Available Control Technology (BACT).

SCAQMD RULE 1401

A person shall not discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any 1 hour that is as dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States (U.S.) Bureau of Mines.

Although the Project would comply with the above regulatory requirements, it should be noted that there is no way to quantify these reductions in the California Emissions Estimator Model (CalEEMod). The two most pertinent regulatory requirements that could be modeled, are Rule 403 (Fugitive Dust) (2) and Rule 1113 (Architectural Coatings) (3). Because they are required by law, credit for Rule 403 and Rule 1113 have been taken in the analysis.

ES.3 CONSTRUCTION AND OPERATIONAL-SOURCE MMS

The Project would not result in an exceedance of any regional or localized construction or operational-source emissions thresholds. As such, the Project would not result in any significant impacts and no MMs are required.

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1 INTRODUCTION

This report presents the results of the AQIA prepared by Urban Crossroads, Inc., for the proposed Monte Vista Ranch (Project). The purpose of this AQIA is to evaluate the potential impacts to air quality associated with construction and operation of the proposed Project and recommend measures to mitigate impacts considered potentially significant in comparison to thresholds established by the SCAQMD.

1.1 SITE LOCATION

The proposed Project site is generally located on the northeast corner of Monte Vista Drive (Dr.) and Summer Sage Dr. in the City of Wildomar, as shown on Exhibit 1-A. The Project site is currently vacant. The Project site is currently designated for Commercial Retail (CR) uses (4). The Project site is surrounded by residential uses to the north, vacant land to the east, a church to the south, and Interstate 15 (I-15) is to the east.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates a preliminary site plan for the Project. The Project is anticipated to be developed within a single phase with an opening year of 2023. Consistent with the *Monte Vista Ranch (Tract No. 32024, Lot 71) Traffic Analysis* (TA) report, the Project is proposed to consist of 65 multifamily housing (low-rise) residential dwelling units (DUs) (5).

This analysis includes a conservative assumption of on-site Project-related emission sources for potential future tenants, including architectural coatings, consumer products, landscape maintenance equipment, emissions associated with natural gas and electricity, and mobile source emissions. This analysis is intended to describe air impacts associated with the expected operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN



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2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN (SCAB)

The Project site is located in the SCAB within the jurisdiction of SCAQMD (6). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As previously stated, the Project site is located within the SCAB, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County.

The SCAB is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bounded by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bounded by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s degrees Fahrenheit (°F). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide (SO_2) to sulfates (SO_4) is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71% along the coast and 59% inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90% of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los

Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14½ hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as nitrogen oxides (NO_X) and carbon monoxide (CO) from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The SCAB is located in a coastal plain with connecting broad valleys and

low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly onshore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 CRITERIA POLLUTANTS

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and health effects are identified below (7):

TABLE 2-1: CRITERIA POLLUTANTS

Criteria Pollutant	Description	Sources	Health Effects
CO	CO is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike O_3, motor vehicles operating at slow speeds are the primary source of CO in the SCAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen (O_2) supply to the heart. Inhaled CO has no direct toxic effect on the lungs but exerts its effect on tissues by interfering with O_2 transport and competing with O_2 to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for O_2 supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (O_2 deficiency) as seen at high altitudes.

Criteria Pollutant	Description	Sources	Health Effects
SO_2	SO_2 is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO_2 oxidizes in the atmosphere, it forms SO_4. Collectively, these pollutants are referred to as sulfur oxides (SO_X).	Coal or oil burning power plants and industries, refineries, diesel engines	A few minutes of exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2. Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically, or one pollutant alone is the predominant factor.

Criteria Pollutant	Description	Sources	Health Effects
NO_X	NO_X consist of nitric oxide (NO), nitrogen dioxide (NO_2) and nitrous oxide (N_2O) and are formed when nitrogen (N_2) combines with O_2. Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. NO_X is typically created during combustion processes and are major contributors to smog formation and acid deposition. NO_2 is a criteria air pollutant and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO_2 is the most abundant in the atmosphere. As ambient concentrations of NO_2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO_2 than those indicated by regional monitoring station.	Any source that burns fuel such as automobiles, trucks, heavy construction equipment, farming equipment and residential heating.	Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups. In animals, exposure to levels of NO_2 considerably higher than ambient concentrations result in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of O_3 exposure increases when animals are exposed to a combination of O_3 and NO_2.
O_3	O_3 is a highly reactive and unstable gas that is formed when VOCs and NO_X, both byproducts of internal combustion engine exhaust, undergo slow photochemical reactions in the presence of sunlight. O_3 concentrations are generally highest during the summer	Formed when reactive organic gases (ROG) and NO_X react in the presence of sunlight. ROG sources include any source	Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for O_3 effects. Short-term exposure (lasting for a

Criteria Pollutant	Description	Sources	Health Effects
	months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.	that burns fuels, (e.g., gasoline, natural gas, wood, oil) solvents, petroleum processing and storage and pesticides.	few hours) to O_3 at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated O_3 levels are associated with increased school absences. In recent years, a correlation between elevated ambient O_3 levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple outdoor sports and reside in communities with high O_3 levels. O_3 exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes O_3 may be more toxic than exposure to O_3 alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.
PM	PM_{10}: A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. PM pollution is a major cause of reduce visibility (haze) which is caused by the scattering of light	Sources of PM_{10} include road dust, windblown dust and construction. Also formed from other pollutants (acid rain, NO_X, SO_X,	A consistent correlation between elevated ambient fine PM (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks

Criteria Pollutant	Description	Sources	Health Effects
	and consequently the significant reduction air clarity. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. Additionally, it should be noted that PM_{10} is considered a criteria air pollutant. $PM_{2.5}$: A similar air pollutant to PM_{10} consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include SO_4 formed from SO_2 release from power plants and industrial facilities and nitrates that are formed from NO_X release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. $PM_{2.5}$ is a criteria air pollutant.	organics). Incomplete combustion of any fuel. $PM_{2.5}$ comes from fuel combustion in motor vehicles, equipment and industrial sources, residential and agricultural burning. Also formed from reaction of other pollutants (acid rain, NO_X, SO_X, organics).	and the number of hospital admissions has been observed in different parts of the U.S. and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in lifespan, and an increased mortality from lung cancer. Daily fluctuations in $PM_{2.5}$ concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long term exposure to PM. The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM_{10} and $PM_{2.5}$.
VOC	VOCs are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form O_3 to the same extent when exposed to photochemical	Organic chemicals are widely used as ingredients in household products. Paints, varnishes and wax all contain organic solvents, as do many cleaning, disinfecting, cosmetic, degreasing and hobby products. Fuels are made up of organic	Breathing VOCs can irritate the eyes, nose and throat, can cause difficulty breathing and nausea, and can damage the central nervous system as well as other organs. Some VOCs can cause cancer. Not all VOCs have all these health effects, though many have several.

Criteria Pollutant	Description	Sources	Health Effects
	processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include CO, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms VOC and ROG (see below) interchangeably.	chemicals. All of these products can release organic compounds while you are using them, and, to some degree, when they are stored.	
ROG	Similar to VOC, ROGs are also precursors in forming O_3 and consist of compounds containing methane, ethane, propane, butane, and longer chain hydrocarbons, which are typically the result of some type of combustion/decomposition process. Smog is formed when ROG and NO_X react in the presence of sunlight. ROGs are a criteria pollutant since they are a precursor to O_3, which is a criteria pollutant. The terms ROG and VOC (see previous) interchangeably.	Sources similar to VOCs.	Health effects similar to VOCs.
Lead (Pb)	Pb is a heavy metal that is highly persistent in the environment and is considered a criteria pollutant. In the past, the primary source of Pb in the air was emissions from vehicles burning leaded gasoline. The major sources of Pb emissions are ore and metals processing, particularly Pb smelters, and piston-engine aircraft operating on leaded aviation gasoline. Other stationary sources include waste incinerators, utilities, and lead-acid battery manufacturers. It should be noted that the Project does not include operational activities such as metal processing or Pb acid	Metal smelters, resource recovery, leaded gasoline, deterioration of Pb paint.	Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure. Pb poisoning can cause anemia, lethargy, seizures, and death; although it

Criteria Pollutant	Description	Sources	Health Effects
	battery manufacturing. As such, the Project is not anticipated to generate a quantifiable amount of Pb emissions.		appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.
Odor	Odor means the perception experienced by a person when one or more chemical substances in the air come into contact with the human olfactory nerves (8).	Odors can come from many sources including animals, human activities, industry, natures, and vehicles.	Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.5 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. NAAQS and California Ambient Air Quality Standards (CAAQS) currently in effect are shown in Table 2-2 (9).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards. At the time of this AQIA, the most recent state and federal standards were updated by California Air Resources Board (CARB) on May 4, 2016 and are presented in Table 2-2. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, PM_{10}, and $PM_{2.5}$ do not exceed standards. All others are not to be equaled or exceeded. It should be noted that the three-year period is presented for informational purposes and is not the basis for how the State assigns attainment status. Attainment status for a pollutant means that the SCAQMD meets the standards set by the Environmental Protection Agency (EPA) or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, CARB has implemented a State Implementation Plan (SIP). The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area (10).

TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

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TABLE 2-2: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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2.6 REGIONAL AIR QUALITY

Air pollution contributes to a wide variety of adverse health effects. The EPA has established NAAQS for six of the most common air pollutants: CO, Pb, O_3, PM (PM_{10} and $PM_{2.5}$), NO_2, and SO_2 which are known as criteria pollutants. The SCAQMD monitors levels of various criteria pollutants at 37 permanent monitoring stations and 5 single-pollutant source Pb air monitoring sites throughout the air district (11). On February 21, 2019, CARB posted the 2018 amendments to the state and national area designations. See Table 2-3 for attainment designations for the SCAB (12). Appendix 2.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

TABLE 2-3: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SCAB

Criteria Pollutant	State Designation	Federal Designation
O_3 – 1-hour standard	Nonattainment	--
O_3 – 8-hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
CO	Attainment	Unclassifiable/Attainment
NO_2	Attainment	Unclassifiable/Attainment
SO_2	Unclassifiable/Attainment	Unclassifiable/Attainment
Pb[1]	Attainment	Unclassifiable/Attainment

Note: See Appendix 2.1 for a detailed map of State/National Area Designations within the SCAB
"-" = The national 1-hour O_3 standard was revoked effective June 15, 2005.

2.7 LOCAL AIR QUALITY

The SCAQMD has designated general forecast areas and air monitoring areas (referred to as Source Receptor Areas [SRA]) throughout the district in order to provide Southern California residents about the air quality conditions. The Project site is located within the Lake Elsinore monitoring area (SRA 25). The Lake Elsinore monitoring station is located approximately 5.5 miles northwest of the Project site and reports air quality statistics for O_3, CO, NO_2, and PM_{10}. The Lake Elsinore monitoring station does not include data for $PM_{2.5}$. As such, the next nearest monitoring stations will be used. The Saddleback Valley monitoring station, located in SRA 19, is the next nearest monitoring station for $PM_{2.5}$, and is located approximately 23.5 miles west of the Project site. It should be noted that the Saddleback Valley monitoring station was utilized in lieu of the Lake Elsinore monitoring station only in instances where data was not available.

The most recent three (3) years of data available is shown on Table 2-4 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Development Site. Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ for 2017 through 2019 was obtained from the SCAQMD Air Quality Data Tables (13).

[1] The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

Additionally, data for SO_2 has been omitted as attainment is regularly met in the SCAB and few monitoring stations measure SO_2 concentrations.

TABLE 2-4: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2017-2019

Pollutant	Standard	Year		
		2017	2018	2019
O_3				
Maximum Federal 1-Hour Concentration (ppm)		0.121	0.116	0.108
Maximum Federal 8-Hour Concentration (ppm)		0.098	0.095	0.089
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	23	16	4
Number of Days Exceeding State/Federal 8-Hour Standard	> 0.070 ppm	54	30	28
CO				
Maximum Federal 1-Hour Concentration	> 35 ppm	1.2	1.1	1.6
Maximum Federal 8-Hour Concentration	> 20 ppm	0.8	0.8	0.7
NO_2				
Maximum Federal 1-Hour Concentration	> 0.100 ppm	0.049	0.041	0.038
Annual Federal Standard Design Value		0.008	0.009	0.007
PM_{10}				
Maximum Federal 24-Hour Concentration (µg/m^3)	> 150 µg/m^3	133	104	93
Annual Federal Arithmetic Mean (µg/m^3)		22.5	22.4	18.7
Number of Days Exceeding Federal 24-Hour Standard	> 150 µg/m^3	0	0	0
Number of Days Exceeding State 24-Hour Standard	> 50 µg/m^3	9	9	5
$PM_{2.5}$				
Maximum Federal 24-Hour Concentration (µg/m^3)	> 35 µg/m^3	19.50	20.80	20.80
Annual Federal Arithmetic Mean (µg/m^3)	> 12 µg/m^3	8.11	8.31	7.11
Number of Days Exceeding Federal 24-Hour Standard	> 35 µg/m^3	0	0	0

ppm = Parts Per Million
µg/m^3 = Microgram per Cubic Meter
Source: Data for O_3, CO, NO_2, PM_{10}, and $PM_{2.5}$ was obtained from SCAQMD Air Quality Data Tables.

2.8 REGULATORY BACKGROUND

2.8.1 FEDERAL REGULATIONS

The EPA is responsible for setting and enforcing the NAAQS for O_3, CO, NO_X, SO_2, PM_{10}, and Pb (14). The EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955 and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (15). The CAA also mandates that states submit and implement SIPs for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions) (16) (17). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O_3, NO_2, SO_2, PM_{10}, CO, $PM_{2.5}$, and Pb. The NAAQS were amended in July 1997 to include an additional standard for O_3 and to adopt a NAAQS for $PM_{2.5}$. Table 2-3 (previously presented) provides the NAAQS within the SCAB.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and NO_X. NO_X is a collective term that includes all forms of NO_X which are emitted as byproducts of the combustion process.

2.8.2 CALIFORNIA REGULATIONS

CARB

CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. AB 2595 mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for SO_4, visibility, hydrogen sulfide (H_2S), and vinyl chloride (C_2H_3Cl). However, at this time, H_2S and C_2H_3Cl are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (18) (14).

Local air quality management districts, such as the SCAQMD, regulate air emissions from stationary sources such as commercial and industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare Air Quality Management Plans (AQMP) that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;

- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a 5% or more annual reduction in emissions or 15% or more in a period of three years for ROGs, NO_X, CO and PM_{10}. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than 5% per year under certain circumstances.

TITLE 24 ENERGY EFFICIENCY STANDARDS AND CALIFORNIA GREEN BUILDING STANDARDS

California Code of Regulations (CCR) Title 24 Part 6: The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. CCR, Title 24, Part 11: California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2009, and is administered by the California Building Standards Commission.

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards that became effective January 1, 2020.

Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction waste and demolition ordinances and defers to them as the ruling guidance provided they establish a minimum 65% diversion requirement.

The code also provides exemptions for areas not served by construction waste and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official.

Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the California Energy Commission (CEC) and became effective on January 1, 2020.

The 2019 Title 24 standards will result in less energy use, thereby reducing air pollutant emissions associated with energy consumption in the SCAB and across the State of California. For example, the 2019 Title 24 standards require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting requirements for nonresidential buildings.

The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7% less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will use about 53% less energy than homes built under the 2016 standards. Nonresidential buildings (such as the Project) will use approximately 30% less energy due to lighting upgrade requirements (18).

Because the Project will be constructed after January 1, 2019, the 2019 CALGreen standards are applicable to the Project and require, among other items (19):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- Electric vehicle (EV) charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3).
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8)
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section
- 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
    - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
    - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).

  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor portable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient (MWELO), whichever is more stringent (5.304.1).
- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

2.8.3 AQMP

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMP to meet the state and federal ambient air quality standards (19). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.10.

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3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

This study quantifies air quality emissions generated by construction and operation of the Project and addresses whether the Project conflicts with implementation of the SCAQMD's AQMP and Lead Agency planning regulations. The analysis of Project-generated air emissions determines whether the Project would result in a cumulatively considerable net increase of any criteria pollutant for which the SCAB is in non-attainment under an applicable NAAQS and CAAQS. Additionally, the Project has been evaluated to determine whether the Project would expose sensitive receptors to substantial pollutant concentrations and the impacts of odors. The significance of these potential impacts is described in the following sections.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the *CEQA Guidelines* (14 CCR §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (1):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard.
- Expose sensitive receptors to substantial pollutant concentrations.
- Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

The SCAQMD has also developed regional significance thresholds for other regulated pollutants, as summarized at Table 3-1 (20). The SCAQMD's *CEQA Air Quality Significance Thresholds* (April 2019) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact.

TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Regional Construction Threshold	Regional Operational Thresholds
NO_X	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_X	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Pb	3 lbs/day	3 lbs/day

lbs/day = Pounds Per Day

3.3 MODELS EMPLOYED TO ANALYZE AIR QUALITY

3.3.1 CALEEMOD

Land uses such as the Project affect air quality through construction-source and operational-source emissions.

On October 17, 2017, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod Version 2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from MMs (21). Accordingly, the latest version of CalEEMod has been used for this Project to determine construction and operational air quality emissions. Output from the model runs for both construction and operational activity are provided in Appendix 3.1.

3.3.2 EMISSION FACTORS MODEL

On August 19, 2019, the EPA approved the 2017 version of the EMissions FACtor model (EMFAC) web database for use in SIP and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, and vehicle miles traveled (VMT) from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources (22). This AQIA utilizes summer, winter, and annual EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season.

Because the EMFAC2017 emission rates are associated with vehicle fuel types while CalEEMod vehicle emission factors are aggregated to include all fuel types for each individual vehicle class, the EMFAC2017 emission rates for different fuel types of a vehicle class are averaged by activity or by population and activity to derive CalEEMod emission factors. The equations applied to obtain CalEEMod vehicle emission factors for each emission type are detailed in CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* (23). EMFAC2017 emission rates utilized in this analysis can be found in Appendix 3.2 of this report.

3.4 CONSTRUCTION EMISSIONS

3.4.1 CONSTRUCTION ACTIVITIES

Construction activities associated with the Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving

- Architectural Coating

GRADING ACTIVITIES

Dust is typically a major concern during grading activities. Because such emissions are not amenable to collection and discharge through a controlled source, they are called "fugitive emissions". Fugitive dust emissions rates vary as a function of many parameters (soil silt, soil moisture, wind speed, area disturbed, number of vehicles, depth of disturbance or excavation, etc.). CalEEMod was utilized to calculate fugitive dust emissions resulting from this phase of activity. This analysis assumes that earthwork activities are expected to balance on site and no import or export of soils would be required.

ON-ROAD TRIPS

Construction generates on-road vehicle emissions from vehicle usage for workers, hauling, and vendors commuting to and from the site. The number of workers, hauling, and vendor trips are presented below in Table 3-2. It should be noted that for Vendor Trips, specifically, CalEEMod only assigns Vendor Trips to the Building Construction phase. Vendor trips would likely occur during all phases of construction. As such, the CalEEMod defaults for Vendor Trips have been adjusted based on a ratio of the total vendor trips to the number of days of each subphase of activity.

TABLE 3-2: CONSTRUCTION TRIP ASSUMPTIONS

Phase Name	Worker Trips Per Day	Vendor Trips Per Day	Hauling Trips Per Day
Site Preparation	18	1	0
Grading	15	1	0
Building Construction	90	20	0
Paving	15	2	0
Architectural Coating	18	2	0

3.4.2 CONSTRUCTION DURATION

Construction is expected to commence in July 2021 and will last through July 2022. The construction schedule utilized in the analysis, shown in Table 3-3, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent.[2] The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (1). The duration of construction activity was based on CalEEMod defaults.

[2] As shown in the CalEEMod User's Guide Version 2016.3.2, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

TABLE 3-3: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Site Preparation	07/01/2021	07/07/2021	5
Grading	07/08/2021	07/19/2021	8
Building Construction	07/20/2021	06/06/2022	230
Paving	06/07/2022	06/30/2022	18
Architectural Coating	07/01/2022	07/26/2022	18

3.4.3 CONSTRUCTION EQUIPMENT

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 3-4 will operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the code. It should be noted that most pieces of equipment would likely operate for fewer hours per day. A summary of construction equipment assumptions by phase is provided at Table 3-4.

TABLE 3-4: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Equipment [A]	Amount	Hours Per Day
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	3	8
	Excavators	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

[A] In order to account for fugitive dust emissions associated with Site Preparation and Grading activities, Crawler Tractors were used in lieu of Tractors/Loaders/Backhoes.

3.4.4 CONSTRUCTION EMISSIONS SUMMARY

IMPACTS WITHOUT MITIGATION

CalEEMod calculates maximum daily emissions for summer and winter periods. As such, the estimated maximum daily construction emissions without mitigation for both summer and winter periods are summarized on Table 3-5. Detailed construction model outputs are presented in Appendix 3.1. Under the assumed scenarios, emissions resulting from the Project construction would not exceed criteria pollutant thresholds established by the SCAQMD for emissions of any criteria pollutant.

TABLE 3-5: PROJECT CONSTRUCTION EMISSIONS SUMMARY – WITHOUT MITIGATION

Year	Emissions (lbs/day)					
	VOC	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Summer						
2021	5.43	60.93	22.54	0.06	11.97	6.59
2022	24.55	18.73	20.82	0.04	2.01	1.12
Winter						
2021	5.43	60.93	22.41	0.06	11.97	6.59
2022	24.55	18.72	20.28	0.04	2.01	1.12
Maximum Daily Emissions	**24.55**	**60.93**	**22.54**	**0.06**	**11.97**	**6.59**
SCAQMD Regional Threshold	75	100	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod unmitigated regional construction-source emissions are presented in Appendix 3.1.

3.5 OPERATIONAL EMISSIONS

Operational activities associated with the Project will result in emissions of VOCs, NO_X, SO_X, CO, PM_{10}, and $PM_{2.5}$. Operational emissions would be expected from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions

3.5.1 AREA SOURCE EMISSIONS

ARCHITECTURAL COATINGS

Over a period of time the buildings that are part of this Project will require maintenance and will therefore produce emissions resulting from the evaporation of solvents contained in paints, varnishes, primers, and other surface coatings. The emissions associated with architectural coatings were calculated using CalEEMod.

CONSUMER PRODUCTS

Consumer products include, but are not limited to detergents, cleaning compounds, polishes, personal care products, and lawn and garden products. Many of these products contain organic compounds which when released in the atmosphere can react to form O_3 and other photochemically reactive pollutants. The emissions associated with use of consumer products were calculated based on defaults provided within CalEEMod.

LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

3.5.2 ENERGY SOURCE EMISSIONS

COMBUSTION EMISSIONS ASSOCIATED WITH NATURAL GAS AND ELECTRICITY

Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas. When combustion of natural gas occurs within a building, the building is considered a direct emission source and CalEEMod will calculate emissions of all criteria pollutants (23). For purposes of analysis, the emissions associated with natural gas use were calculated using CalEEMod.

CalEEMod also calculates criteria pollutants from generation of electricity associated with a building. It should be noted that when electricity is used in buildings, the electricity generation typically takes place offsite (i.e. power plants). Because power plants are existing stationary sources, criteria pollutant emissions are generally associated with the power plants and not the individual buildings or electricity users (23). Since electricity will be provided to the Project by Southern California Edison, Project-related electricity generation is considered to take place offsite and therefore criteria pollutant emissions are not accounted for.

INTEGRATED ENERGY POLICY REPORT

Project building operations and Project site maintenance activities would result in the consumption of natural gas and electricity. Natural gas would be supplied to the Project by Southern California Gas (SoCalGas) and electricity would be supplied to the Project by Southern California Edison (SCE).

TITLE 24 ENERGY EFFICIENCY STANDARDS

California's Energy Efficiency Standards for Residential and Nonresidential Buildings was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. The CEC anticipates that residential buildings will use approximately 53% less energy compared to

the prior code (24). The CalEEMod defaults for Title 24 – Electricity and Lighting Energy were reduced by 53% in order to reflect consistency with the 2019 Title 24 standard.

3.5.3 MOBILE SOURCE EMISSIONS

The Project related operational air quality emissions derive primarily from vehicle trips generated by the Project. Trip characteristics available from the TA report were utilized in this analysis. Per the TA, the Project would generate a total of approximately 476 two-way vehicular trips per day (238 trips inbound and 238 trips outbound) (5).

It should be noted that CalEEMod has different trip rates for different days of the week. In order to accurately determine mobile-source emission from vehicle activity generated by the proposed Project, the CalEEMod default trip rates were adjusted for weekday, Saturday, and Sunday utilizing the trip rates used in this analysis are based on the trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017)**Invalid source specified.**.

FUGITIVE DUST RELATED TO VEHICULAR TRAVEL

Vehicles traveling on paved roads would be a source of fugitive emissions due to the generation of road dust inclusive of break and tire wear particulates. The emission estimates for travel on paved roads were calculated using CalEEMod.

3.5.4 OPERATIONAL EMISSIONS SUMMARY

IMPACTS WITHOUT MITIGATION

As previously stated, CalEEMod utilizes summer and winter EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities, which vary by season. The estimated operational-source emissions are summarized on Tables 3-6. Detailed operation model outputs for the Project are presented in Appendix 3.1. As shown on Table 3-6, the Project's daily regional emissions from on-going operations will not exceed any of the thresholds of significance.

TABLE 3-6: SUMMARY OF PEAK OPERATIONAL EMISSIONS– WITHOUT MITIGATION (1 OF 2)

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Summer						
Area Source	1.73	1.14	5.84	7.17E-03	0.12	0.12
Energy Source	0.02	0.17	0.07	1.10E-03	0.01	0.01
Mobile Source	1.21	3.31	12.04	0.04	3.89	1.07
Total Maximum Daily Emissions	**2.97**	**4.63**	**17.95**	**0.05**	**4.02**	**1.20**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

TABLE 3-6: SUMMARY OF PEAK OPERATIONAL EMISSIONS– WITHOUT MITIGATION (2 OF 2)

Source	Emissions (lbs/day)					
	VOC	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Winter						
Area Source	1.73	1.14	5.84	7.17E-03	0.12	0.12
Energy Source	0.02	0.17	0.07	1.10E-03	0.01	0.01
Mobile Source	1.16	3.48	10.81	0.04	3.89	1.07
Total Maximum Daily Emissions	**2.91**	**4.79**	**16.72**	**0.05**	**4.02**	**1.20**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod regional operational-source emissions are presented in Appendix 3.1

3.6 LOCALIZED SIGNIFICANCE

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (*LST Methodology*). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4[3]. LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the *LST Methodology* (25).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate SRA for the LST analysis is the SCAQMD Elsinore Valley (SRA 25). LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects less than or equal to 5 acres in size.

[3] The purpose of SCAQMD's Environmental Justice program is to ensure that everyone has the right to equal protection from air pollution and fair access to the decision-making process that works to improve the quality of air within their communities. Further, the SCAQMD defines Environmental Justice as "…equitable environmental policymaking and enforcement to protect the health of all residents, regardless of age, culture, ethnicity, gender, race, socioeconomic status, or geographic location, from the health effects of air pollution."

In order to determine the appropriate methodology for determining localized impacts that could occur as a result of Project-related construction, the following process is undertaken:

- Identify the maximum daily on-site emissions that will occur during construction activity:
    - The maximum daily on-site emissions could be based on information provided by the Project Applicant; or
    - The SCAQMD's *Fact Sheet for Applying CalEEMod to Localized Significance Thresholds* and CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* can be used to determine the maximum site acreage that is actively disturbed based on the construction equipment fleet and equipment hours as estimated in CalEEMod (26) (23).
- If the total acreage disturbed is less than or equal to 5 acres per day, then the SCAQMD's screening look-up tables are utilized to determine if a Project has the potential to result in a significant impact. The look-up tables establish a maximum daily emissions threshold in lbs/day that can be compared to CalEEMod outputs.
- If the total acreage disturbed is greater than 5 acres per day, then LST impacts may still be conservatively evaluated using the LST look-up tables for a 5-acre disturbance area. Use of the 5-acre disturbance area thresholds can be used to show that even if the daily emissions from all construction activity were emitted within a 5-acre area, and therefore concentrated over a smaller area which would result in greater site adjacent concentrations, the impacts would still be less than significant if the applicable 5-acre thresholds are utilized.
- The *LST Methodology* presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds.

EMISSIONS CONSIDERED

Based on SCAQMD's *LST Methodology*, emissions for concern during construction activities are on-site NO_X, CO, $PM_{2.5}$, and PM_{10}. The *LST Methodology* clearly states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs (27)." As such, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered.

MAXIMUM DAILY DISTURBED-ACREAGE

As a conservative measure, it is assumed that a maximum of 5 acres per day can be actively disturbed during construction of the site. In CalEEMod, the Total Acres Graded (TAG) field represents the cumulative distance traversed on the property by the grading equipment. In order to properly grade a piece of land, multiple passes with grading equipment may be required. So even though the lot size is a fixed number of acres, the TAG could be an order of magnitude higher than the footprint of the lot (23). TAG is a function of the maximum acreage disturbed per day times the number of days of the subphase of construction. As such, the TAG field in CalEEMod has been revised to 50 acres (5 acres per day x 10 days) for site preparation and 100 acres (5 acres per day x 20 days) for grading[4].

[4] CalEEMod does not provide a "Total Acres Graded" field for Building Construction, Paving, or Architectural Coating activities.

SENSITIVE RECEPTORS

As previously stated, LSTs represent the maximum emissions from a project that would not cause or contribute to an exceedance of the most stringent applicable NAAQS and CAAQS at the nearest residence or sensitive receptor. Receptor locations are off-site locations where individuals may be exposed to emissions from Project activities.

Some people are especially sensitive to air pollution and are given special consideration when evaluating air quality impacts from projects. These groups of people include children, the elderly and individuals with pre-existing respiratory or cardiovascular illness. Structures that house these persons or places where they gather are defined as "sensitive receptors". These structures typically include uses such as residences, hotels, and hospitals where an individual can remain for 24 hours. Consistent with the *LST Methodology*, the nearest land use where an individual could remain for 24 hours to the Project site (in this case the West Valley Detention Center) has been used to determine construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$, since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time.

LSTs apply, even for non-sensitive land uses, consistent with *LST Methodology* and SCAQMD guidance. Per the *LST Methodology*, commercial and industrial facilities are not included in the definition of sensitive receptor because employees and patrons do not typically remain onsite for a full 24 hours but are typically onsite for 8 hours or less. However, *LST Methodology* explicitly states that "*LSTs based on shorter averaging periods, such as the NO_2 and CO LSTs, could also be applied to receptors such as industrial or commercial facilities since it is reasonable to assume that a worker at these sites could be present for periods of one to eight hours* (27)." Therefore, any adjacent land use where an individual could remain for 1 or 8-hours, that is located at a closer distance to the Project site than the receptor used for PM_{10} and $PM_{2.5}$ analysis, must be considered to determine construction and operational LST air impacts for emissions of NO_2 and CO since these pollutants have an averaging time of 1 and 8-hours.

PROJECT-RELATED SENSITIVE RECEPTORS

Localized air quality impacts were evaluated at receptor land uses nearest the Project site. All distances are measured from the Project site boundary to the outdoor living areas (e.g., backyards) or at the building façade, whichever is closer to the Project site.

The SCAQMD recommends that the nearest sensitive receptor be considered when determining the Project's potential to cause an individual a cumulatively significant impact. The nearest land use where an individual could remain for 24 hours to the Project site has been used to determine localized construction and operational air quality impacts for emissions of PM_{10} and $PM_{2.5}$ (since PM_{10} and $PM_{2.5}$ thresholds are based on a 24-hour averaging time). The nearest receptor used for evaluation of localized impacts of PM_{10} and $PM_{2.5}$ is represented by the residential homes located immediately adjacent to the northern boundary of the Project site.

As previously stated, and consistent with *LST Methodology*, the nearest industrial/commercial use to the Project site is used to determine construction and operational LST air impacts for emissions of NO_X and CO as the averaging periods for these pollutants are shorter (8 hours or less) and it is reasonable to assumed that an individual could be present at these sites for periods

of one to 8 hours. The nearest industrial/commercial receptor used for evaluation of localized impacts of NO_X and CO is located at a further distance in comparison to the residential homes adjacent to the Project site. As such, the same residential homes will be utilized for evaluation of localized NO_X and CO impacts.

It should be noted that the *LST Methodology* explicitly states that "*It is possible that a project may have receptors closer than 25 meters. Projects with boundaries located closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters* (28)." As such a 25-meter receptor distance will be used for evaluation of localized PM_{10}, $PM_{2.5}$, NO_2, and CO.

3.7 CONSTRUCTION-SOURCE EMISSIONS LST ANALYSIS

3.7.1 LOCALIZED THRESHOLDS FOR CONSTRUCTION ACTIVITY

Although the total acreage disturbed is more than 5 acres per day for construction activities, the *LST Methodology* provides look-up tables for sites with an area with daily disturbance of 5 acres or less. For projects that exceed 5 acres, the 5-acre LST look-up tables can be used as a screening tool to determine which pollutants require additional detailed analysis. This approach is conservative as it assumes that all on-site emissions associated with the Project would occur within a concentrated 5-acre area. This screening method would therefore over-predict potential localized impacts, because by assuming that on-site construction activities are occurring over a smaller area, the resulting concentrations of air pollutants are more highly concentrated once they reach the smaller site boundary than they would be for activities if they were spread out over a larger surface area. On a larger site, the same amount of air pollutants generated would disperse over a larger surface area and would result in a lower concentration once emissions reach the Project-site boundary. As such, LSTs for a 5-acre site during construction are used as a screening tool to determine if further detailed analysis is required. The thresholds used in for the construction-source LST analysis are presented below in Table 3-7.

TABLE 3-7: MAXIMUM DAILY LOCALIZED EMISSIONS THRESHOLDS

Pollutant	Construction Localized Thresholds
NO_X	371 lbs/day
CO	1,965 lbs/day
PM_{10}	13 lbs/day
$PM_{2.5}$	8 lbs/day

Source: Localized Thresholds presented in this table are based on the SCAQMD Final *LST Methodology*, July 2008

3.7.2 LOCALIZED CONSTRUCTION-SOURCE EMISSIONS

IMPACTS WITHOUT MITIGATION

In order to estimate on-site emissions from each building area, the total on-site construction emissions were weighed based on the ratio of each building area relative to the entire Project site. Table 3-8 identifies the localized impacts at the nearest receptor location in the vicinity of

the Project. Without mitigation, localized construction emissions would not exceed the applicable SCAQMD LSTs for emissions of any criteria pollutant.

TABLE 3-8: PROJECT LOCALIZED CONSTRUCTION EMISSIONS – WITHOUT MITIGATION

On-Site Emissions	Emissions (lbs/day)			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Site Preparation				
Maximum Daily Emissions	**60.79**	**21.85**	**11.76**	**6.53**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Grading				
Maximum Daily Emissions	**39.95**	**16.38**	**6.03**	**3.00**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Building Construction				
Maximum Daily Emissions	**18.75**	**17.67**	**1.03**	**0.96**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Paving				
Maximum Daily Emissions	**11.12**	**14.58**	**0.57**	**0.52**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**
Architectural Coating				
Maximum Daily Emissions	**1.88**	**2.42**	**0.11**	**0.11**
SCAQMD Localized Threshold	371	1,965	13	8
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**

Source: CalEEMod unmitigated localized construction-source emissions are presented in Appendix 3.1.

3.8 LOCALIZED SIGNIFICANCE – LONG-TERM OPERATIONAL ACTIVITY

The development of the proposed Project is located on 5 acres. As previously stated, the total development currently includes 65 multifamily housing (low-rise) residential DUs. According to SCAQMD *LST Methodology*, LSTs would apply to the operational phase of a proposed project, if the project includes stationary sources, or attracts mobile sources that may spend long periods queuing and idling at the site (e.g., transfer facilities and warehouse buildings). The proposed project does not include such uses, and thus, due to the lack of significant stationary source emissions, no long-term localized significance threshold analysis is needed.

3.9 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific CO "hot spots" is not needed to reach this conclusion. An adverse CO concentration, known as a "hot spot", would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the SCAQMD's *CEQA Air Quality Handbook (1993)* (*1993 CEQA Handbook*), the SCAB was designated nonattainment under the CAAQS and NAAQS for CO (29).

It has long been recognized that CO hotspots are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty 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 SCAB is now designated as attainment.

To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for 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, as shown on Table 3-9.

TABLE 3-9: CO MODEL RESULTS

Intersection Location	CO Concentrations (ppm)		
	Morning 1-hour	Afternoon 1-hour	8-hour
Wilshire Blvd./Veteran Ave.	4.6	3.5	4.2
Sunset Blvd./Highland Ave.	4	4.5	3.9
La Cienega Blvd./Century Blvd.	3.7	3.1	5.8
Long Beach Blvd./Imperial Hwy.	3	3.1	9.3

Ave. = Avenue
Blvd. = Boulevard
Highway = Hwy.
Source: 2003 AQMP, Appendix V: Modeling and Attainment Demonstrations
Notes: Federal 1-hour standard is 35 ppm and the deferral 8-hour standard is 9.0 ppm.

Based on the SCAQMD's 2003 AQMP and the *1992 Federal Attainment Plan for Carbon Monoxide* (*1992 CO Plan*), peak CO concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of traffic volumes and congestion at a particular intersection. As evidence of this, for example, 8.4 ppm 8-hr CO concentration measured at the Long Beach Blvd. and Imperial Hwy. intersection (highest CO generating intersection within the "hot spot" analysis), only 0.7 ppm was attributable to the traffic volumes and congestion at this intersection; the remaining 7.7 ppm were due to the ambient air measurements at the time the 2003 AQMP was prepared (30). In contrast, an adverse CO concentration, known as a "hot spot",

would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur.

The ambient 1-hr and 8-hr CO concentration within the Project study area is estimated to be 1.6 ppm and 0.7 ppm, respectively (data from Lake Elsinore station for 2019). Therefore, even if the traffic volumes for the proposed Project were double or even triple of the traffic volumes generated at the Long Beach Blvd. and Imperial Hwy. intersection, coupled with the on-going improvements in ambient air quality, the Project would not be capable of resulting in a CO "hot spot" at any study area intersections.

The 2003 AQMP, and as previously shown in Table 3-9, estimated that the 1-hour concentration for the Wilshire Blvd. and Veteran Ave. intersection was 4.6 ppm; this indicates that, should the daily traffic volume increase four times to 400,000 vehicles per day, CO concentrations (4.6 ppm x 4= 18.4 ppm) would still not likely exceed the most stringent 1-hour CO standard (20.0 ppm).[5]

Traffic volumes generating the CO concentrations for the "hot spot" analysis is shown on Table 3-10. The busiest intersection evaluated for traffic volumes was at La Cienega Blvd. and Century Blvd., which has a traffic volume of approximately 8,674 vehicles per hour (vph) (30). As shown on Table 3-11, the highest trips on a segment of road for the proposed Project is 679 vph on Monte Vista Dr. and Summer Sage Dr. As such, Project-related traffic volumes are less than the traffic volumes identified in the 2003 AQMP. The Project considered herein would not produce the volume of traffic required to generate a CO "hot spot" either in the context of the 2003 Los Angeles hot spot study or based on representative BAAQMD CO threshold considerations. Therefore, CO "hot spots" are not an environmental impact of concern for the Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

TABLE 3-10: TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Wilshire Blvd./Veteran Ave.	4,954/2,069	1,830/3,317	721/1,400	560/933	8,062/7,719
Sunset Blvd./Highland Ave.	1,417/1,764	1,342/1,540	2,304/1,832	1,551/2,238	6,614/5,374
La Cienega Blvd./Century Blvd.	2,540/2,243	1,890/2,728	1,384/2,029	821/1,674	6,634/8,674
Long Beach Blvd/Imperial Hwy.	1,217/2,020	1,760/1,400	479/944	756/1,150	4,212/5,514

Source: 2003 AQMP

[5] Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

TABLE 3-11: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES

Intersection Location	Peak Traffic Volumes (vph)				
	Eastbound (AM/PM)	Westbound (AM/PM)	Southbound (AM/PM)	Northbound (AM/PM)	Total (AM/PM)
Monte Vista Dr./Summer Sage Dr.	214/197	406/232	0/0	60/32	679/460
Driveway 1/Summer Sage Dr.	0/0	23/13	51/48	36/18	110/79

Source: *Monte Vista Ranch (Tract No. 32024, Lot 71) Traffic Analysis* (Urban Crossroads, 2021)

3.10 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the SCAB. In response, the SCAQMD has adopted a series of AQMPs to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

In March 2017, the SCAQMD released the Final 2016 AQMP. The 2016 AQMP continues to evaluate current integrated strategies and control measures to meet the NAAQS and explores new and innovative methods to reach its goals. Some of these approaches include utilizing incentive programs, recognizing existing co-benefit programs from other sectors, and developing a strategy with fair-share reductions at the federal, state, and local levels (31). Similar to the 2012 AQMP, the 2016 AQMP incorporates scientific and technological information and planning assumptions, including the 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS), a planning document that supports the integration of land use and transportation to help the region meet the federal Clean Air Act requirements (19). The Project's consistency with the AQMP will be determined using the 2016 AQMP as discussed below.

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (32). These indicators are discussed below:

3.10.1 CONSISTENCY CRITERION NO. 1

The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The violations that Consistency Criterion No. 1 refers to are the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if regional or localized significance thresholds were exceeded.

Construction Impacts – Consistency Criterion 1

Consistency Criterion No. 1 refers to violations of the CAAQS and NAAQS. CAAQS and NAAQS violations would occur if LSTs or regional significance thresholds were exceeded. As evaluated, the Project's regional and localized construction-source emissions would not exceed applicable regional significance threshold and LST thresholds. As such, a less than significant impact is expected.

Operational Impacts – Consistency Criterion 1

As evaluated, and when taking into consideration existing emissions, the Project's operational emissions would not exceed the applicable regional significance thresholds and LST thresholds for operational activity. Therefore, the Project would not conflict with the AQMP according to this criterion.

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

3.10.2 CONSISTENCY CRITERION NO. 2

The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The 2016 AQMP demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the SCAG, which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in City of Wildomar General Plan is considered to be consistent with the AQMP***.***

Construction Impacts – Consistency Criterion 2

Peak day emissions generated by construction activities are largely independent of land use assignments, but rather are a function of development scope and maximum area of disturbance. Irrespective of the site's land use designation, development of the site to its maximum potential would likely occur, with disturbance of the entire site occurring during construction activities.

Operational Impacts – Consistency Criterion 2

Per the City's General Plan, the Project site is designated for Commercial Retail uses. The Commercial Retail land use designation allows for the development of commercial retail uses at a neighborhood, community and regional level, as well as for professional office and tourist-oriented commercial uses (4).

As previously stated, the total development currently includes the development of 65 multifamily housing (low-rise) residential DUs. As the Project's proposed land use and development is not consistent with the land use designation stated in the General Plan, the Project would require a

General Plan Amendment. However, since the Project construction and operational regional and localized emissions do not exceed the thresholds of significance, the Project would not cause an exceedance of an air quality violation. It should also be noted that the residential use proposed by the Project will generate less traffic and consequently fewer emissions than if the Project site were developed consistent with the CR land use designation (retail, office, commercial uses), which would generate more trips and consequently more emissions than the proposed Project.

On the basis of the preceding discussion, the Project is determined to be consistent with the second criterion.

AQMP CONSISTENCY CONCLUSION

The Project would not result in or cause NAAQS or CAAQS violations. Although the Project would not be consistent with the site land use and zoning designations, construction and operational-source impacts would not exceed the applicable SCAQMD regional and localized thresholds. As such, the Project is therefore considered to be consistent with the AQMP.

3.11 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long-term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, childcare centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during construction. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations during Project construction.

Additionally, the Project will not exceed the SCAQMD localized significance thresholds during operational activity. Further Project traffic would not create or result in a CO "hotspot." Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations as the result of Project operations.

3.11.1 FRIANT RANCH CASE

In December 2018, in the case of *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502, California Supreme Court held that an EIR's air quality analysis must meaningfully connect the identified air quality impacts to the human health consequences of those impacts, or meaningfully explain why that analysis cannot be provided. As noted in the Brief of Amicus Curiae by the SCAQMD in the Friant Ranch case (April 6, 2015, Appendix 3.3) (Brief), SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, and thus it is uniquely situated to express an opinion on how lead agencies should correlate air quality impacts with specific health outcomes (33).

The SCAQMD discusses that it may be infeasible to quantify health risks caused by projects similar to the proposed Project, due to many factors. It is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence)

(33). The Brief states that it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s))[6] (33). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk--it does not necessarily mean anyone will contract cancer as a result of the Project (33). The Brief also cites the author of the CARB methodology, which reported that a $PM_{2.5}$ methodology is not suited for small projects and may yield unreliable results (33). Similarly, SCAQMD staff does not currently know of a way to accurately quantify O_3-related health impacts caused by NO_X or VOC emissions from relatively small projects, due to photochemistry and regional model limitations (33). The Brief concludes, with respect to the Friant Ranch EIR, that although it may have been technically possible to plug the data into a methodology, the results would not have been reliable or meaningful (33).

On the other hand, for extremely large regional projects (unlike the proposed Project), the SCAQMD states that it has been able to correlate potential health outcomes for very large emissions sources – as part of their rulemaking activity, specifically 6,620 lbs./day of NO_X and 89,180 lbs./day of VOC were expected to result in approximately 20 premature deaths per year and 89,947 school absences due to O_3 (33).

The proposed Project does not generate anywhere near 6,620 lbs/day of NO_X or 89,190 lbs/day of VOC emissions. The proposed Project would generate up to 60.93 lbs/day of NO_X during construction and 4.79 lbs/day of NO_X during operations (0.92% and 0.07% of 6,620 lbs/day, respectively). The Project would also generate a maximum of 24.55 lbs/day of VOC emissions during construction and 2.97 lbs/day of VOC emissions during operations (0.04% and 0.003% of 89,190 lbs/day, respectively). Therefore, the proposed Project's emissions are not sufficiently high enough to use a regional modeling program to correlate health effects on a basin-wide level.

Notwithstanding, this AQIA does evaluate the proposed Project's localized impact to air quality for emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$ by comparing the Proposed Project's on-site emissions to the SCAQMD's applicable LST thresholds. As evaluated in this AQIA, the proposed Project would not result in emissions that exceeded the SCAQMD's LSTs. Therefore, the proposed Project would not be expected to exceed the most stringent applicable federal or state ambient air quality standards for emissions of CO, NO_X, PM_{10}, and $PM_{2.5}$.

3.12 ODORS

The potential for the proposed Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants

[6] It should also be noted that the actual occurrence of specific health conditions is based on numerous other factors that are infeasible to quantify, such as an individual's genetic predisposition, diet, exercise regiment, stress, and other behavioral characteristics.

- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The proposed Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from construction equipment exhaust and the application of asphalt and architectural coatings during construction activities and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. Standard construction requirements would minimize odor impacts from construction. The construction odor emissions would be temporary, short-term, and intermittent in nature and would cease upon completion of the respective phase of construction and is thus considered less than significant. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project construction and operations would be less than significant and no mitigation is required (34).

3.13 CUMULATIVE IMPACTS

The proposed Project site area is designated as an extreme non-attainment area for O_3, and a non-attainment area for PM_{10}, $PM_{2.5}$, and lead.

The SCAQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (35). In this report the SCAQMD clearly states (Page D-3):

> *"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.*
>
> *Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not*

> *exceed the project-specific thresholds are generally not considered to be cumulatively significant."*

Therefore, this analysis assumes that individual projects that do not generate operational or construction emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related construction and operational emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

CONSTRUCTION IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project construction-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project construction-source emissions would be considered less than significant on a project-specific and cumulative basis.

OPERATIONAL IMPACTS

The Project-specific evaluation of emissions presented in the preceding analysis demonstrates that proposed Project operational-source air pollutant emissions would not result in exceedances of regional thresholds. Therefore, proposed Project operational-source emissions would be considered less than significant on a project-specific and cumulative basis.

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5 CERTIFICATIONS

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Monte Vista Ranch. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

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Master of Science in Environmental Studies
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AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
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PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – CARB • August 2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

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APPENDIX 2.1:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

APPENDIX C

MAPS AND TABLES OF AREA DESIGNATIONS FOR STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

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APPENDIX C

MAPS AND TABLES OF AREA DESIGNATIONS FOR STATE AND NATIONAL AMBIENT AIR QUALITY STANDARDS

This attachment fulfills the requirement of Health and Safety Code section 40718 for CARB to publish maps that identify areas where one or more violations of any State ambient air quality standard (State standard) or national ambient air quality standard (national standard) have been measured. The national standards are those promulgated under section 109 of the federal Clean Air Act (42 U.S.C. 7409).

This attachment is divided into three parts. The first part comprises a table showing the levels, averaging times, and measurement methods for each of the State and national standards. This is followed by a section containing maps and tables showing the area designations for each pollutant for which there is a State standard in the California Code of Regulations, title 17, section 70200. The last section contains maps and tables showing the most current area designations for the national standards.

Ambient Air Quality Standards

(Updated 5/4/16)

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m³)		0.070 ppm (137 µg/m³)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m³	Gravimetric or Beta Attenuation	150 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m³		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m³	Gravimetric or Beta Attenuation	12.0 µg/m³	15 µg/m³	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m³)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m³)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m³)		9 ppm (10 mg/m³)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m³)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m³)	Gas Phase Chemiluminescence	100 ppb (188 µg/m³)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m³)		0.053 ppm (100 µg/m³)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m³)	Ultraviolet Fluorescence	75 ppb (196 µg/m³)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m³)	
	24 Hour	0.04 ppm (105 µg/m³)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m³	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m³ (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m³		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m³)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m³)	Gas Chromatography			

See footnotes on next page …

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

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Area Designations for the State Ambient Air Quality Standards

The following maps and tables show the area designations for each pollutant with a State standard set forth in the California Code of Regulations, title 17, section 60200. Each area is identified as attainment, nonattainment, nonattainment-transitional, or unclassified for each pollutant, as shown below:

Attainment	A
Nonattainment	N
Nonattainment-Transitional	NA-T
Unclassified	U

In general, CARB designates areas by air basin for pollutants with a regional impact and by county for pollutants with a more local impact. However, when there are areas within an air basin or county with distinctly different air quality deriving from sources and conditions not affecting the entire air basin or county, CARB may designate a smaller area. Generally, when boundaries of the designated area differ from the air basin or county boundaries, the description of the specific area is referenced at the bottom of the summary table.

FIGURE 1


2018
Area Designations for State
Ambient Air Quality Standards
OZONE
N
0
50
100
200
Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Shasta
Lassen
Trinity
Humboldt
Tehema
SACRAMENTO VALLEY
SUTTER BUTTES
Plumas
Butte
Sierra
MOUNTAIN COUNTIES
Mendocino
Glenn
Nevada
LAKE COUNTY
Colusa
Yuba
Placer
Lake
Sutter
LAKE TAHOE
El Dorado
Yolo
Alpine
Sonoma
Napa
Sac
Amador
SAN FRANCISCO BAY AREA
Solano
Calaveras
Marin
San Joaquin
Contra Costa
Tuolumne
Mono
San Francisco
Alameda
Mariposa
GREAT BASIN VALLEYS
San Mateo
Stanislaus
Santa Clara
Merced
Santa Cruz
Madera
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Inyo
Tulare
Monterey
Kings
San Luis Obispo
Kern
SOUTH CENTRAL COAST
San Bernardino
Santa Barbara
Los Angeles
MOJAVE DESERT
Ventura
Orange
Riverside
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
SALTON SEA
Unclassified
Attainment
Nonattainment-Transitional
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 1

California Ambient Air Quality Standards
Area Designations for Ozone (1)

	N	NA-T	U	A		N	NA-T	U	A
GREAT BASIN VALLEYS AIR BASIN					NORTHEAST PLATEAU AIR BASIN				X
Alpine County			X		SACRAMENTO VALLEY AIR BASIN				
Inyo County	X				Colusa and Glenn Counties				X
Mono County	X				Sutter/Yuba Counties				
LAKE COUNTY AIR BASIN				X	Sutter Buttes	X			
LAKE TAHOE AIR BASIN				X	Remainder of Sutter County				X
MOJAVE DESERT AIR BASIN	X				Yuba County				X
MOUNTAIN COUNTIES AIR BASIN					Yolo/Solano Counties		X		
Amador County	X				Remainder of Air Basin	X			
Calaveras County	X				SALTON SEA AIR BASIN	X			
El Dorado County (portion)	X				SAN DIEGO AIR BASIN	X			
Mariposa County	X				SAN FRANCISCO BAY AREA AIR BASIN	X			
Nevada County	X				SAN JOAQUIN VALLEY AIR BASIN	X			
Placer County (portion)	X				SOUTH CENTRAL COAST AIR BASIN				
Plumas County			X		San Luis Obispo County	X			
Sierra County			X		Santa Barbara County		X		
Tuolumne County	X				Ventura County	X			
NORTH CENTRAL COAST AIR BASIN		X			SOUTH COAST AIR BASIN	X			
NORTH COAST AIR BASIN				X					

(1) AB 3048 (Olberg) and AB 2525 (Miller) signed into law in 1996, made changes to Health and Safety Code, section 40925.5. One of the changes allows nonattainment districts to become nonattainment-transitional for ozone by operation of law.

FIGURE 2

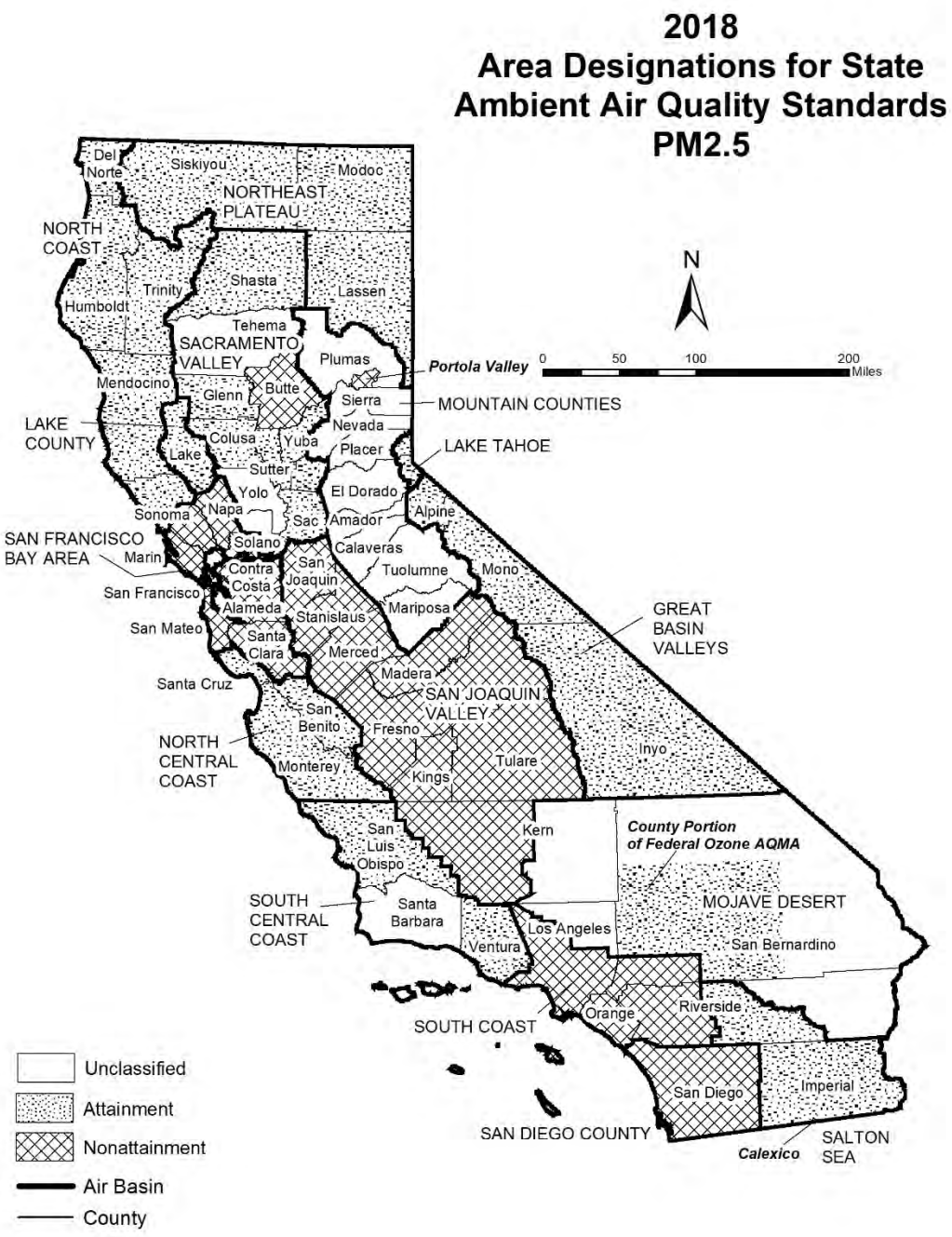

2018
Area Designations for State
Ambient Air Quality Standards
PM10
N
0
50
100
200
Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Trinity
Shasta
Lassen
Humboldt
Tehema
SACRAMENTO VALLEY
Plumas
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
LAKE COUNTY
Colusa
Yuba
Nevada
Lake
Sutter
Placer
LAKE TAHOE
Yolo
El Dorado
Sonoma
Napa
Sac
Amador
Alpine
Yosemite NP
SAN FRANCISCO BAY AREA
Solano
Calaveras
Marin
Contra Costa
San Joaquin
Tuolumne
Mono
San Francisco
Alameda
Stanislaus
Mariposa
GREAT BASIN VALLEYS
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Monterey
Tulare
Inyo
Kings
San Luis Obispo
Kern
MOJAVE DESERT
Santa Barbara
Los Angeles
San Bernardino
SOUTH CENTRAL COAST
Ventura
Orange
Riverside
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
SALTON SEA
Unclassified
Attainment
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 2

California Ambient Air Quality Standards
Area Designation for Suspended Particulate Matter (PM10)

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN	X			NORTH CENTRAL COAST AIR BASIN	X		
LAKE COUNTY AIR BASIN			X	NORTH COAST AIR BASIN			
LAKE TAHOE AIR BASIN	X			Del Norte, Sonoma (portion) and Trinity Counties			X
MOJAVE DESERT AIR BASIN	X			Remainder of Air Basin	X		
MOUNTAIN COUNTIES AIR BASIN				NORTHEAST PLATEAU AIR BASIN			
Amador County		X		Siskiyou County			X
Calaveras County	X			Remainder of Air Basin		X	
El Dorado County (portion)	X			SACRAMENTO VALLEY AIR BASIN			
Mariposa County				Shasta County			X
- Yosemite National Park	X			Remainder of Air Basin	X		
- Remainder of County		X		SALTON SEA AIR BASIN	X		
Nevada County	X			SAN DIEGO AIR BASIN	X		
Placer County (portion)	X			SAN FRANCISCO BAY AREA AIR BASIN	X		
Plumas County	X			SAN JOAQUIN VALLEY AIR BASIN	X		
Sierra County	X			SOUTH CENTRAL COAST AIR BASIN	X		
Tuolumne County		X		SOUTH COAST AIR BASIN	X		

FIGURE 3



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 3

California Ambient Air Quality Standards
Area Designations for Fine Particulate Matter (PM2.5)

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN			X	SALTON SEA AIR BASIN			
LAKE COUNTY AIR BASIN			X	Imperial County			
LAKE TAHOE AIR BASIN			X	- City of Calexico (3)	X		
MOJAVE DESERT AIR BASIN				Remainder of Air Basin			X
San Bernardino County				SAN DIEGO AIR BASIN	X		
- County portion of federal Southeast Desert Modified AQMA for Ozone (1)			X	SAN FRANCISCO BAY AREA AIR BASIN	X		
				SAN JOAQUIN VALLEY AIR BASIN	X		
Remainder of Air Basin		X		SOUTH CENTRAL COAST AIR BASIN			
MOUNTAIN COUNTIES AIR BASIN				San Luis Obispo County			X
Plumas County				Santa Barbara County		X	
- Portola Valley (2)	X			Ventura County			X
Remainder of Air Basin		X		SOUTH COAST AIR BASIN	X		
NORTH CENTRAL COAST AIR BASIN			X				
NORTH COAST AIR BASIN			X				
NORTHEAST PLATEAU AIR BASIN			X				
SACRAMENTO VALLEY AIR BASIN							
Butte County	X						
Colusa County			X				
Glenn County			X				
Placer County (portion)			X				
Sacramento County			X				
Shasta County			X				
Sutter and Yuba Counties			X				
Remainder of Air Basin		X					

(1) California Code of Regulations, title 17, section 60200(b)

(2) California Code of Regulations, title 17, section 60200(c)

(3) California Code of Regulations, title 17, section 60200(a)

FIGURE 4

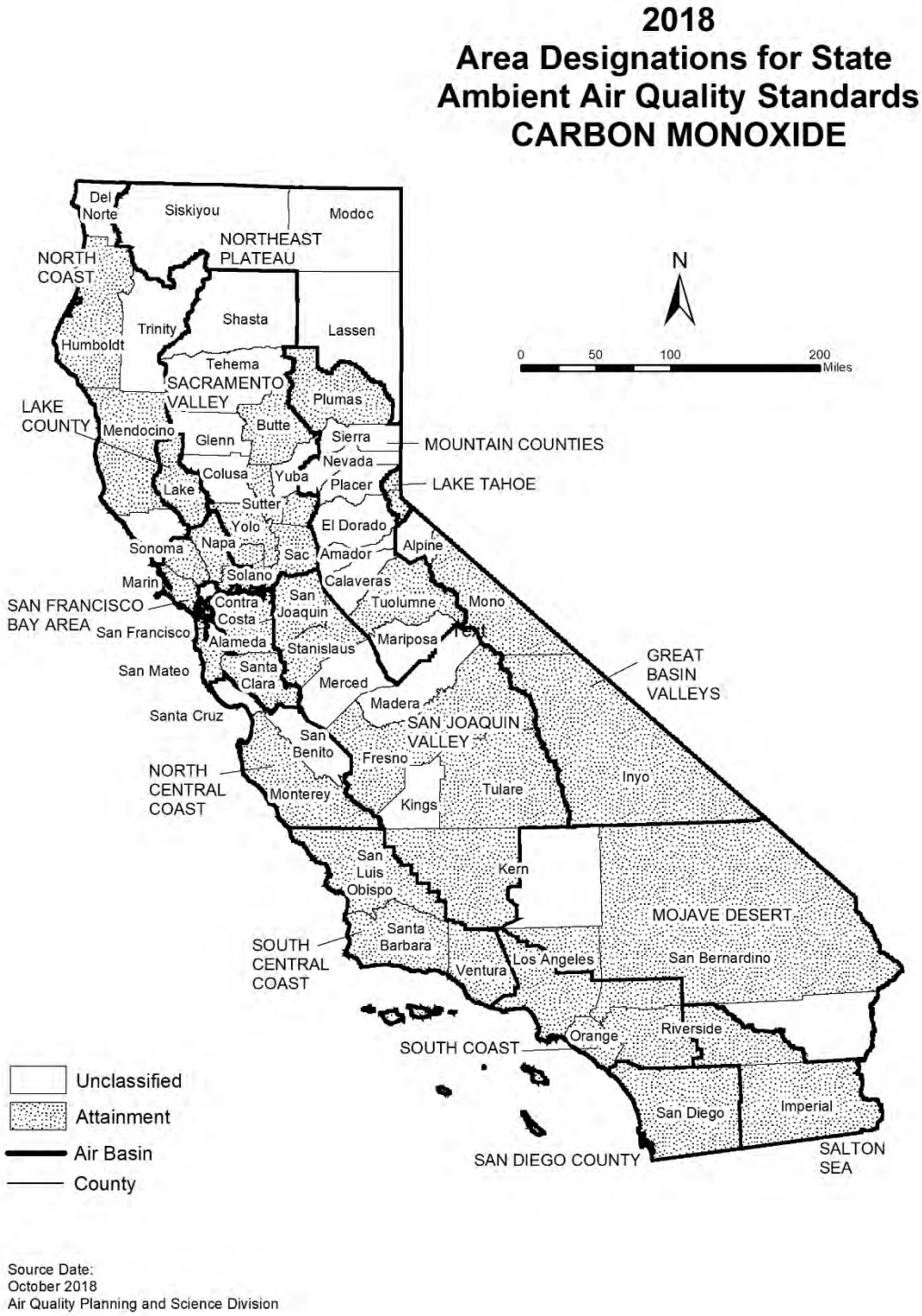

2018
Area Designations for State
Ambient Air Quality Standards
CARBON MONOXIDE
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Trinity
Shasta
Lassen
Humboldt
Tehema
SACRAMENTO VALLEY
Plumas
LAKE COUNTY
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Nevada
Colusa
Yuba
Placer
LAKE TAHOE
Lake
Sutter
Yolo
El Dorado
Sonoma
Napa
Sac
Amador
Alpine
Marin
Solano
Calaveras
SAN FRANCISCO BAY AREA
Contra Costa
San Joaquin
Tuolumne
Mono
San Francisco
Alameda
Stanislaus
Mariposa
GREAT BASIN VALLEYS
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Monterey
Kings
Tulare
Inyo
San Luis Obispo
Kern
MOJAVE DESERT
Santa Barbara
SOUTH CENTRAL COAST
Ventura
Los Angeles
San Bernardino
Orange
Riverside
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
SALTON SEA
N
0
50
100
200
Miles
Unclassified
Attainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 4

California Ambient Air Quality Standards
Area Designation for Carbon Monoxide*

	N	NA-T	U	A		N	NA-T	U	A
GREAT BASIN VALLEYS AIR BASIN					SACRAMENTO VALLEY AIR BASIN				
Alpine County			X		Butte County				X
Inyo County				X	Colusa County			X	
Mono County				X	Glenn County			X	
LAKE COUNTY AIR BASIN				X	Placer County (portion)				X
LAKE TAHOE AIR BASIN				X	Sacramento County				X
MOJAVE DESERT AIR BASIN					Shasta County			X	
Kern County (portion)			X		Solano County (portion)				X
Los Angeles County (portion)				X	Sutter County				X
Riverside County (portion)			X		Tehama County			X	
San Bernardino County (portion)				X	Yolo County				X
MOUNTAIN COUNTIES AIR BASIN					Yuba County			X	
Amador County			X		SALTON SEA AIR BASIN				X
Calaveras County			X		SAN DIEGO AIR BASIN				X
El Dorado County (portion)			X		SAN FRANCISCO BAY AREA AIR BASIN				X
Mariposa County			X		SAN JOAQUIN VALLEY AIR BASIN				
Nevada County			X		Fresno County				X
Placer County (portion)			X		Kern County (portion)				X
Plumas County				X	Kings County			X	
Sierra County			X		Madera County			X	
Tuolumne County				X	Merced County			X	
NORTH CENTRAL COAST AIR BASIN					San Joaquin County				X
Monterey County				X	Stanislaus County				X
San Benito County			X		Tulare County				X
Santa Cruz County			X		SOUTH CENTRAL COAST AIR BASIN				X
NORTH COAST AIR BASIN					SOUTH COAST AIR BASIN				X
Del Norte County			X						
Humboldt County				X					
Mendocino County				X					
Sonoma County (portion)			X						
Trinity County			X						
NORTHEAST PLATEAU AIR BASIN			X						

* The area designated for carbon monoxide is a county or portion of a county

FIGURE 5



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 5

California Ambient Air Quality Standards
Area Designation for Nitrogen Dioxide

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN			X	SACRAMENTO VALLEY AIR BASIN			X
LAKE COUNTY AIR BASIN			X	SALTON SEA AIR BASIN			X
LAKE TAHOE AIR BASIN			X	SAN DIEGO AIR BASIN			X
MOJAVE DESERT AIR BASIN			X	SAN FRANCISCO BAY AREA AIR BASIN			X
MOUNTAIN COUNTIES AIR BASIN			X	SAN JOAQUIN VALLEY AIR BASIN			X
NORTH CENTRAL COAST AIR BASIN			X	SOUTH CENTRAL COAST AIR BASIN			X
NORTH COAST AIR BASIN			X	SOUTH COAST AIR BASIN			
NORTHEAST PLATEAU AIR BASIN			X	CA 60 Near-road Portion of San Bernardino, Riverside, and Los Angeles Counties	X		
				Remainder of Air Basin			X

FIGURE 6



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 6

California Ambient Air Quality Standards
Area Designation for Sulfur Dioxide*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SACRAMENTO VALLEY AIR BASIN		X
LAKE COUNTY AIR BASIN		X	SALTON SEA AIR BASIN		X
LAKE TAHOE AIR BASIN		X	SAN DIEGO AIR BASIN		X
MOJAVE DESERT AIR BASIN		X	SAN FRANCISCO BAY AREA AIR BASIN		X
MOUNTAIN COUNTIES AIR BASIN		X	SAN JOAQUIN VALLEY AIR BASIN		X
NORTH CENTRAL COAST AIR BASIN		X	SOUTH CENTRAL COAST AIR BASIN		X
NORTH COAST AIR BASIN		X	SOUTH COAST AIR BASIN		X
NORTHEAST PLATEAU AIR BASIN		X			

* The area designated for sulfur dioxide is a county or portion of a county

FIGURE 7



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 7

California Ambient Air Quality Standards
Area Designation for Sulfates

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN			X	SACRAMENTO VALLEY AIR BASIN			X
LAKE COUNTY AIR BASIN			X	SALTON SEA AIR BASIN			X
LAKE TAHOE AIR BASIN			X	SAN DIEGO AIR BASIN			X
MOJAVE DESERT AIR BASIN			X	SAN FRANCISCO BAY AREA AIR BASIN			X
MOUNTAIN COUNTIES AIR BASIN			X	SAN JOAQUIN VALLEY AIR BASIN			X
NORTH CENTRAL COAST AIR BASIN			X	SOUTH CENTRAL COAST AIR BASIN			X
NORTH COAST AIR BASIN			X	SOUTH COAST AIR BASIN			X
NORTHEAST PLATEAU AIR BASIN			X				

FIGURE 8



Source Date:
October 2018
Air Quality Planning and Science Division

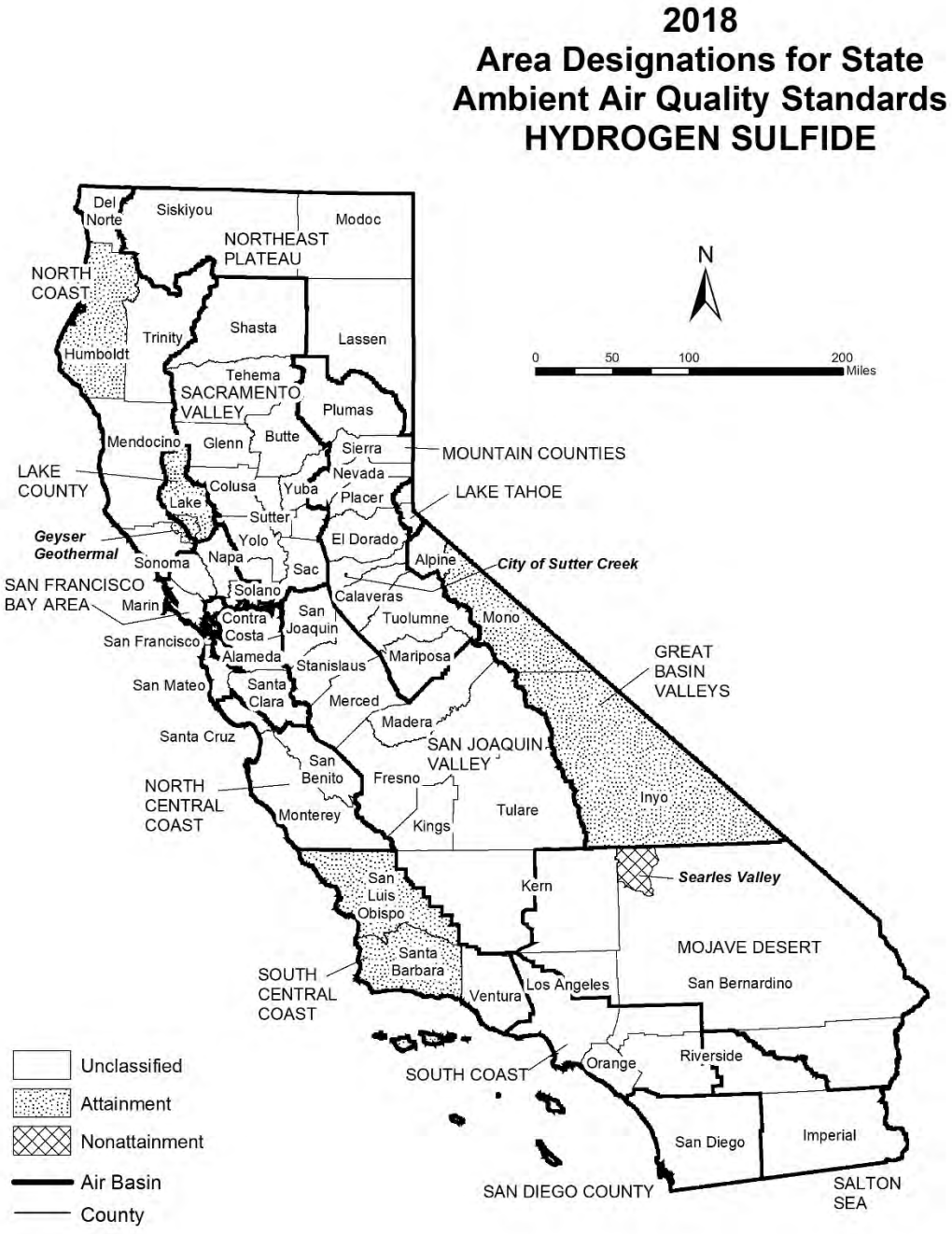
TABLE 8

California Ambient Air Quality Standards
Area Designations for Lead (particulate)*

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN			X	SALTON SEA AIR BASIN			X
LAKE COUNTY AIR BASIN			X	SAN DIEGO AIR BASIN			X
LAKE TAHOE AIR BASIN			X	SAN FRANCISCO BAY AREA AIR BASIN			X
MOJAVE DESERT AIR BASIN			X	SAN JOAQUIN VALLEY AIR BASIN			X
MOUNTAIN COUNTIES AIR BASIN			X	SOUTH CENTRAL COAST AIR BASIN			X
NORTH CENTRAL COAST AIR BASIN			X	SOUTH COAST AIR BASIN			X
NORTH COAST AIR BASIN			X				
NORTHEAST PLATEAU AIR BASIN			X				
SACRAMENTO VALLEY AIR BASIN			X				

* The area designated for lead is a county or portion of a county. Since all areas in the State are in attainment for this standard, air basins are indicated here for simplicity.

FIGURE 9



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 9

California Ambient Air Quality Standards
Area Designation for Hydrogen Sulfide*

	N	NA-T	U	A		N	NA-T	U	A
GREAT BASIN VALLEYS AIR BASIN					NORTH CENTRAL COAST AIR BASIN			X	
Alpine County			X		NORTH COAST AIR BASIN				
Inyo County				X	Del Norte County			X	
Mono County				X	Humboldt County				X
LAKE COUNTY AIR BASIN				X	Mendocino County			X	
LAKE TAHOE AIR BASIN			X		Sonoma County (portion)				
MOJAVE DESERT AIR BASIN					- Geyser Geothermal Area (2)				X
Kern County (portion)			X		- Remainder of County			X	
Los Angeles County (portion)			X		Trinity County			X	
Riverside County (portion)			X		NORTHEAST PLATEAU AIR BASIN			X	
San Bernardino County (portion)					SACRAMENTO VALLEY AIR BASIN			X	
- Searles Valley Planning Area (1)	X				SALTON SEA AIR BASIN			X	
- Remainder of County			X		SAN DIEGO AIR BASIN			X	
MOUNTAIN COUNTIES AIR BASIN					SAN FRANCISCO BAY AREA AIR BASIN			X	
Amador County					SAN JOAQUIN VALLEY AIR BASIN			X	
- City of Sutter Creek	X				SOUTH CENTRAL COAST AIR BASIN				
- Remainder of County			X		San Luis Obispo County				X
Calaveras County			X		Santa Barbara County				X
El Dorado County (portion)			X		Ventura County			X	
Mariposa County			X		SOUTH COAST AIR BASIN			X	
Nevada County			X						
Placer County (portion)			X						
Plumas County			X						
Sierra County			X						
Tuolumne County			X						

* The area designated for hydrogen sulfide is a county or portion of a county

(1) 52 Federal Register 29384 (August 7, 1987)

(2) California Code of Regulations, title 17, section 60200(d)

FIGURE 10



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 10

California Ambient Air Quality Standards
Area Designation for Visibility Reducing Particles

	N	NA-T	U	A		N	NA-T	U	A
GREAT BASIN VALLEYS AIR BASIN			X		SACRAMENTO VALLEY AIR BASIN			X	
LAKE COUNTY AIR BASIN				X	SALTON SEA AIR BASIN			X	
LAKE TAHOE AIR BASIN			X		SAN DIEGO AIR BASIN			X	
MOJAVE DESERT AIR BASIN			X		SAN FRANCISCO BAY AREA AIR BASIN			X	
MOUNTAIN COUNTIES AIR BASIN			X		SAN JOAQUIN VALLEY AIR BASIN			X	
NORTH CENTRAL COAST AIR BASIN			X		SOUTH CENTRAL COAST AIR BASIN			X	
NORTH COAST AIR BASIN			X		SOUTH COAST AIR BASIN			X	
NORTHEAST PLATEAU AIR BASIN			X						

Area Designations for the National Ambient Air Quality Standards

The following maps and tables show the area designations for each pollutant with a national ambient air quality standard. Additional information about the federal area designations is available on the U.S. EPA website:

https://www.epa.gov/green-book

Over the last several years, U.S. EPA has been reviewing the levels of the various national standards. The agency has already promulgated new standard levels for some pollutants and is considering revising the levels for others. Information about the status of these reviews is available on the U.S. EPA website:

https://www.epa.gov/criteria-air-pollutants

Designation Categories

Suspended Particulate Matter (PM_{10}). The U.S. EPA uses three categories to designate areas with respect to PM_{10}:

- Attainment
- Nonattainment
- Unclassifiable

Ozone, Fine Suspended Particulate Matter ($PM_{2.5}$), Carbon Monoxide (CO), and Nitrogen Dioxide (NO_2). The U.S. EPA uses two categories to designate areas with respect to these standards:

- Nonattainment
- Unclassifiable/Attainment

The national 1-hour ozone standard was revoked effective June 15, 2005, and the area designations map reflects the 2015 national 8-hour ozone standard of 0.070 ppm. Original designations were finalized on August 3, 2018.

On December 14, 2012, the U.S. EPA established a new national annual primary $PM_{2.5}$ standard of 12.0 $\mu g/m^3$. New area designations reflecting this revised standard became final in December 2014. The current designation map reflects the most recently revised (2012) annual average standard of 12.0 $\mu g/m^3$ as well as the 24-hour standard of 35 $\mu g/m^3$, revised in 2006.

On January 22, 2010, the U.S. EPA established a new national 1-hour NO_2 standard of 100 parts per billion (ppb) and retained the annual average standard of 53 ppb. Designations for the primary NO_2 standard became effective on February 29, 2012. All areas of California meet this standard.

Sulfur Dioxide (SO_2). The U.S. EPA uses three categories to designate areas with respect to the 24-hour and annual average sulfur dioxide standards. These designation categories are:

- Nonattainment,
- Unclassifiable, and
- Attainment/Unclassifiable.

On June 2, 2010, the U.S. EPA established a new primary 1-hour SO_2 standard of 75 parts per billion (ppb). At the same time, U.S. EPA revoked the 24-hour and annual

average standards. Area designations for the 1-hour SO_2 standard were finalized on December 21, 2017 and are reflected in the area designations map.

Lead (particulate). The U.S. EPA promulgated a new rolling 3-month average lead standard in October 2008 of 0.15 µg/m^3. Designations were made for this standard in November 2010.

Designation Areas

From time to time, the boundaries of the California air basins have been changed to facilitate the planning process. CARB generally initiates these changes, and they are not always reflected in the U.S. EPA's area designations. For purposes of consistency, the maps in this attachment reflect area designation boundaries and nomenclature as promulgated by the U.S. EPA. In some cases, these may not be the same as those adopted by CARB. For example, the national area designations reflect the former Southeast Desert Air Basin. In accordance with Health and Safety Code section 39606.1, CARB redefined this area in 1996 to be the Mojave Desert Air Basin and Salton Sea Air Basin. The definitions and boundaries for all areas designated for the national standards can be found in Title 40, Code of Federal Regulations (CFR), Chapter I, Subchapter C, Part 81.305. They are available on the web at:

https://ecfr.io/Title-40/se40.20.81_1305

FIGURE 11

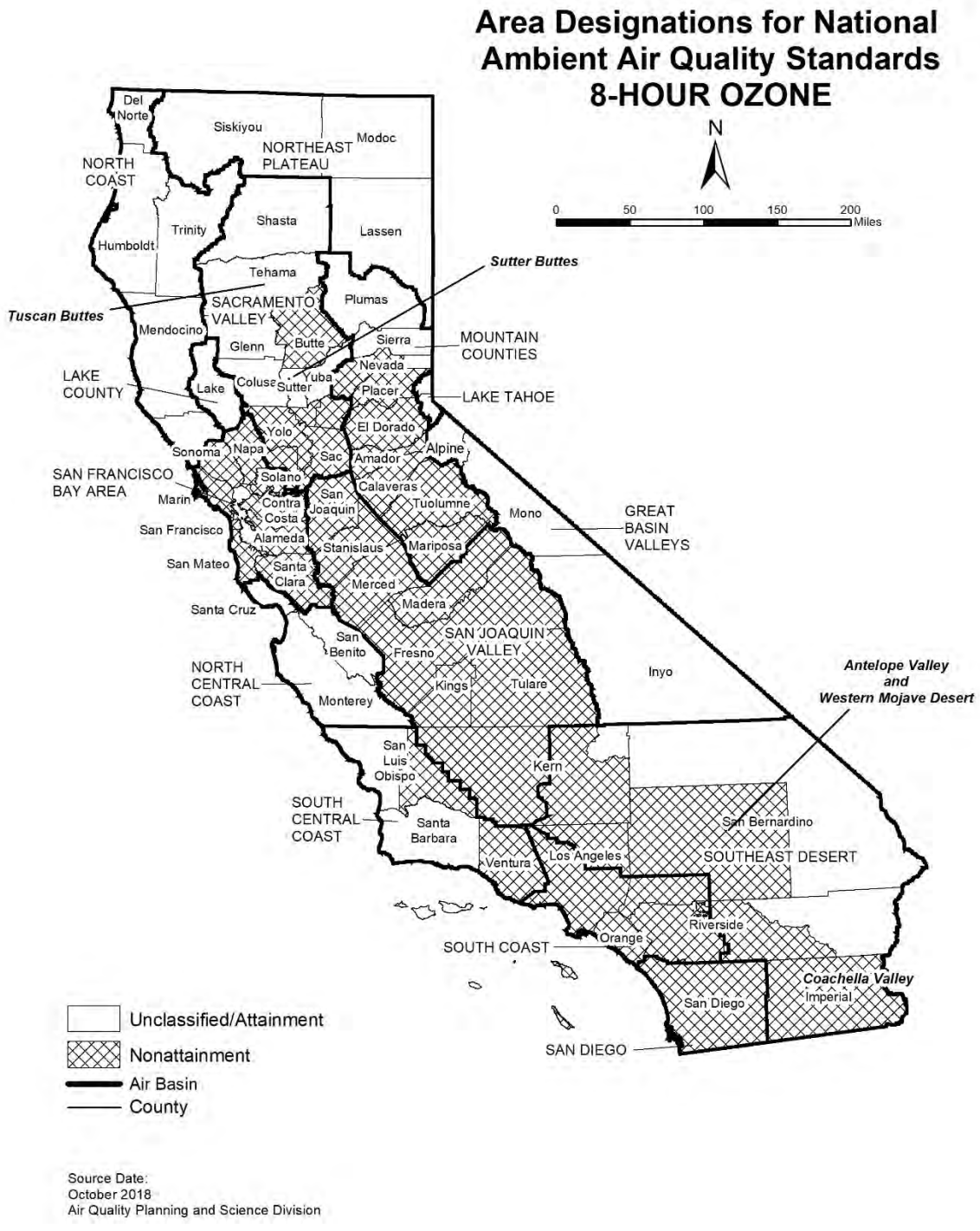

Area Designations for National Ambient Air Quality Standards
8-HOUR OZONE
N
0 50 100 150 200 Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Trinity
Shasta
Lassen
Humboldt
Tehama
Sutter Buttes
Tuscan Buttes
SACRAMENTO VALLEY
Plumas
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Nevada
LAKE COUNTY
Lake
Colusa
Sutter
Yuba
Placer
LAKE TAHOE
Yolo
El Dorado
Sonoma
Napa
Sac
Amador
Alpine
SAN FRANCISCO BAY AREA
Solano
Marin
Contra Costa
San Joaquin
Calaveras
Tuolumne
Mono
GREAT BASIN VALLEYS
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
San Benito
SAN JOAQUIN VALLEY
Fresno
Inyo
Antelope Valley and Western Mojave Desert
NORTH CENTRAL COAST
Monterey
Kings
Tulare
San Luis Obispo
Kern
SOUTH CENTRAL COAST
Santa Barbara
San Bernardino
Ventura
Los Angeles
SOUTHEAST DESERT
Riverside
Orange
SOUTH COAST
Coachella Valley
Imperial
San Diego
SAN DIEGO
Unclassified/Attainment
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 11

National Ambient Air Quality Standards
Area Designations for 8-Hour Ozone*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SACRAMENTO VALLEY AIR BASIN (cont.)		
LAKE COUNTY AIR BASIN		X	Yolo County (2)	X	
LAKE TAHOE AIR BASIN		X	Yuba County		X
MOUNTAIN COUNTIES AIR BASIN			SAN DIEGO COUNTY	X	
Amador County	X		SAN FRANCISCO BAY AREA AIR BASIN	X	
Calaveras County	X		SAN JOAQUIN VALLEY AIR BASIN	X	
El Dorado County (portion) (2)	X		SOUTH CENTRAL COAST AIR BASIN (1)		
Mariposa County	X		San Luis Obispo County		
Nevada County			- Eastern San Luis Obispo County	X	
- Western Nevada County	X		- Remainder of County		X
- Remainder of County		X	Santa Barbara County		X
Placer County (portion) (2)	X		Ventura County		
Plumas County		X	- Area excluding Anacapa and San Nicolas Islands	X	
Sierra County		X	- Channel Islands (1)		X
Tuolumne County	X		SOUTH COAST AIR BASIN (1)	X	
NORTH CENTRAL COAST AIR BASIN		X	SOUTHEAST DESERT AIR BASIN		
NORTH COAST AIR BASIN		X	Kern County (portion)	X	
NORTHEAST PLATEAU AIR BASIN		X	- Indian Wells Valley		X
SACRAMENTO VALLEY AIR BASIN			Imperial County	X	
Butte County	X		Los Angeles County (portion)	X	
Colusa County		X	Riverside County (portion)		
Glenn County		X	- Coachella Valley	X	
Sacramento Metro Area (2)	X		- Non-AQMA portion		X
Shasta County		X	San Bernardino County		
Sutter County			- Western portion (AQMA)	X	
- Sutter Buttes	X		- Eastern portion (non-AQMA)		X
- Southern portion of Sutter County (2)	X				
- Remainder of Sutter County		X			
Tehama County					
- Tuscan Buttes	X				
- Remainder of Tehama County		X			

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305.

NOTE: This map and table reflect the 2015 8-hour ozone standard of 0.070 ppm.

(1) South Central Coast Air Basin Channel Islands:
Santa Barbara County includes Santa Cruz, San Miguel, Santa Rosa, and Santa Barbara Islands.
Ventura County includes Anacapa and San Nicolas Islands.

South Coast Air Basin:
Los Angeles County includes San Clemente and Santa Catalina Islands.

(2) For this purpose, the Sacramento Metro Area comprises all of Sacramento and Yolo Counties, the Sacramento Valley Air Basin portion of Solano County, the southern portion of Sutter County, and the Sacramento Valley and Mountain Counties Air Basins portions of Placer and El Dorado counties.

FIGURE 12


Area Designations for National Ambient Air Quality Standards PM10
N
0 50 100 150 200 Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Shasta
Lassen
Trinity
Humboldt
Tehema
SACRAMENTO VALLEY
Plumas
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Nevada
LAKE COUNTY
Colusa
Yuba
Lake
Sutter
Placer
LAKE TAHOE
Yolo
El Dorado
Alpine
Sacramento County
Sonoma
Napa
Sac
Amador
SAN FRANCISCO BAY AREA
Marin
Solano
Calaveras
Mono
Mono Basin
San Joaquin
Contra Costa
Tuolumne
Mammoth Lake
San Francisco
Alameda
Mariposa
GREAT BASIN VALLEYS
Stanislaus
San Mateo
Santa Clara
Merced
Madera
Inyo
Santa Cruz
San Benito
Fresno
SAN JOAQUIN VALLEY
Owens Valley
Coso Junction
Trona
NORTH CENTRAL COAST
Monterey
Kings
Tulare
San Luis Obispo
Kern
Indian Wells Valley
San Bernardino
SOUTH CENTRAL COAST
Santa Barbara
Ventura
Los Angeles
SOUTHEAST DESERT
Riverside
Coachella Valley
Orange
SOUTH COAST
Imperial
San Diego
SAN DIEGO COUNTY
Unclassified
Attainment
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 12

National Ambient Air Quality Standards
Area Designations for Suspended Particulate Matter (PM10)*

	N	U	A		N	U	A
GREAT BASIN VALLEYS AIR BASIN				SAN DIEGO COUNTY		X	
Alpine County		X		SAN FRANCISCO BAY AREA AIR BASIN		X	
Inyo County				SAN JOAQUIN VALLEY AIR BASIN			X
- Owens Valley Planning Area	X			SOUTH CENTRAL COAST AIR BASIN		X	
- Coso Junction			X	SOUTH COAST AIR BASIN			X
- Remainder of County		X		SOUTHEAST DESERT AIR BASIN			
Mono County				Eastern Kern County			
- Mammoth Lake Planning Area			X	- Indian Wells Valley			X
- Mono Lake Basin	X			- Portion within San Joaquin Valley Planning Area	X		
- Remainder of County		X		- Remainder of County		X	
LAKE COUNTY AIR BASIN		X		Imperial County			
LAKE TAHOE AIR BASIN		X		- Imperial Valley Planning Area	X		
MOUNTAIN COUNTIES AIR BASIN				- Remainder of County		X	
Placer County (portion) (2)		X		Los Angeles County (portion)		X	
Remainder of Air Basin		X		Riverside County (portion)			
NORTH CENTRAL COAST AIR BASIN		X		- Coachella Valley (3)	X		
NORTH COAST AIR BASIN		X		- Non-AQMA portion		X	
NORTHEAST PLATEAU AIR BASIN		X		San Bernardino County			
SACRAMENTO VALLEY AIR BASIN				- Trona	X		
Butte County		X		- Remainder of County	X		
Colusa County		X					
Glenn County		X					
Placer County (portion) (2)		X					
Sacramento County (1)			X				
Shasta County		X					
Solano County (portion)		X					
Sutter County		X					
Tehama County		X					
Yolo County		X					
Yuba County		X					

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305.
(1) Air quality in Sacramento County meets the national PM10 standards. The request for redesignation to attainment was approved by U.S. EPA in September 2013.
(2) U.S. EPA designation puts the Sacramento Valley Air Basin portion of Placer County in the Mountain Counties Air Basin.
(3) Air quality in Coachella Valley meets the national PM10 standards. A request for redesignation to attainment has been submitted to U.S. EPA.

FIGURE 13


Area Designations for National Ambient Air Quality Standards PM2.5
N
0 50 100 150 200 Miles
Del Norte
Siskiyou
Modoc
NORTH COAST
NORTHEAST PLATEAU
Humboldt
Trinity
Shasta
Lassen
Tehama
SACRAMENTO VALLEY
Plumas
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Mendocino
Nevada
LAKE COUNTY
Colusa
Yuba
Placer
Lake
Sutter
LAKE TAHOE
El Dorado
Yolo
Sonoma
Napa
Sacramento
Alpine
Amador
Solano
Calaveras
SAN FRANCISCO BAY AREA
Marin
Tuolumne
GREAT BASIN VALLEYS
Contra Costa
San Joaquin
Mono
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Madera
Santa Cruz
Fresno
NORTH CENTRAL COAST
San Benito
SAN JOAQUIN VALLEY
Inyo
Tulare
Monterey
Kings
San Luis Obispo
Kern
SOUTH CENTRAL COAST
Santa Barbara
San Bernardino
SOUTHEAST DESERT
Ventura
Los Angeles
Orange
Riverside
SOUTH COAST
Imperial
San Diego
SAN DIEGO COUNTY
Unclassified/Attainment
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 13

National Ambient Air Quality Standards
Area Designations for Fine Particulate Matter (PM2.5)*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SAN DIEGO COUNTY		X
LAKE COUNTY AIR BASIN		X	SAN FRANCISCO BAY AREA AIR BASIN (2)	X	
LAKE TAHOE AIR BASIN		X	SAN JOAQUIN VALLEY AIR BASIN	X	
MOUNTAIN COUNTIES AIR BASIN			SOUTH CENTRAL COAST AIR BASIN		X
Plumas County			SOUTH COAST AIR BASIN (3)	X	
- Portola Valley Portion of Plumas	X		SOUTHEAST DESERT AIR BASIN		
- Remainder of Plumas County		X	Imperial County (portion) (4)	X	
Remainder of Air Basin		X	Remainder of Air Basin		X
NORTH CENTRAL COAST AIR BASIN		X			
NORTH COAST AIR BASIN		X			
NORTHEAST PLATEAU AIR BASIN		X			
SACRAMENTO VALLEY AIR BASIN					
Sacramento Metro Area (1)	X				
Sutter County		X			
Yuba County (portion)		X			
Remainder of Air Basin		X			

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305. This map reflects the 2006 24-hour PM2.5 standard as well as the 1997 and 2012 PM2.5 annual standards.

(1) For this purpose, Sacramento Metro Area comprises all of Sacramento and portions of El Dorado, Placer, Solano, and Yolo Counties. Air quality in this area meets the national PM2.5 standards. A Determination of Attainment for the 2006 24-hour PM2.5 standard was made by U.S. EPA in June 2017.

(2) Air quality in this area meets the national PM2.5 standards. A Determination of Attainment for the 2006 24-hour PM2.5 standard was made by U.S. EPA in June 2017.

(3) Those lands of the Santa Rosa Band of Cahulla Mission Indians in Riverside County are designated Unclassifiable/Attainment.

(4) That portion of Imperial County encompassing the urban and surrounding areas of Brawley, Calexico, El Centro, Heber, Holtville, Imperial, Seeley, and Westmorland. Air quality in this area meets the national PM2.5 standards. A Determination of Attainment for the 2006 24-hour PM2.5 standard was made by U.S. EPA in June 2017.

FIGURE 14


Area Designations for National Ambient Air Quality Standards
CARBON MONOXIDE
N
0 50 100 150 200 Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Trinity
Shasta
Lassen
Humboldt
Tehama
SACRAMENTO VALLEY
Plumas
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Nevada
Colusa
Lake
Sutter
Yuba
Placer
LAKE TAHOE
LAKE COUNTY
Yolo
El Dorado
Napa
Alpine
Sonoma
Sac
Amador
SAN FRANCISCO BAY AREA
Solano
Calaveras
Marin
San Joaquin
Contra Costa
Tuolumne
Mono
GREAT BASIN VALLEYS
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Santa Cruz
Madera
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Tulare
Inyo
Monterey
Kings
San Luis Obispo
Kern
SOUTH CENTRAL COAST
SOUTHEAST DESERT
Santa Barbara
Ventura
Los Angeles
San Bernardino
Riverside
Orange
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
Unclassified/Attainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 14

National Ambient Air Quality Standards
Area Designations for Carbon Monoxide*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SACRAMENTO VALLEY AIR BASIN		X
LAKE COUNTY AIR BASIN		X	SAN DIEGO COUNTY		X
LAKE TAHOE AIR BASIN		X	SAN FRANCISCO BAY AREA AIR BASIN		X
MOUNTAIN COUNTIES AIR BASIN		X	SAN JOAQUIN VALLEY AIR BASIN		X
NORTH CENTRAL COAST AIR BASIN		X	SOUTH CENTRAL COAST AIR BASIN		X
NORTH COAST AIR BASIN		X	SOUTH COAST AIR BASIN		X
NORTHEAST PLATEAU AIR BASIN		X	SOUTHEAST DESERT AIR BASIN		X

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305.

FIGURE 15


Area Designations for National Ambient Air Quality Standards
NITROGEN DIOXIDE
N
0 50 100 150 200 Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Trinity
Shasta
Lassen
Humboldt
Tehema
Plumas
SACRAMENTO VALLEY
Mendocino
Glenn
Butte
Sierra
Nevada
MOUNTAIN COUNTIES
Colusa
Yuba
Placer
LAKE COUNTY
Lake
Sutter
LAKE TAHOE
Yolo
El Dorado
Napa
Alpine
Sonoma
Sac
Amador
SAN FRANCISCO BAY AREA
Solano
Marin
Calaveras
Contra Costa
San Joaquin
Tuolumne
Mono
GREAT BASIN VALLEYS
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Santa Cruz
Madera
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Tulare
Inyo
Monterey
Kings
San Luis Obispo
Kern
SOUTH CENTRAL COAST
Santa Barbara
SOUTHEAST DESERT
Los Angeles
San Bernardino
Ventura
Riverside
Orange
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
Unclassified/Attainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

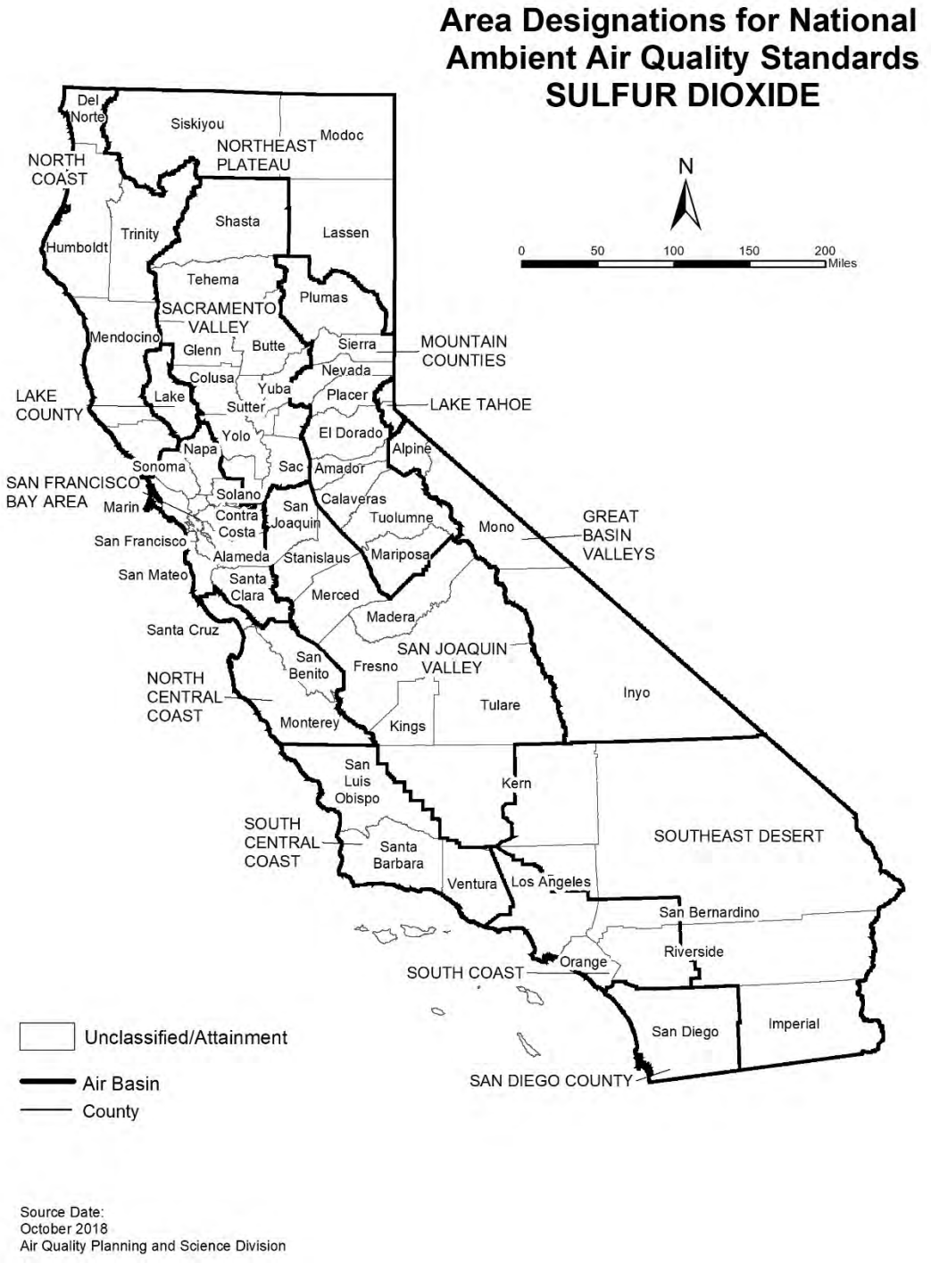
TABLE 15

National Ambient Air Quality Standards
Area Designations for Nitrogen Dioxide*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SACRAMENTO VALLEY AIR BASIN		X
LAKE COUNTY AIR BASIN		X	SAN DIEGO COUNTY		X
LAKE TAHOE AIR BASIN		X	SAN FRANCISCO BAY AREA AIR BASIN		X
MOUNTAIN COUNTIES AIR BASIN		X	SAN JOAQUIN VALLEY AIR BASIN		X
NORTH CENTRAL COAST AIR BASIN		X	SOUTH CENTRAL COAST AIR BASIN		X
NORTH COAST AIR BASIN		X	SOUTH COAST AIR BASIN		X
NORTHEAST PLATEAU AIR BASIN		X	SOUTHEAST DESERT AIR BASIN		X

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305.

FIGURE 16



Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 16

National Ambient Air Quality Standards
Area Designations for Sulfur Dioxide*

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SOUTH CENTRAL COAST AIR BASIN		
LAKE COUNTY AIR BASIN		X	San Luis Obispo County		X
LAKE TAHOE AIR BASIN		X	Santa Barbara County		X
MOUNTAIN COUNTIES AIR BASIN		X	Ventura County		X
NORTH CENTRAL COAST AIR BASIN		X	Channel Islands (1)		X
NORTH COAST AIR BASIN		X	SOUTH COAST AIR BASIN		X
NORTHEAST PLATEAU AIR BASIN		X	SOUTHEAST DESERT AIR BASIN		
SACRAMENTO VALLEY AIR BASIN		X	Imperial County		X
SAN DIEGO COUNTY		X	Remainder of Air Basin		X
SAN FRANCISCO BAY AREA AIR BASIN		X			
SAN JOAQUIN VALLEY AIR BASIN					
Fresno County		X			
Kern County (portion)		X			
Kings County		X			
Madera County		X			
Merced County		X			
San Joaquin County		X			
Stanislaus County		X			
Tulare County		X			

* Definitions and references for all areas can be found in 40 CFR, Chapter I, Part 81.305.

NOTE: This map and table reflect the 2010 1-hour SO_2 standard of 75 ppb.

(1) South Central Coast Air Basin Channel Islands:

Santa Barbara County includes Santa Cruz, San Miguel, Santa Rosa, and Santa Barbara Islands.

Ventura County includes Anacapa and San Nicolas Islands.

Note that the San Clemente and Santa Catalina Islands are considered part of Los Angeles County, and therefore, are included as part of the South Coast Air Basin.

FIGURE 17


Area Designations for National Ambient Air Quality Standards
LEAD
N
0 50 100 150 200
Miles
Del Norte
Siskiyou
Modoc
NORTHEAST PLATEAU
NORTH COAST
Shasta
Lassen
Trinity
Humboldt
Tehama
SACRAMENTO VALLEY
Plumas
Mendocino
Glenn
Butte
Sierra
MOUNTAIN COUNTIES
Nevada
Colusa
Lake
Sutter
Yuba
Placer
LAKE TAHOE
LAKE COUNTY
Yolo
El Dorado
Napa
Alpine
Sonoma
Sac
Amador
SAN FRANCISCO BAY AREA
Solano
Calaveras
Marin
San Joaquin
Contra Costa
Tuolumne
Mono
GREAT BASIN VALLEYS
San Francisco
Alameda
Stanislaus
Mariposa
San Mateo
Santa Clara
Merced
Santa Cruz
Madera
SAN JOAQUIN VALLEY
San Benito
Fresno
NORTH CENTRAL COAST
Inyo
Tulare
Monterey
Kings
San Luis Obispo
Kern
SOUTH CENTRAL COAST
SOUTHEAST DESERT
Santa Barbara
Ventura
Los Angeles
San Bernardino
Riverside
Orange
SOUTH COAST
San Diego
Imperial
SAN DIEGO COUNTY
Unclassified/Attainment
Nonattainment
Air Basin
County
Source Date:
October 2018
Air Quality Planning and Science Division

TABLE 17

National Ambient Air Quality Standards
Area Designations for Lead (particulate)

	N	U/A		N	U/A
GREAT BASIN VALLEYS AIR BASIN		X	SAN DIEGO COUNTY		X
LAKE COUNTY AIR BASIN		X	SAN FRANCISCO BAY AREA AIR BASIN		X
LAKE TAHOE AIR BASIN		X	SAN JOAQUIN VALLEY AIR BASIN		X
MOUNTAIN COUNTIES AIR BASIN		X	SOUTH CENTRAL COAST AIR BASIN		X
NORTH CENTRAL COAST AIR BASIN		X	SOUTH COAST AIR BASIN		
NORTH COAST AIR BASIN		X	Los Angeles County (portion) (1)	X	
NORTHEAST PLATEAU AIR BASIN		X	Remainder of Air Basin		X
SACRAMENTO VALLEY AIR BASIN		X	SOUTHEAST DESERT AIR BASIN		X

(1) Portion of County in Air Basin, not including Channel Islands

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APPENDIX 3.1:

CALEEMOD PROJECT CONSTRUCTION AND OPERATIONAL EMISSIONS MODEL OUTPUTS

Monte Vista Ranch

Riverside-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	39.93	1000sqft	0.92	39,932.00	0
Parking Lot	158.00	Space	1.42	63,200.00	0
Apartments Low Rise	65.00	Dwelling Unit	2.66	65,000.00	186

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	550.81	**CH4 Intensity (lb/MWhr)**	0.023	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intensity factors adjusted to reflect the RPS for the 2023 Opening Year

Land Use - Total Project Area is +/- 5 acres

Construction Phase -

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Off-road Equipment -

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Trips and VMT - CalEEMod only assumes Vendor Trips during Building Construction. The CalEEMod default trips were ratioed and rounded up between each phase based on the number of days.

Grading - It is assumed that up to 5 acres will be disturbed per day

Architectural Coating -

Vehicle Trips - Trip rates based on information provided in the Traffic Analysis

Woodstoves - Rule 445

Energy Use - The Project will design building shells and building components to meet 2019 Title 24 Standards which expects 53% less energy for residential uses

Construction Off-road Equipment Mitigation - Rule 403

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	810.36	380.87
tblEnergyUse	T24E	877.14	412.26
tblEnergyUse	T24NG	9,544.50	4,485.92
tblFireplaces	NumberGas	55.25	65.00
tblFireplaces	NumberNoFireplace	6.50	0.00
tblFireplaces	NumberWood	3.25	0.00

tblGrading	AcresOfGrading	16.00	40.00
tblGrading	AcresOfGrading	10.00	25.00
tblLandUse	LotAcreage	4.06	2.66
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.023
tblProjectCharacteristics	CO2IntensityFactor	702.44	550.81
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	24.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleEF	HHD	0.96	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	2.07	6.43
tblVehicleEF	HHD	0.41	0.24
tblVehicleEF	HHD	1.44	4.3850e-003
tblVehicleEF	HHD	6,147.84	1,065.92
tblVehicleEF	HHD	1,399.88	1,272.83
tblVehicleEF	HHD	4.72	0.04
tblVehicleEF	HHD	17.43	5.31
tblVehicleEF	HHD	0.97	1.96

tblVehicleEF	HHD	20.29	2.50
tblVehicleEF	HHD	5.1890e-003	2.3650e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	4.9650e-003	2.2630e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.8060e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	7.3000e-005	3.0000e-006
tblVehicleEF	HHD	2.3430e-003	9.7000e-005
tblVehicleEF	HHD	0.55	0.44
tblVehicleEF	HHD	4.3000e-005	2.0000e-006
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.5400e-004	4.4400e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	7.3000e-005	3.0000e-006
tblVehicleEF	HHD	2.3430e-003	9.7000e-005
tblVehicleEF	HHD	0.63	0.50
tblVehicleEF	HHD	4.3000e-005	2.0000e-006
tblVehicleEF	HHD	0.08	0.05
tblVehicleEF	HHD	1.5400e-004	4.4400e-004

tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.91	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.50	6.35
tblVehicleEF	HHD	0.41	0.24
tblVehicleEF	HHD	1.38	4.1390e-003
tblVehicleEF	HHD	6,513.09	1,052.83
tblVehicleEF	HHD	1,399.88	1,272.83
tblVehicleEF	HHD	4.72	0.04
tblVehicleEF	HHD	17.99	5.06
tblVehicleEF	HHD	0.91	1.85
tblVehicleEF	HHD	20.28	2.50
tblVehicleEF	HHD	4.3760e-003	2.0780e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	4.1860e-003	1.9880e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.8060e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	1.4000e-004	5.0000e-006
tblVehicleEF	HHD	2.6540e-003	1.0600e-004
tblVehicleEF	HHD	0.51	0.46
tblVehicleEF	HHD	8.2000e-005	3.0000e-006

tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.5700e-004	4.4900e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.06	9.8850e-003
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.0000e-005	0.00
tblVehicleEF	HHD	1.4000e-004	5.0000e-006
tblVehicleEF	HHD	2.6540e-003	1.0600e-004
tblVehicleEF	HHD	0.59	0.53
tblVehicleEF	HHD	8.2000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.05
tblVehicleEF	HHD	1.5700e-004	4.4900e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	1.04	0.02
tblVehicleEF	HHD	0.03	8.2000e-004
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	2.85	6.51
tblVehicleEF	HHD	0.41	0.15
tblVehicleEF	HHD	1.46	4.3390e-003
tblVehicleEF	HHD	5,643.45	1,077.40
tblVehicleEF	HHD	1,399.88	1,253.68
tblVehicleEF	HHD	4.72	0.04
tblVehicleEF	HHD	16.66	5.62
tblVehicleEF	HHD	0.96	1.92
tblVehicleEF	HHD	20.29	2.50
tblVehicleEF	HHD	6.3140e-003	2.7000e-003
tblVehicleEF	HHD	0.06	0.06

tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	6.0400e-003	2.5830e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.7520e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	5.5000e-005	3.0000e-006
tblVehicleEF	HHD	2.4340e-003	1.0800e-004
tblVehicleEF	HHD	0.59	0.40
tblVehicleEF	HHD	3.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.6500e-004	4.7200e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.05	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	5.5000e-005	3.0000e-006
tblVehicleEF	HHD	2.4340e-003	1.0800e-004
tblVehicleEF	HHD	0.68	0.46
tblVehicleEF	HHD	3.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	1.6500e-004	4.7200e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	LDA	3.3240e-003	1.8870e-003
tblVehicleEF	LDA	4.1920e-003	0.04

tblVehicleEF	LDA	0.51	0.56
tblVehicleEF	LDA	0.96	2.03
tblVehicleEF	LDA	235.32	251.70
tblVehicleEF	LDA	54.50	52.26
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
tblVehicleEF	LDA	1.4310e-003	1.2020e-003
tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.3520e-003	6.9510e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.06	0.19
tblVehicleEF	LDA	2.3560e-003	2.4590e-003
tblVehicleEF	LDA	5.6100e-004	5.1100e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	3.7650e-003	2.1290e-003
tblVehicleEF	LDA	3.6350e-003	0.04
tblVehicleEF	LDA	0.62	0.67

tblVehicleEF	LDA	0.85	1.70
tblVehicleEF	LDA	256.22	272.11
tblVehicleEF	LDA	54.50	51.65
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.15
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
tblVehicleEF	LDA	1.4310e-003	1.2020e-003
tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	9.4470e-003	7.7540e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	2.5670e-003	2.6590e-003
tblVehicleEF	LDA	5.5900e-004	5.0500e-004
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	3.2080e-003	1.8550e-003
tblVehicleEF	LDA	4.3060e-003	0.04
tblVehicleEF	LDA	0.48	0.54
tblVehicleEF	LDA	0.98	2.01

tblVehicleEF	LDA	229.53	248.26
tblVehicleEF	LDA	54.50	52.24
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.16
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
tblVehicleEF	LDA	1.4310e-003	1.2020e-003
tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0650e-003	6.8280e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.06	0.19
tblVehicleEF	LDA	2.2980e-003	2.4260e-003
tblVehicleEF	LDA	5.6100e-004	5.1000e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.9310e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDT1	9.2940e-003	5.7490e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.18	1.22
tblVehicleEF	LDT1	2.73	2.28
tblVehicleEF	LDT1	295.40	298.87

tblVehicleEF	LDT1	68.37	63.71
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.17	0.26
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.18	0.16
tblVehicleEF	LDT1	0.30	0.22
tblVehicleEF	LDT1	0.12	0.11
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.18	0.73
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	2.9680e-003	2.9210e-003
tblVehicleEF	LDT1	7.3100e-004	6.2300e-004
tblVehicleEF	LDT1	0.18	0.16
tblVehicleEF	LDT1	0.30	0.23
tblVehicleEF	LDT1	0.12	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.18	0.74
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.4140e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	1.43	1.44
tblVehicleEF	LDT1	2.40	1.91
tblVehicleEF	LDT1	320.93	320.06
tblVehicleEF	LDT1	68.37	62.93

tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.16	0.24
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.16	0.31
tblVehicleEF	LDT1	3.2270e-003	3.1280e-003
tblVehicleEF	LDT1	7.2500e-004	6.1500e-004
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.18	0.34
tblVehicleEF	LDT1	8.9360e-003	5.6560e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.11	1.18
tblVehicleEF	LDT1	2.78	2.26
tblVehicleEF	LDT1	287.77	295.29
tblVehicleEF	LDT1	68.37	63.68
tblVehicleEF	LDT1	0.11	0.10

tblVehicleEF	LDT1	0.17	0.26
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	2.8910e-003	2.8860e-003
tblVehicleEF	LDT1	7.3200e-004	6.2200e-004
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT2	4.7540e-003	3.1840e-003
tblVehicleEF	LDT2	5.7630e-003	0.06
tblVehicleEF	LDT2	0.68	0.79
tblVehicleEF	LDT2	1.27	2.59
tblVehicleEF	LDT2	330.23	314.22
tblVehicleEF	LDT2	76.02	67.26
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26

tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.3070e-003	3.0700e-003
tblVehicleEF	LDT2	7.8100e-004	6.5700e-004
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.3890e-003	3.5750e-003
tblVehicleEF	LDT2	5.0030e-003	0.05
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.13	2.16
tblVehicleEF	LDT2	359.32	334.38
tblVehicleEF	LDT2	76.02	66.44
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.24
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003

tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.24
tblVehicleEF	LDT2	3.6000e-003	3.2670e-003
tblVehicleEF	LDT2	7.7900e-004	6.4900e-004
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.5710e-003	3.1320e-003
tblVehicleEF	LDT2	5.9350e-003	0.06
tblVehicleEF	LDT2	0.63	0.76
tblVehicleEF	LDT2	1.30	2.57
tblVehicleEF	LDT2	321.50	310.81
tblVehicleEF	LDT2	76.02	67.23
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.25
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003

tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.2190e-003	3.0370e-003
tblVehicleEF	LDT2	7.8200e-004	6.5700e-004
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LHD1	4.9950e-003	4.5410e-003
tblVehicleEF	LHD1	8.5970e-003	4.4200e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.89
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.91	1.39

tblVehicleEF	LHD1	0.93	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5540e-003

tblVehicleEF	LHD1	8.7610e-003	4.4900e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.82	0.61
tblVehicleEF	LHD1	2.04	0.84
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.98
tblVehicleEF	LHD1	29.33	9.91
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.80	1.31
tblVehicleEF	LHD1	0.90	0.27
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.22	0.06
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005

tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3200e-004	9.8000e-005
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.24	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5430e-003
tblVehicleEF	LHD1	8.5850e-003	4.4280e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.88
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.98
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.89	1.37
tblVehicleEF	LHD1	0.92	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003

tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD2	3.3070e-003	2.7700e-003
tblVehicleEF	LHD2	3.5370e-003	3.2640e-003
tblVehicleEF	LHD2	6.6670e-003	7.1780e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.48
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92

tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.29	1.52
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.4000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.06	0.06

tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7770e-003
tblVehicleEF	LHD2	3.5730e-003	3.2860e-003
tblVehicleEF	LHD2	6.4430e-003	6.9030e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.45
tblVehicleEF	LHD2	0.98	0.45
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.93
tblVehicleEF	LHD2	22.93	6.38
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.22	1.43
tblVehicleEF	LHD2	0.45	0.15
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.05	0.06

tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
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tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7710e-003
tblVehicleEF	LHD2	3.5300e-003	3.2670e-003
tblVehicleEF	LHD2	6.7050e-003	7.1290e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.47
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92
tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.28	1.49
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.3000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	MCY	0.43	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.81	18.85
tblVehicleEF	MCY	9.70	8.64
tblVehicleEF	MCY	166.71	207.60

tblVehicleEF	MCY	45.36	60.36
tblVehicleEF	MCY	1.12	1.13
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.11	2.11
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.05	1.83
tblVehicleEF	MCY	2.0360e-003	2.0540e-003
tblVehicleEF	MCY	6.7200e-004	5.9700e-004
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.61	2.61
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.23	2.00
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	19.51	18.83
tblVehicleEF	MCY	9.10	7.90
tblVehicleEF	MCY	166.71	207.41
tblVehicleEF	MCY	45.36	58.44

tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	3.35	2.75
tblVehicleEF	MCY	1.23	1.09
tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.09	2.07
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	1.84	1.61
tblVehicleEF	MCY	2.0460e-003	2.0530e-003
tblVehicleEF	MCY	6.5600e-004	5.7800e-004
tblVehicleEF	MCY	3.35	2.75
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tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.59	2.56
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	2.00	1.75
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.37	18.30
tblVehicleEF	MCY	9.67	8.43
tblVehicleEF	MCY	166.71	206.64
tblVehicleEF	MCY	45.36	59.88
tblVehicleEF	MCY	1.12	1.09

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.59	1.64
tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.11	2.09
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.06	1.79
tblVehicleEF	MCY	2.0290e-003	2.0450e-003
tblVehicleEF	MCY	6.7200e-004	5.9300e-004
tblVehicleEF	MCY	1.59	1.64
tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.61	2.59
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.24	1.95
tblVehicleEF	MDV	9.8990e-003	4.1640e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.15	0.92
tblVehicleEF	MDV	2.62	2.99
tblVehicleEF	MDV	458.82	396.16
tblVehicleEF	MDV	104.21	84.06
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.25	0.33

tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.5960e-003	3.8690e-003
tblVehicleEF	MDV	1.0880e-003	8.2200e-004
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MDV	0.01	4.6800e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	1.41	1.09
tblVehicleEF	MDV	2.31	2.49
tblVehicleEF	MDV	498.05	417.66
tblVehicleEF	MDV	104.21	83.09
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.24	0.31
tblVehicleEF	MDV	1.6580e-003	1.4100e-003

tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.21	0.19
tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.17	0.32
tblVehicleEF	MDV	4.9910e-003	4.0790e-003
tblVehicleEF	MDV	1.0820e-003	8.1200e-004
tblVehicleEF	MDV	0.21	0.19
tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.19	0.35
tblVehicleEF	MDV	9.5100e-003	4.0920e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.08	0.88
tblVehicleEF	MDV	2.68	2.97
tblVehicleEF	MDV	447.05	392.53
tblVehicleEF	MDV	104.21	84.03
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.25	0.33
tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003

tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.13	0.52
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.4770e-003	3.8330e-003
tblVehicleEF	MDV	1.0890e-003	8.2100e-004
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.13	0.52
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	2.00	0.33
tblVehicleEF	MH	5.24	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.48	4.27
tblVehicleEF	MH	0.79	0.00
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	9.7800e-004	0.00

tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.34	0.00
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	2.05	0.33
tblVehicleEF	MH	4.88	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.37	4.03
tblVehicleEF	MH	0.76	0.00
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.14

tblVehicleEF	MH	9.7800e-004	0.00
tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	2.52	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.94	0.00
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.30	0.00
tblVehicleEF	MH	9.8690e-003	8.7850e-003
tblVehicleEF	MH	6.5700e-004	0.00
tblVehicleEF	MH	2.52	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.94	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.32	0.00
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	1.99	0.33
tblVehicleEF	MH	5.28	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.46	4.20
tblVehicleEF	MH	0.79	0.00
tblVehicleEF	MH	0.01	0.02

tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	9.7800e-004	0.00
tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.34	0.00
tblVehicleEF	MHD	0.02	2.7550e-003
tblVehicleEF	MHD	2.5650e-003	8.7300e-004
tblVehicleEF	MHD	0.05	7.0300e-003
tblVehicleEF	MHD	0.32	0.33
tblVehicleEF	MHD	0.21	0.12
tblVehicleEF	MHD	5.07	0.81
tblVehicleEF	MHD	148.43	67.29
tblVehicleEF	MHD	1,056.49	911.02

tblVehicleEF	MHD	54.56	7.21
tblVehicleEF	MHD	0.41	0.40
tblVehicleEF	MHD	0.47	0.91
tblVehicleEF	MHD	11.43	1.80
tblVehicleEF	MHD	1.3500e-004	4.3400e-004
tblVehicleEF	MHD	2.6660e-003	9.4670e-003
tblVehicleEF	MHD	7.3000e-004	8.3000e-005
tblVehicleEF	MHD	1.2900e-004	4.1500e-004
tblVehicleEF	MHD	2.5470e-003	9.0550e-003
tblVehicleEF	MHD	6.7100e-004	7.6000e-005
tblVehicleEF	MHD	1.5020e-003	4.1800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.6500e-004	2.2800e-004
tblVehicleEF	MHD	0.02	9.5450e-003
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.31	0.04
tblVehicleEF	MHD	1.4270e-003	6.3800e-004
tblVehicleEF	MHD	0.01	8.6560e-003
tblVehicleEF	MHD	6.3400e-004	7.1000e-005
tblVehicleEF	MHD	1.5020e-003	4.1800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.6500e-004	2.2800e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.34	0.04

tblVehicleEF	MHD	0.02	2.6270e-003
tblVehicleEF	MHD	2.5980e-003	8.8800e-004
tblVehicleEF	MHD	0.05	6.7570e-003
tblVehicleEF	MHD	0.23	0.29
tblVehicleEF	MHD	0.21	0.12
tblVehicleEF	MHD	4.84	0.76
tblVehicleEF	MHD	157.22	67.24
tblVehicleEF	MHD	1,056.49	911.02
tblVehicleEF	MHD	54.56	7.14
tblVehicleEF	MHD	0.42	0.39
tblVehicleEF	MHD	0.44	0.86
tblVehicleEF	MHD	11.41	1.80
tblVehicleEF	MHD	1.1400e-004	3.6900e-004
tblVehicleEF	MHD	2.6660e-003	9.4670e-003
tblVehicleEF	MHD	7.3000e-004	8.3000e-005
tblVehicleEF	MHD	1.0900e-004	3.5300e-004
tblVehicleEF	MHD	2.5470e-003	9.0550e-003
tblVehicleEF	MHD	6.7100e-004	7.6000e-005
tblVehicleEF	MHD	2.8970e-003	7.5100e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.01
tblVehicleEF	MHD	1.4710e-003	4.4600e-004
tblVehicleEF	MHD	0.02	9.6090e-003
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.30	0.04
tblVehicleEF	MHD	1.5100e-003	6.3800e-004
tblVehicleEF	MHD	0.01	8.6560e-003

tblVehicleEF	MHD	6.3000e-004	7.1000e-005
tblVehicleEF	MHD	2.8970e-003	7.5100e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.4710e-003	4.4600e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.33	0.04
tblVehicleEF	MHD	0.02	2.9460e-003
tblVehicleEF	MHD	2.5410e-003	8.7400e-004
tblVehicleEF	MHD	0.05	6.9640e-003
tblVehicleEF	MHD	0.44	0.39
tblVehicleEF	MHD	0.21	0.12
tblVehicleEF	MHD	5.15	0.80
tblVehicleEF	MHD	136.28	67.35
tblVehicleEF	MHD	1,056.49	911.02
tblVehicleEF	MHD	54.56	7.20
tblVehicleEF	MHD	0.39	0.41
tblVehicleEF	MHD	0.46	0.89
tblVehicleEF	MHD	11.44	1.80
tblVehicleEF	MHD	1.6400e-004	5.2400e-004
tblVehicleEF	MHD	2.6660e-003	9.4670e-003
tblVehicleEF	MHD	7.3000e-004	8.3000e-005
tblVehicleEF	MHD	1.5700e-004	5.0100e-004
tblVehicleEF	MHD	2.5470e-003	9.0550e-003
tblVehicleEF	MHD	6.7100e-004	7.6000e-005
tblVehicleEF	MHD	1.0970e-003	4.3600e-004

tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	5.9600e-004	2.3900e-004
tblVehicleEF	MHD	0.02	9.5510e-003
tblVehicleEF	MHD	0.02	0.08
tblVehicleEF	MHD	0.31	0.04
tblVehicleEF	MHD	1.3130e-003	6.3800e-004
tblVehicleEF	MHD	0.01	8.6560e-003
tblVehicleEF	MHD	6.3600e-004	7.1000e-005
tblVehicleEF	MHD	1.0970e-003	4.3600e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	5.9600e-004	2.3900e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.08
tblVehicleEF	MHD	0.34	0.04
tblVehicleEF	OBUS	0.01	8.5220e-003
tblVehicleEF	OBUS	5.6790e-003	5.4050e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.25	0.49
tblVehicleEF	OBUS	0.39	0.70
tblVehicleEF	OBUS	5.52	2.68
tblVehicleEF	OBUS	68.59	64.37
tblVehicleEF	OBUS	1,085.33	1,335.49
tblVehicleEF	OBUS	69.49	21.28
tblVehicleEF	OBUS	0.13	0.23
tblVehicleEF	OBUS	0.35	0.91

tblVehicleEF	OBUS	2.07	0.69
tblVehicleEF	OBUS	1.2000e-005	7.5000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
tblVehicleEF	OBUS	8.7100e-004	2.1800e-004
tblVehicleEF	OBUS	1.1000e-005	7.2000e-005
tblVehicleEF	OBUS	1.8490e-003	8.0880e-003
tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	2.0910e-003	2.6670e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	9.0600e-004	1.1770e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.29
tblVehicleEF	OBUS	0.34	0.13
tblVehicleEF	OBUS	6.6700e-004	6.1500e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9200e-004	2.1100e-004
tblVehicleEF	OBUS	2.0910e-003	2.6670e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	9.0600e-004	1.1770e-003
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.05	0.29
tblVehicleEF	OBUS	0.38	0.14
tblVehicleEF	OBUS	0.01	8.5920e-003
tblVehicleEF	OBUS	5.7930e-003	5.5390e-003
tblVehicleEF	OBUS	0.03	0.02

tblVehicleEF	OBUS	0.24	0.48
tblVehicleEF	OBUS	0.40	0.72
tblVehicleEF	OBUS	5.16	2.49
tblVehicleEF	OBUS	71.65	63.70
tblVehicleEF	OBUS	1,085.33	1,335.52
tblVehicleEF	OBUS	69.49	20.96
tblVehicleEF	OBUS	0.14	0.21
tblVehicleEF	OBUS	0.33	0.84
tblVehicleEF	OBUS	2.03	0.67
tblVehicleEF	OBUS	1.0000e-005	6.7000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
tblVehicleEF	OBUS	8.7100e-004	2.1800e-004
tblVehicleEF	OBUS	1.0000e-005	6.4000e-005
tblVehicleEF	OBUS	1.8490e-003	8.0880e-003
tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	3.8840e-003	4.6970e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.7290e-003	2.2650e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.29
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	6.9600e-004	6.0900e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.8600e-004	2.0700e-004
tblVehicleEF	OBUS	3.8840e-003	4.6970e-003
tblVehicleEF	OBUS	0.02	0.03

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	1.7290e-003	2.2650e-003
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.05	0.29
tblVehicleEF	OBUS	0.36	0.13
tblVehicleEF	OBUS	0.01	8.4630e-003
tblVehicleEF	OBUS	5.6610e-003	5.4160e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.25	0.49
tblVehicleEF	OBUS	0.39	0.70
tblVehicleEF	OBUS	5.57	2.67
tblVehicleEF	OBUS	64.36	65.29
tblVehicleEF	OBUS	1,085.33	1,335.50
tblVehicleEF	OBUS	69.49	21.26
tblVehicleEF	OBUS	0.13	0.24
tblVehicleEF	OBUS	0.35	0.89
tblVehicleEF	OBUS	2.06	0.68
tblVehicleEF	OBUS	1.5000e-005	8.7000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
tblVehicleEF	OBUS	8.7100e-004	2.1800e-004
tblVehicleEF	OBUS	1.4000e-005	8.3000e-005
tblVehicleEF	OBUS	1.8490e-003	8.0880e-003
tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	1.7990e-003	2.7830e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	8.3400e-004	1.2510e-003

tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.35	0.13
tblVehicleEF	OBUS	6.2600e-004	6.2400e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9300e-004	2.1000e-004
tblVehicleEF	OBUS	1.7990e-003	2.7830e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	8.3400e-004	1.2510e-003
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tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.38	0.14
tblVehicleEF	SBUS	0.82	0.09
tblVehicleEF	SBUS	9.5650e-003	6.6030e-003
tblVehicleEF	SBUS	0.06	8.0990e-003
tblVehicleEF	SBUS	7.84	3.43
tblVehicleEF	SBUS	0.57	0.55
tblVehicleEF	SBUS	6.44	1.08
tblVehicleEF	SBUS	1,128.57	369.74
tblVehicleEF	SBUS	1,093.03	1,096.55
tblVehicleEF	SBUS	55.12	6.92
tblVehicleEF	SBUS	8.81	3.32
tblVehicleEF	SBUS	3.97	4.42
tblVehicleEF	SBUS	12.20	0.78
tblVehicleEF	SBUS	8.4250e-003	3.3040e-003
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	8.0610e-003	3.1610e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	5.0680e-003	1.5760e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.93	0.41
tblVehicleEF	SBUS	2.4310e-003	7.9200e-004
tblVehicleEF	SBUS	0.10	0.09
tblVehicleEF	SBUS	0.02	0.07
tblVehicleEF	SBUS	0.36	0.05
tblVehicleEF	SBUS	0.01	3.5360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6300e-004	6.9000e-005
tblVehicleEF	SBUS	5.0680e-003	1.5760e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	2.4310e-003	7.9200e-004
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.07
tblVehicleEF	SBUS	0.39	0.05
tblVehicleEF	SBUS	0.82	0.09
tblVehicleEF	SBUS	9.7050e-003	6.6870e-003
tblVehicleEF	SBUS	0.05	6.7520e-003
tblVehicleEF	SBUS	7.74	3.39

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tblVehicleEF	SBUS	4.67	0.77
tblVehicleEF	SBUS	1,179.47	378.98
tblVehicleEF	SBUS	1,093.03	1,096.56
tblVehicleEF	SBUS	55.12	6.42
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tblVehicleEF	SBUS	12.17	0.77
tblVehicleEF	SBUS	7.1020e-003	2.7930e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	6.7950e-003	2.6720e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	9.1290e-003	2.7600e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.92	0.41
tblVehicleEF	SBUS	4.4980e-003	1.4670e-003
tblVehicleEF	SBUS	0.10	0.09
tblVehicleEF	SBUS	0.02	0.06
tblVehicleEF	SBUS	0.30	0.04
tblVehicleEF	SBUS	0.01	3.6240e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.3300e-004	6.3000e-005
tblVehicleEF	SBUS	9.1290e-003	2.7600e-003

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tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	4.4980e-003	1.4670e-003
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.06
tblVehicleEF	SBUS	0.33	0.04
tblVehicleEF	SBUS	0.82	0.09
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tblVehicleEF	SBUS	0.06	8.2440e-003
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tblVehicleEF	SBUS	1,093.03	1,096.55
tblVehicleEF	SBUS	55.12	6.96
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tblVehicleEF	SBUS	3.93	4.35
tblVehicleEF	SBUS	12.21	0.78
tblVehicleEF	SBUS	0.01	4.0110e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	9.8080e-003	3.8370e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.93	0.41
tblVehicleEF	SBUS	2.3310e-003	8.1800e-004
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tblVehicleEF	SBUS	0.02	0.08
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.01	3.4160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6900e-004	6.9000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	2.3310e-003	8.1800e-004
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.08
tblVehicleEF	SBUS	0.40	0.05
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.52	23.60
tblVehicleEF	UBUS	13.83	1.86
tblVehicleEF	UBUS	1,788.21	1,635.62
tblVehicleEF	UBUS	153.17	22.96
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tblVehicleEF	UBUS	12.24	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003

tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.09	0.10
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7820e-003	2.2700e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.19	0.10
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.58	23.60
tblVehicleEF	UBUS	11.85	1.58
tblVehicleEF	UBUS	1,788.21	1,635.63
tblVehicleEF	UBUS	153.17	22.49
tblVehicleEF	UBUS	3.53	0.30
tblVehicleEF	UBUS	12.16	0.21

tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	0.43	0.05
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.99	0.09
tblVehicleEF	UBUS	9.5110e-003	6.3200e-003
tblVehicleEF	UBUS	1.7480e-003	2.2300e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	1.83	3.11
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.09	0.09
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.51	23.60
tblVehicleEF	UBUS	14.02	1.85
tblVehicleEF	UBUS	1,788.21	1,635.62

tblVehicleEF	UBUS	153.17	22.93
tblVehicleEF	UBUS	3.75	0.30
tblVehicleEF	UBUS	12.25	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.10	0.09
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7850e-003	2.2700e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.20	0.10
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	SU_TR	6.07	6.28

tblVehicleTrips	WD_TR	6.59	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	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					
2021	5.4305	60.9273	22.5357	0.0592	23.5764	2.6474	26.2237	10.5584	2.4356	12.9940	0.0000	5,742.4850	5,742.4850	1.7929	0.0000	5,787.3084
2022	24.5459	18.7320	20.8154	0.0432	1.1341	0.8733	2.0073	0.3037	0.8204	1.1240	0.0000	4,202.2638	4,202.2638	0.7286	0.0000	4,220.4794
Maximum	**24.5459**	**60.9273**	**22.5357**	**0.0592**	**23.5764**	**2.6474**	**26.2237**	**10.5584**	**2.4356**	**12.9940**	**0.0000**	**5,742.4850**	**5,742.4850**	**1.7929**	**0.0000**	**5,787.3084**

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					
2021	5.4305	60.9273	22.5357	0.0592	9.3214	2.6474	11.9688	4.1515	2.4356	6.5870	0.0000	5,742.4850	5,742.4850	1.7929	0.0000	5,787.3084
2022	24.5459	18.7320	20.8154	0.0432	1.1341	0.8733	2.0073	0.3037	0.8204	1.1240	0.0000	4,202.2638	4,202.2638	0.7286	0.0000	4,220.4794
Maximum	**24.5459**	**60.9273**	**22.5357**	**0.0592**	**9.3214**	**2.6474**	**11.9688**	**4.1515**	**2.4356**	**6.5870**	**0.0000**	**5,742.4850**	**5,742.4850**	**1.7929**	**0.0000**	**5,787.3084**

	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**	**57.69**	**0.00**	**50.49**	**58.98**	**0.00**	**45.38**	**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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Energy	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Mobile	1.2136	3.3121	12.0351	0.0430	3.8500	0.0398	3.8897	1.0291	0.0375	1.0666		4,464.9597	4,464.9597	0.1566		4,468.8757
Total	**2.9662**	**4.6249**	**17.9513**	**0.0512**	**3.8500**	**0.1706**	**4.0206**	**1.0291**	**0.1684**	**1.1975**	**0.0000**	**6,071.4469**	**6,071.4469**	**0.1966**	**0.0293**	**6,085.0868**

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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Energy	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Mobile	1.2136	3.3121	12.0351	0.0430	3.8500	0.0398	3.8897	1.0291	0.0375	1.0666		4,464.9597	4,464.9597	0.1566		4,468.8757
Total	**2.9662**	**4.6249**	**17.9513**	**0.0512**	**3.8500**	**0.1706**	**4.0206**	**1.0291**	**0.1684**	**1.1975**	**0.0000**	**6,071.4469**	**6,071.4469**	**0.1966**	**0.0293**	**6,085.0868**

	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	Site Preparation	7/1/2021	7/7/2021	5	5	
2	Grading	Grading	7/8/2021	7/19/2021	5	8	
3	Building Construction	Building Construction	7/20/2021	6/6/2022	5	230	
4	Paving	Paving	6/7/2022	6/30/2022	5	18	
5	Architectural Coating	Architectural Coating	7/1/2022	7/26/2022	5	18	

Acres of Grading (Site Preparation Phase): 25

Acres of Grading (Grading Phase): 40

Acres of Paving: 2.34

Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 6,188 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	212	0.43
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Crawler Tractors	3	8.00	212	0.43
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Site Preparation	7	18.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	90.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

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					23.3688	0.0000	23.3688	10.5032	0.0000	10.5032			0.0000			0.0000
Off-Road	5.3428	60.7861	21.8537	0.0570		2.6460	2.6460		2.4343	2.4343		5,523.5047	5,523.5047	1.7864		5,568.1651
Total	**5.3428**	**60.7861**	**21.8537**	**0.0570**	**23.3688**	**2.6460**	**26.0148**	**10.5032**	**2.4343**	**12.9376**		**5,523.5047**	**5,523.5047**	**1.7864**		**5,568.1651**

3.2 Site Preparation - 2021

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
Vendor	2.3300e-003	0.0925	0.0165	2.6000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0100e-003		27.3251	27.3251	1.9500e-003		27.3740
Worker	0.0853	0.0486	0.6655	1.9200e-003	0.2012	1.1900e-003	0.2024	0.0534	1.0900e-003	0.0545		191.6552	191.6552	4.5700e-003		191.7694
Total	**0.0877**	**0.1412**	**0.6820**	**2.1800e-003**	**0.2076**	**1.3700e-003**	**0.2090**	**0.0552**	**1.2600e-003**	**0.0565**		**218.9803**	**218.9803**	**6.5200e-003**		**219.1434**

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					9.1138	0.0000	9.1138	4.0963	0.0000	4.0963			0.0000			0.0000
Off-Road	5.3428	60.7861	21.8537	0.0570		2.6460	2.6460		2.4343	2.4343	0.0000	5,523.5047	5,523.5047	1.7864		5,568.1651
Total	**5.3428**	**60.7861**	**21.8537**	**0.0570**	**9.1138**	**2.6460**	**11.7598**	**4.0963**	**2.4343**	**6.5306**	**0.0000**	**5,523.5047**	**5,523.5047**	**1.7864**		**5,568.1651**

3.2 Site Preparation - 2021

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
Vendor	2.3300e-003	0.0925	0.0165	2.6000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0100e-003		27.3251	27.3251	1.9500e-003		27.3740
Worker	0.0853	0.0486	0.6655	1.9200e-003	0.2012	1.1900e-003	0.2024	0.0534	1.0900e-003	0.0545		191.6552	191.6552	4.5700e-003		191.7694
Total	**0.0877**	**0.1412**	**0.6820**	**2.1800e-003**	**0.2076**	**1.3700e-003**	**0.2090**	**0.0552**	**1.2600e-003**	**0.0565**		**218.9803**	**218.9803**	**6.5200e-003**		**219.1434**

3.3 Grading - 2021

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					11.3246	0.0000	11.3246	3.8828	0.0000	3.8828			0.0000			0.0000
Off-Road	3.3813	39.9534	16.3820	0.0439		1.6111	1.6111		1.4822	1.4822		4,250.3144	4,250.3144	1.3746		4,284.6803
Total	**3.3813**	**39.9534**	**16.3820**	**0.0439**	**11.3246**	**1.6111**	**12.9357**	**3.8828**	**1.4822**	**5.3650**		**4,250.3144**	**4,250.3144**	**1.3746**		**4,284.6803**

3.3 Grading - 2021

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
Vendor	2.3300e-003	0.0925	0.0165	2.6000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0100e-003		27.3251	27.3251	1.9500e-003		27.3740
Worker	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078
Total	**0.0734**	**0.1331**	**0.5711**	**1.8600e-003**	**0.1741**	**1.1700e-003**	**0.1752**	**0.0463**	**1.0800e-003**	**0.0474**		**187.0377**	**187.0377**	**5.7600e-003**		**187.1818**

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					4.4166	0.0000	4.4166	1.5143	0.0000	1.5143			0.0000			0.0000
Off-Road	3.3813	39.9534	16.3820	0.0439		1.6111	1.6111		1.4822	1.4822	0.0000	4,250.3144	4,250.3144	1.3746		4,284.6803
Total	**3.3813**	**39.9534**	**16.3820**	**0.0439**	**4.4166**	**1.6111**	**6.0277**	**1.5143**	**1.4822**	**2.9965**	**0.0000**	**4,250.3144**	**4,250.3144**	**1.3746**		**4,284.6803**

3.3 Grading - 2021

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
Vendor	2.3300e-003	0.0925	0.0165	2.6000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0100e-003		27.3251	27.3251	1.9500e-003		27.3740
Worker	0.0711	0.0405	0.5546	1.6000e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		159.7126	159.7126	3.8100e-003		159.8078
Total	**0.0734**	**0.1331**	**0.5711**	**1.8600e-003**	**0.1741**	**1.1700e-003**	**0.1752**	**0.0463**	**1.0800e-003**	**0.0474**		**187.0377**	**187.0377**	**5.7600e-003**		**187.1818**

3.4 Building Construction - 2021

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	2.0228	18.7492	17.6706	0.0288		1.0251	1.0251		0.9625	0.9625		2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**2.0228**	**18.7492**	**17.6706**	**0.0288**		**1.0251**	**1.0251**		**0.9625**	**0.9625**		**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

3.4 Building Construction - 2021

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
Vendor	0.0467	1.8508	0.3302	5.1800e-003	0.1281	3.5200e-003	0.1316	0.0369	3.3700e-003	0.0402		546.5020	546.5020	0.0391		547.4795
Worker	0.4267	0.2431	3.3274	9.6200e-003	1.0060	5.9300e-003	1.0119	0.2668	5.4600e-003	0.2723		958.2758	958.2758	0.0229		958.8471
Total	**0.4734**	**2.0939**	**3.6576**	**0.0148**	**1.1341**	**9.4500e-003**	**1.1435**	**0.3037**	**8.8300e-003**	**0.3125**		**1,504.7779**	**1,504.7779**	**0.0620**		**1,506.3265**

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	2.0228	18.7492	17.6706	0.0288		1.0251	1.0251		0.9625	0.9625	0.0000	2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**2.0228**	**18.7492**	**17.6706**	**0.0288**		**1.0251**	**1.0251**		**0.9625**	**0.9625**	**0.0000**	**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

3.4 Building Construction - 2021

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
Vendor	0.0467	1.8508	0.3302	5.1800e-003	0.1281	3.5200e-003	0.1316	0.0369	3.3700e-003	0.0402		546.5020	546.5020	0.0391		547.4795
Worker	0.4267	0.2431	3.3274	9.6200e-003	1.0060	5.9300e-003	1.0119	0.2668	5.4600e-003	0.2723		958.2758	958.2758	0.0229		958.8471
Total	**0.4734**	**2.0939**	**3.6576**	**0.0148**	**1.1341**	**9.4500e-003**	**1.1435**	**0.3037**	**8.8300e-003**	**0.3125**		**1,504.7779**	**1,504.7779**	**0.0620**		**1,506.3265**

3.4 Building Construction - 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	1.8146	16.7670	17.4392	0.0288		0.8645	0.8645		0.8122	0.8122		2,737.1520	2,737.1520	0.6711		2,753.9288
Total	**1.8146**	**16.7670**	**17.4392**	**0.0288**		**0.8645**	**0.8645**		**0.8122**	**0.8122**		**2,737.1520**	**2,737.1520**	**0.6711**		**2,753.9288**

3.4 Building Construction - 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
Vendor	0.0435	1.7462	0.3071	5.1400e-003	0.1281	2.9600e-003	0.1310	0.0369	2.8300e-003	0.0397		541.8504	541.8504	0.0370		542.7761
Worker	0.3991	0.2188	3.0691	9.2600e-003	1.0060	5.7700e-003	1.0118	0.2668	5.3100e-003	0.2721		923.2614	923.2614	0.0205		923.7745
Total	**0.4427**	**1.9649**	**3.3762**	**0.0144**	**1.1341**	**8.7300e-003**	**1.1428**	**0.3037**	**8.1400e-003**	**0.3118**		**1,465.1118**	**1,465.1118**	**0.0576**		**1,466.5506**

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	1.8146	16.7670	17.4392	0.0288		0.8645	0.8645		0.8122	0.8122	0.0000	2,737.1520	2,737.1520	0.6711		2,753.9288
Total	**1.8146**	**16.7670**	**17.4392**	**0.0288**		**0.8645**	**0.8645**		**0.8122**	**0.8122**	**0.0000**	**2,737.1520**	**2,737.1520**	**0.6711**		**2,753.9288**

3.4 Building Construction - 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
Vendor	0.0435	1.7462	0.3071	5.1400e-003	0.1281	2.9600e-003	0.1310	0.0369	2.8300e-003	0.0397		541.8504	541.8504	0.0370		542.7761
Worker	0.3991	0.2188	3.0691	9.2600e-003	1.0060	5.7700e-003	1.0118	0.2668	5.3100e-003	0.2721		923.2614	923.2614	0.0205		923.7745
Total	**0.4427**	**1.9649**	**3.3762**	**0.0144**	**1.1341**	**8.7300e-003**	**1.1428**	**0.3037**	**8.1400e-003**	**0.3118**		**1,465.1118**	**1,465.1118**	**0.0576**		**1,466.5506**

3.5 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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.2067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3095**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 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
Vendor	4.3500e-003	0.1746	0.0307	5.1000e-004	0.0128	3.0000e-004	0.0131	3.6900e-003	2.8000e-004	3.9700e-003		54.1850	54.1850	3.7000e-003		54.2776
Worker	0.0665	0.0365	0.5115	1.5400e-003	0.1677	9.6000e-004	0.1686	0.0445	8.9000e-004	0.0454		153.8769	153.8769	3.4200e-003		153.9624
Total	**0.0709**	**0.2111**	**0.5422**	**2.0500e-003**	**0.1805**	**1.2600e-003**	**0.1817**	**0.0482**	**1.1700e-003**	**0.0493**		**208.0620**	**208.0620**	**7.1200e-003**		**208.2400**

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.2067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3095**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 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
Vendor	4.3500e-003	0.1746	0.0307	5.1000e-004	0.0128	3.0000e-004	0.0131	3.6900e-003	2.8000e-004	3.9700e-003		54.1850	54.1850	3.7000e-003		54.2776
Worker	0.0665	0.0365	0.5115	1.5400e-003	0.1677	9.6000e-004	0.1686	0.0445	8.9000e-004	0.0454		153.8769	153.8769	3.4200e-003		153.9624
Total	**0.0709**	**0.2111**	**0.5422**	**2.0500e-003**	**0.1805**	**1.2600e-003**	**0.1817**	**0.0482**	**1.1700e-003**	**0.0493**		**208.0620**	**208.0620**	**7.1200e-003**		**208.2400**

3.6 Architectural Coating - 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					
Archit. Coating	24.1890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2727	1.8780	2.4181	3.9600e-003		0.1090	0.1090		0.1090	0.1090		375.2641	375.2641	0.0244		375.8749
Total	**24.4618**	**1.8780**	**2.4181**	**3.9600e-003**		**0.1090**	**0.1090**		**0.1090**	**0.1090**		**375.2641**	**375.2641**	**0.0244**		**375.8749**

3.6 Architectural Coating - 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
Vendor	4.3500e-003	0.1746	0.0307	5.1000e-004	0.0128	3.0000e-004	0.0131	3.6900e-003	2.8000e-004	3.9700e-003		54.1850	54.1850	3.7000e-003		54.2776
Worker	0.0798	0.0438	0.6138	1.8500e-003	0.2012	1.1500e-003	0.2024	0.0534	1.0600e-003	0.0544		184.6523	184.6523	4.1000e-003		184.7549
Total	**0.0842**	**0.2184**	**0.6445**	**2.3600e-003**	**0.2140**	**1.4500e-003**	**0.2155**	**0.0571**	**1.3400e-003**	**0.0584**		**238.8373**	**238.8373**	**7.8000e-003**		**239.0325**

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					
Archit. Coating	24.1890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2727	1.8780	2.4181	3.9600e-003		0.1090	0.1090		0.1090	0.1090	0.0000	375.2641	375.2641	0.0244		375.8749
Total	**24.4618**	**1.8780**	**2.4181**	**3.9600e-003**		**0.1090**	**0.1090**		**0.1090**	**0.1090**	**0.0000**	**375.2641**	**375.2641**	**0.0244**		**375.8749**

3.6 Architectural Coating - 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
Vendor	4.3500e-003	0.1746	0.0307	5.1000e-004	0.0128	3.0000e-004	0.0131	3.6900e-003	2.8000e-004	3.9700e-003		54.1850	54.1850	3.7000e-003		54.2776
Worker	0.0798	0.0438	0.6138	1.8500e-003	0.2012	1.1500e-003	0.2024	0.0534	1.0600e-003	0.0544		184.6523	184.6523	4.1000e-003		184.7549
Total	**0.0842**	**0.2184**	**0.6445**	**2.3600e-003**	**0.2140**	**1.4500e-003**	**0.2155**	**0.0571**	**1.3400e-003**	**0.0584**		**238.8373**	**238.8373**	**7.8000e-003**		**239.0325**

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	1.2136	3.3121	12.0351	0.0430	3.8500	0.0398	3.8897	1.0291	0.0375	1.0666		4,464.9597	4,464.9597	0.1566		4,468.8757
Unmitigated	1.2136	3.3121	12.0351	0.0430	3.8500	0.0398	3.8897	1.0291	0.0375	1.0666		4,464.9597	4,464.9597	0.1566		4,468.8757

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	476.00	529.10	408.20	1,619,392	1,619,392
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	476.00	529.10	408.20	1,619,392	1,619,392

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
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	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
Apartments Low Rise	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Other Non-Asphalt Surfaces	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Parking Lot	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898

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	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
NaturalGas Unmitigated	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267

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					
Apartments Low Rise	1872.7	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Other Non-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
Parking Lot	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		**0.0202**	**0.1726**	**0.0734**	**1.1000e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**220.3174**	**220.3174**	**4.2200e-003**	**4.0400e-003**	**221.6267**

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					
Apartments Low Rise	1.8727	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Other Non-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
Parking Lot	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		**0.0202**	**0.1726**	**0.0734**	**1.1000e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**220.3174**	**220.3174**	**4.2200e-003**	**4.0400e-003**	**221.6267**

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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Unmitigated	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845

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	0.1193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1262	1.0782	0.4588	6.8800e-003		0.0872	0.0872		0.0872	0.0872	0.0000	1,376.4706	1,376.4706	0.0264	0.0252	1,384.6503
Landscaping	0.1635	0.0620	5.3840	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6992	9.6992	9.4000e-003		9.9342
Total	**1.7325**	**1.1403**	**5.8428**	**7.1600e-003**		**0.1169**	**0.1169**		**0.1169**	**0.1169**	**0.0000**	**1,386.1698**	**1,386.1698**	**0.0358**	**0.0252**	**1,394.5845**

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	0.1193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1262	1.0782	0.4588	6.8800e-003		0.0872	0.0872		0.0872	0.0872	0.0000	1,376.4706	1,376.4706	0.0264	0.0252	1,384.6503
Landscaping	0.1635	0.0620	5.3840	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6992	9.6992	9.4000e-003		9.9342
Total	**1.7325**	**1.1403**	**5.8428**	**7.1600e-003**		**0.1169**	**0.1169**		**0.1169**	**0.1169**	**0.0000**	**1,386.1698**	**1,386.1698**	**0.0358**	**0.0252**	**1,394.5845**

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

Monte Vista Ranch

Riverside-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	39.93	1000sqft	0.92	39,932.00	0
Parking Lot	158.00	Space	1.42	63,200.00	0
Apartments Low Rise	65.00	Dwelling Unit	2.66	65,000.00	186

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	550.81	**CH4 Intensity (lb/MWhr)**	0.023	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intensity factors adjusted to reflect the RPS for the 2023 Opening Year

Land Use - Total Project Area is +/- 5 acres

Construction Phase -

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Off-road Equipment -

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Trips and VMT - CalEEMod only assumes Vendor Trips during Building Construction. The CalEEMod default trips were ratioed and rounded up between each phase based on the number of days.

Grading - It is assumed that up to 5 acres will be disturbed per day

Architectural Coating -

Vehicle Trips - Trip rates based on information provided in the Traffic Analysis

Woodstoves - Rule 445

Energy Use - The Project will design building shells and building components to meet 2019 Title 24 Standards which expects 53% less energy for residential uses

Construction Off-road Equipment Mitigation - Rule 403

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
tblEnergyUse	LightingElect	810.36	380.87
tblEnergyUse	T24E	877.14	412.26
tblEnergyUse	T24NG	9,544.50	4,485.92
tblFireplaces	NumberGas	55.25	65.00
tblFireplaces	NumberNoFireplace	6.50	0.00
tblFireplaces	NumberWood	3.25	0.00

tblGrading	AcresOfGrading	16.00	40.00
tblGrading	AcresOfGrading	10.00	25.00
tblLandUse	LotAcreage	4.06	2.66
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.023
tblProjectCharacteristics	CO2IntensityFactor	702.44	550.81
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	24.00	20.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleEF	HHD	0.96	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	2.07	6.43
tblVehicleEF	HHD	0.41	0.24
tblVehicleEF	HHD	1.44	4.3850e-003
tblVehicleEF	HHD	6,147.84	1,065.92
tblVehicleEF	HHD	1,399.88	1,272.83
tblVehicleEF	HHD	4.72	0.04
tblVehicleEF	HHD	17.43	5.31
tblVehicleEF	HHD	0.97	1.96

tblVehicleEF	HHD	20.29	2.50
tblVehicleEF	HHD	5.1890e-003	2.3650e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	4.9650e-003	2.2630e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.8060e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	7.3000e-005	3.0000e-006
tblVehicleEF	HHD	2.3430e-003	9.7000e-005
tblVehicleEF	HHD	0.55	0.44
tblVehicleEF	HHD	4.3000e-005	2.0000e-006
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.5400e-004	4.4400e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.06	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	7.3000e-005	3.0000e-006
tblVehicleEF	HHD	2.3430e-003	9.7000e-005
tblVehicleEF	HHD	0.63	0.50
tblVehicleEF	HHD	4.3000e-005	2.0000e-006
tblVehicleEF	HHD	0.08	0.05
tblVehicleEF	HHD	1.5400e-004	4.4400e-004

tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.91	0.02
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.50	6.35
tblVehicleEF	HHD	0.41	0.24
tblVehicleEF	HHD	1.38	4.1390e-003
tblVehicleEF	HHD	6,513.09	1,052.83
tblVehicleEF	HHD	1,399.88	1,272.83
tblVehicleEF	HHD	4.72	0.04
tblVehicleEF	HHD	17.99	5.06
tblVehicleEF	HHD	0.91	1.85
tblVehicleEF	HHD	20.28	2.50
tblVehicleEF	HHD	4.3760e-003	2.0780e-003
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tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	4.1860e-003	1.9880e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.8060e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	1.4000e-004	5.0000e-006
tblVehicleEF	HHD	2.6540e-003	1.0600e-004
tblVehicleEF	HHD	0.51	0.46
tblVehicleEF	HHD	8.2000e-005	3.0000e-006

tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.5700e-004	4.4900e-004
tblVehicleEF	HHD	0.04	1.0000e-006
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tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.0000e-005	0.00
tblVehicleEF	HHD	1.4000e-004	5.0000e-006
tblVehicleEF	HHD	2.6540e-003	1.0600e-004
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tblVehicleEF	HHD	8.2000e-005	3.0000e-006
tblVehicleEF	HHD	0.08	0.05
tblVehicleEF	HHD	1.5700e-004	4.4900e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	1.04	0.02
tblVehicleEF	HHD	0.03	8.2000e-004
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tblVehicleEF	HHD	16.66	5.62
tblVehicleEF	HHD	0.96	1.92
tblVehicleEF	HHD	20.29	2.50
tblVehicleEF	HHD	6.3140e-003	2.7000e-003
tblVehicleEF	HHD	0.06	0.06

tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	5.1440e-003	0.02
tblVehicleEF	HHD	3.9000e-005	0.00
tblVehicleEF	HHD	6.0400e-003	2.5830e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8620e-003	8.7520e-003
tblVehicleEF	HHD	4.9210e-003	0.02
tblVehicleEF	HHD	3.6000e-005	0.00
tblVehicleEF	HHD	5.5000e-005	3.0000e-006
tblVehicleEF	HHD	2.4340e-003	1.0800e-004
tblVehicleEF	HHD	0.59	0.40
tblVehicleEF	HHD	3.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.04	0.02
tblVehicleEF	HHD	1.6500e-004	4.7200e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	HHD	0.05	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	7.1000e-005	0.00
tblVehicleEF	HHD	5.5000e-005	3.0000e-006
tblVehicleEF	HHD	2.4340e-003	1.0800e-004
tblVehicleEF	HHD	0.68	0.46
tblVehicleEF	HHD	3.6000e-005	2.0000e-006
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	1.6500e-004	4.7200e-004
tblVehicleEF	HHD	0.04	1.0000e-006
tblVehicleEF	LDA	3.3240e-003	1.8870e-003
tblVehicleEF	LDA	4.1920e-003	0.04

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tblVehicleEF	LDA	54.50	52.26
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.17
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
tblVehicleEF	LDA	1.4310e-003	1.2020e-003
tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.3520e-003	6.9510e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.06	0.19
tblVehicleEF	LDA	2.3560e-003	2.4590e-003
tblVehicleEF	LDA	5.6100e-004	5.1100e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDA	3.7650e-003	2.1290e-003
tblVehicleEF	LDA	3.6350e-003	0.04
tblVehicleEF	LDA	0.62	0.67

tblVehicleEF	LDA	0.85	1.70
tblVehicleEF	LDA	256.22	272.11
tblVehicleEF	LDA	54.50	51.65
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.15
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
tblVehicleEF	LDA	1.4310e-003	1.2020e-003
tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	9.4470e-003	7.7540e-003
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.05	0.16
tblVehicleEF	LDA	2.5670e-003	2.6590e-003
tblVehicleEF	LDA	5.5900e-004	5.0500e-004
tblVehicleEF	LDA	0.09	0.09
tblVehicleEF	LDA	0.10	0.10
tblVehicleEF	LDA	0.06	0.07
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.03	0.19
tblVehicleEF	LDA	0.05	0.18
tblVehicleEF	LDA	3.2080e-003	1.8550e-003
tblVehicleEF	LDA	4.3060e-003	0.04
tblVehicleEF	LDA	0.48	0.54
tblVehicleEF	LDA	0.98	2.01

tblVehicleEF	LDA	229.53	248.26
tblVehicleEF	LDA	54.50	52.24
tblVehicleEF	LDA	0.04	0.03
tblVehicleEF	LDA	0.06	0.16
tblVehicleEF	LDA	1.5540e-003	1.3050e-003
tblVehicleEF	LDA	2.2370e-003	1.7590e-003
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tblVehicleEF	LDA	2.0570e-003	1.6170e-003
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	8.0650e-003	6.8280e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.06	0.19
tblVehicleEF	LDA	2.2980e-003	2.4260e-003
tblVehicleEF	LDA	5.6100e-004	5.1000e-004
tblVehicleEF	LDA	0.04	0.05
tblVehicleEF	LDA	0.10	0.09
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	9.9310e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.06	0.21
tblVehicleEF	LDT1	9.2940e-003	5.7490e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.18	1.22
tblVehicleEF	LDT1	2.73	2.28
tblVehicleEF	LDT1	295.40	298.87

tblVehicleEF	LDT1	68.37	63.71
tblVehicleEF	LDT1	0.11	0.10
tblVehicleEF	LDT1	0.17	0.26
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.18	0.16
tblVehicleEF	LDT1	0.30	0.22
tblVehicleEF	LDT1	0.12	0.11
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.18	0.73
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	2.9680e-003	2.9210e-003
tblVehicleEF	LDT1	7.3100e-004	6.2300e-004
tblVehicleEF	LDT1	0.18	0.16
tblVehicleEF	LDT1	0.30	0.23
tblVehicleEF	LDT1	0.12	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.18	0.74
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.4140e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	1.43	1.44
tblVehicleEF	LDT1	2.40	1.91
tblVehicleEF	LDT1	320.93	320.06
tblVehicleEF	LDT1	68.37	62.93

tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.16	0.24
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.16	0.31
tblVehicleEF	LDT1	3.2270e-003	3.1280e-003
tblVehicleEF	LDT1	7.2500e-004	6.1500e-004
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.18	0.34
tblVehicleEF	LDT1	8.9360e-003	5.6560e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.11	1.18
tblVehicleEF	LDT1	2.78	2.26
tblVehicleEF	LDT1	287.77	295.29
tblVehicleEF	LDT1	68.37	63.68
tblVehicleEF	LDT1	0.11	0.10

tblVehicleEF	LDT1	0.17	0.26
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	2.8910e-003	2.8860e-003
tblVehicleEF	LDT1	7.3200e-004	6.2200e-004
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT2	4.7540e-003	3.1840e-003
tblVehicleEF	LDT2	5.7630e-003	0.06
tblVehicleEF	LDT2	0.68	0.79
tblVehicleEF	LDT2	1.27	2.59
tblVehicleEF	LDT2	330.23	314.22
tblVehicleEF	LDT2	76.02	67.26
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26

tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.3070e-003	3.0700e-003
tblVehicleEF	LDT2	7.8100e-004	6.5700e-004
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.3890e-003	3.5750e-003
tblVehicleEF	LDT2	5.0030e-003	0.05
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.13	2.16
tblVehicleEF	LDT2	359.32	334.38
tblVehicleEF	LDT2	76.02	66.44
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.24
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003

tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.24
tblVehicleEF	LDT2	3.6000e-003	3.2670e-003
tblVehicleEF	LDT2	7.7900e-004	6.4900e-004
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.5710e-003	3.1320e-003
tblVehicleEF	LDT2	5.9350e-003	0.06
tblVehicleEF	LDT2	0.63	0.76
tblVehicleEF	LDT2	1.30	2.57
tblVehicleEF	LDT2	321.50	310.81
tblVehicleEF	LDT2	76.02	67.23
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.25
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003

tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.2190e-003	3.0370e-003
tblVehicleEF	LDT2	7.8200e-004	6.5700e-004
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LHD1	4.9950e-003	4.5410e-003
tblVehicleEF	LHD1	8.5970e-003	4.4200e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.89
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.91	1.39

tblVehicleEF	LHD1	0.93	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5540e-003

tblVehicleEF	LHD1	8.7610e-003	4.4900e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.82	0.61
tblVehicleEF	LHD1	2.04	0.84
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.98
tblVehicleEF	LHD1	29.33	9.91
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.80	1.31
tblVehicleEF	LHD1	0.90	0.27
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.22	0.06
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005

tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3200e-004	9.8000e-005
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.24	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5430e-003
tblVehicleEF	LHD1	8.5850e-003	4.4280e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.88
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.98
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.89	1.37
tblVehicleEF	LHD1	0.92	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003

tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD2	3.3070e-003	2.7700e-003
tblVehicleEF	LHD2	3.5370e-003	3.2640e-003
tblVehicleEF	LHD2	6.6670e-003	7.1780e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.48
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92

tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.29	1.52
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.4000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.06	0.06

tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7770e-003
tblVehicleEF	LHD2	3.5730e-003	3.2860e-003
tblVehicleEF	LHD2	6.4430e-003	6.9030e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.45
tblVehicleEF	LHD2	0.98	0.45
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.93
tblVehicleEF	LHD2	22.93	6.38
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.22	1.43
tblVehicleEF	LHD2	0.45	0.15
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.05	0.06

tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
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tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7710e-003
tblVehicleEF	LHD2	3.5300e-003	3.2670e-003
tblVehicleEF	LHD2	6.7050e-003	7.1290e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.47
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92
tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.28	1.49
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.3000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	MCY	0.43	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.81	18.85
tblVehicleEF	MCY	9.70	8.64
tblVehicleEF	MCY	166.71	207.60

tblVehicleEF	MCY	45.36	60.36
tblVehicleEF	MCY	1.12	1.13
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.11	2.11
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.05	1.83
tblVehicleEF	MCY	2.0360e-003	2.0540e-003
tblVehicleEF	MCY	6.7200e-004	5.9700e-004
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.61	2.61
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.23	2.00
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	19.51	18.83
tblVehicleEF	MCY	9.10	7.90
tblVehicleEF	MCY	166.71	207.41
tblVehicleEF	MCY	45.36	58.44

tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	3.35	2.75
tblVehicleEF	MCY	1.23	1.09
tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.09	2.07
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	1.84	1.61
tblVehicleEF	MCY	2.0460e-003	2.0530e-003
tblVehicleEF	MCY	6.5600e-004	5.7800e-004
tblVehicleEF	MCY	3.35	2.75
tblVehicleEF	MCY	1.23	1.09
tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.59	2.56
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	2.00	1.75
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.37	18.30
tblVehicleEF	MCY	9.67	8.43
tblVehicleEF	MCY	166.71	206.64
tblVehicleEF	MCY	45.36	59.88
tblVehicleEF	MCY	1.12	1.09

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.59	1.64
tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.11	2.09
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.06	1.79
tblVehicleEF	MCY	2.0290e-003	2.0450e-003
tblVehicleEF	MCY	6.7200e-004	5.9300e-004
tblVehicleEF	MCY	1.59	1.64
tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.61	2.59
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.24	1.95
tblVehicleEF	MDV	9.8990e-003	4.1640e-003
tblVehicleEF	MDV	0.01	0.08
tblVehicleEF	MDV	1.15	0.92
tblVehicleEF	MDV	2.62	2.99
tblVehicleEF	MDV	458.82	396.16
tblVehicleEF	MDV	104.21	84.06
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.25	0.33

tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.5960e-003	3.8690e-003
tblVehicleEF	MDV	1.0880e-003	8.2200e-004
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MDV	0.01	4.6800e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	1.41	1.09
tblVehicleEF	MDV	2.31	2.49
tblVehicleEF	MDV	498.05	417.66
tblVehicleEF	MDV	104.21	83.09
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.24	0.31
tblVehicleEF	MDV	1.6580e-003	1.4100e-003

tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.21	0.19
tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.17	0.32
tblVehicleEF	MDV	4.9910e-003	4.0790e-003
tblVehicleEF	MDV	1.0820e-003	8.1200e-004
tblVehicleEF	MDV	0.21	0.19
tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.19	0.35
tblVehicleEF	MDV	9.5100e-003	4.0920e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.08	0.88
tblVehicleEF	MDV	2.68	2.97
tblVehicleEF	MDV	447.05	392.53
tblVehicleEF	MDV	104.21	84.03
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.25	0.33
tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003

tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.13	0.52
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.4770e-003	3.8330e-003
tblVehicleEF	MDV	1.0890e-003	8.2100e-004
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.03	0.02
tblVehicleEF	MDV	0.13	0.52
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	2.00	0.33
tblVehicleEF	MH	5.24	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.48	4.27
tblVehicleEF	MH	0.79	0.00
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	9.7800e-004	0.00

tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.34	0.00
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	2.05	0.33
tblVehicleEF	MH	4.88	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.37	4.03
tblVehicleEF	MH	0.76	0.00
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	0.04	0.14

tblVehicleEF	MH	9.7800e-004	0.00
tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	2.52	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.94	0.00
tblVehicleEF	MH	0.08	0.07
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.30	0.00
tblVehicleEF	MH	9.8690e-003	8.7850e-003
tblVehicleEF	MH	6.5700e-004	0.00
tblVehicleEF	MH	2.52	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.94	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.32	0.00
tblVehicleEF	MH	0.02	3.2740e-003
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	1.99	0.33
tblVehicleEF	MH	5.28	0.00
tblVehicleEF	MH	995.46	929.33
tblVehicleEF	MH	57.13	0.00
tblVehicleEF	MH	1.46	4.20
tblVehicleEF	MH	0.79	0.00
tblVehicleEF	MH	0.01	0.02

tblVehicleEF	MH	0.04	0.14
tblVehicleEF	MH	9.7800e-004	0.00
tblVehicleEF	MH	3.2460e-003	4.0000e-003
tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.34	0.00
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tblVehicleEF	MHD	2.5650e-003	8.7300e-004
tblVehicleEF	MHD	0.05	7.0300e-003
tblVehicleEF	MHD	0.32	0.33
tblVehicleEF	MHD	0.21	0.12
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tblVehicleEF	MHD	148.43	67.29
tblVehicleEF	MHD	1,056.49	911.02

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tblVehicleEF	MHD	1.3500e-004	4.3400e-004
tblVehicleEF	MHD	2.6660e-003	9.4670e-003
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tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	7.6500e-004	2.2800e-004
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tblVehicleEF	MHD	0.01	8.6560e-003
tblVehicleEF	MHD	6.3400e-004	7.1000e-005
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tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	7.6500e-004	2.2800e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.34	0.04

tblVehicleEF	MHD	0.02	2.6270e-003
tblVehicleEF	MHD	2.5980e-003	8.8800e-004
tblVehicleEF	MHD	0.05	6.7570e-003
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tblVehicleEF	MHD	0.21	0.12
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tblVehicleEF	MHD	1,056.49	911.02
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tblVehicleEF	MHD	0.44	0.86
tblVehicleEF	MHD	11.41	1.80
tblVehicleEF	MHD	1.1400e-004	3.6900e-004
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tblVehicleEF	MHD	1.0900e-004	3.5300e-004
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tblVehicleEF	MHD	2.8970e-003	7.5100e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.02	0.01
tblVehicleEF	MHD	1.4710e-003	4.4600e-004
tblVehicleEF	MHD	0.02	9.6090e-003
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.30	0.04
tblVehicleEF	MHD	1.5100e-003	6.3800e-004
tblVehicleEF	MHD	0.01	8.6560e-003

tblVehicleEF	MHD	6.3000e-004	7.1000e-005
tblVehicleEF	MHD	2.8970e-003	7.5100e-004
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tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	1.4710e-003	4.4600e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.07
tblVehicleEF	MHD	0.33	0.04
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tblVehicleEF	MHD	0.05	6.9640e-003
tblVehicleEF	MHD	0.44	0.39
tblVehicleEF	MHD	0.21	0.12
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tblVehicleEF	MHD	136.28	67.35
tblVehicleEF	MHD	1,056.49	911.02
tblVehicleEF	MHD	54.56	7.20
tblVehicleEF	MHD	0.39	0.41
tblVehicleEF	MHD	0.46	0.89
tblVehicleEF	MHD	11.44	1.80
tblVehicleEF	MHD	1.6400e-004	5.2400e-004
tblVehicleEF	MHD	2.6660e-003	9.4670e-003
tblVehicleEF	MHD	7.3000e-004	8.3000e-005
tblVehicleEF	MHD	1.5700e-004	5.0100e-004
tblVehicleEF	MHD	2.5470e-003	9.0550e-003
tblVehicleEF	MHD	6.7100e-004	7.6000e-005
tblVehicleEF	MHD	1.0970e-003	4.3600e-004

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tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	5.9600e-004	2.3900e-004
tblVehicleEF	MHD	0.02	9.5510e-003
tblVehicleEF	MHD	0.02	0.08
tblVehicleEF	MHD	0.31	0.04
tblVehicleEF	MHD	1.3130e-003	6.3800e-004
tblVehicleEF	MHD	0.01	8.6560e-003
tblVehicleEF	MHD	6.3600e-004	7.1000e-005
tblVehicleEF	MHD	1.0970e-003	4.3600e-004
tblVehicleEF	MHD	0.04	0.02
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	5.9600e-004	2.3900e-004
tblVehicleEF	MHD	0.03	0.01
tblVehicleEF	MHD	0.02	0.08
tblVehicleEF	MHD	0.34	0.04
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tblVehicleEF	OBUS	5.6790e-003	5.4050e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.25	0.49
tblVehicleEF	OBUS	0.39	0.70
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tblVehicleEF	OBUS	1,085.33	1,335.49
tblVehicleEF	OBUS	69.49	21.28
tblVehicleEF	OBUS	0.13	0.23
tblVehicleEF	OBUS	0.35	0.91

tblVehicleEF	OBUS	2.07	0.69
tblVehicleEF	OBUS	1.2000e-005	7.5000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
tblVehicleEF	OBUS	8.7100e-004	2.1800e-004
tblVehicleEF	OBUS	1.1000e-005	7.2000e-005
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tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	2.0910e-003	2.6670e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	9.0600e-004	1.1770e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.29
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tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9200e-004	2.1100e-004
tblVehicleEF	OBUS	2.0910e-003	2.6670e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	9.0600e-004	1.1770e-003
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.05	0.29
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tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
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tblVehicleEF	OBUS	1.8490e-003	8.0880e-003
tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	3.8840e-003	4.6970e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	1.7290e-003	2.2650e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.29
tblVehicleEF	OBUS	0.33	0.12
tblVehicleEF	OBUS	6.9600e-004	6.0900e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.8600e-004	2.0700e-004
tblVehicleEF	OBUS	3.8840e-003	4.6970e-003
tblVehicleEF	OBUS	0.02	0.03

tblVehicleEF	OBUS	0.04	0.06
tblVehicleEF	OBUS	1.7290e-003	2.2650e-003
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tblVehicleEF	OBUS	1.5000e-005	8.7000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
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tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	8.3400e-004	1.2510e-003

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tblVehicleEF	SBUS	0.02	0.03
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tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
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tblVehicleEF	SBUS	5.0680e-003	1.5760e-003
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tblVehicleEF	SBUS	4.4980e-003	1.4670e-003
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tblVehicleEF	SBUS	0.02	0.06
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tblVehicleEF	SBUS	0.02	0.03
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tblVehicleEF	SBUS	9.8080e-003	3.8370e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003

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tblVehicleEF	SBUS	0.02	0.08
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tblVehicleEF	SBUS	6.6900e-004	6.9000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003
tblVehicleEF	SBUS	0.03	0.01
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tblVehicleEF	SBUS	2.3310e-003	8.1800e-004
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.08
tblVehicleEF	SBUS	0.40	0.05
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.52	23.60
tblVehicleEF	UBUS	13.83	1.86
tblVehicleEF	UBUS	1,788.21	1,635.62
tblVehicleEF	UBUS	153.17	22.96
tblVehicleEF	UBUS	3.79	0.30
tblVehicleEF	UBUS	12.24	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003

tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.09	0.10
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7820e-003	2.2700e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.19	0.10
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.58	23.60
tblVehicleEF	UBUS	11.85	1.58
tblVehicleEF	UBUS	1,788.21	1,635.63
tblVehicleEF	UBUS	153.17	22.49
tblVehicleEF	UBUS	3.53	0.30
tblVehicleEF	UBUS	12.16	0.21

tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	0.43	0.05
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.99	0.09
tblVehicleEF	UBUS	9.5110e-003	6.3200e-003
tblVehicleEF	UBUS	1.7480e-003	2.2300e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	1.83	3.11
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.09	0.09
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.51	23.60
tblVehicleEF	UBUS	14.02	1.85
tblVehicleEF	UBUS	1,788.21	1,635.62

tblVehicleEF	UBUS	153.17	22.93
tblVehicleEF	UBUS	3.75	0.30
tblVehicleEF	UBUS	12.25	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.10	0.09
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7850e-003	2.2700e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.20	0.10
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	SU_TR	6.07	6.28

tblVehicleTrips	WD_TR	6.59	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	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					
2021	5.4290	60.9281	22.4104	0.0590	23.5764	2.6474	26.2237	10.5584	2.4356	12.9940	0.0000	5,721.7369	5,721.7369	1.7926	0.0000	5,766.5510
2022	24.5450	18.7219	20.2774	0.0421	1.1341	0.8734	2.0074	0.3037	0.8205	1.1241	0.0000	4,086.8113	4,086.8113	0.7302	0.0000	4,105.0672
Maximum	**24.5450**	**60.9281**	**22.4104**	**0.0590**	**23.5764**	**2.6474**	**26.2237**	**10.5584**	**2.4356**	**12.9940**	**0.0000**	**5,721.7369**	**5,721.7369**	**1.7926**	**0.0000**	**5,766.5510**

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					
2021	5.4290	60.9281	22.4104	0.0590	9.3214	2.6474	11.9688	4.1515	2.4356	6.5871	0.0000	5,721.7369	5,721.7369	1.7926	0.0000	5,766.5510
2022	24.5450	18.7219	20.2774	0.0421	1.1341	0.8734	2.0074	0.3037	0.8205	1.1241	0.0000	4,086.8113	4,086.8113	0.7302	0.0000	4,105.0671
Maximum	**24.5450**	**60.9281**	**22.4104**	**0.0590**	**9.3214**	**2.6474**	**11.9688**	**4.1515**	**2.4356**	**6.5871**	**0.0000**	**5,721.7369**	**5,721.7369**	**1.7926**	**0.0000**	**5,766.5510**

	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**	**57.69**	**0.00**	**50.49**	**58.98**	**0.00**	**45.38**	**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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Energy	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Mobile	1.1583	3.4779	10.8062	0.0407	3.8495	0.0398	3.8893	1.0289	0.0375	1.0665		4,220.6212	4,220.6212	0.1395		4,224.1093
Total	**2.9110**	**4.7908**	**16.7224**	**0.0490**	**3.8495**	**0.1707**	**4.0202**	**1.0289**	**0.1684**	**1.1973**	**0.0000**	**5,827.1084**	**5,827.1084**	**0.1795**	**0.0293**	**5,840.3204**

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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Energy	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Mobile	1.1583	3.4779	10.8062	0.0407	3.8495	0.0398	3.8893	1.0289	0.0375	1.0665		4,220.6212	4,220.6212	0.1395		4,224.1093
Total	**2.9110**	**4.7908**	**16.7224**	**0.0490**	**3.8495**	**0.1707**	**4.0202**	**1.0289**	**0.1684**	**1.1973**	**0.0000**	**5,827.1084**	**5,827.1084**	**0.1795**	**0.0293**	**5,840.3204**

	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	Site Preparation	7/1/2021	7/7/2021	5	5	
2	Grading	Grading	7/8/2021	7/19/2021	5	8	
3	Building Construction	Building Construction	7/20/2021	6/6/2022	5	230	
4	Paving	Paving	6/7/2022	6/30/2022	5	18	
5	Architectural Coating	Architectural Coating	7/1/2022	7/26/2022	5	18	

Acres of Grading (Site Preparation Phase): 25

Acres of Grading (Grading Phase): 40

Acres of Paving: 2.34

Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 6,188 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	212	0.43
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Crawler Tractors	3	8.00	212	0.43
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Site Preparation	7	18.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	90.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

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					23.3688	0.0000	23.3688	10.5032	0.0000	10.5032			0.0000			0.0000
Off-Road	5.3428	60.7861	21.8537	0.0570		2.6460	2.6460		2.4343	2.4343		5,523.5047	5,523.5047	1.7864		5,568.1651
Total	**5.3428**	**60.7861**	**21.8537**	**0.0570**	**23.3688**	**2.6460**	**26.0148**	**10.5032**	**2.4343**	**12.9376**		**5,523.5047**	**5,523.5047**	**1.7864**		**5,568.1651**

3.2 Site Preparation - 2021

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
Vendor	2.4800e-003	0.0917	0.0195	2.5000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0200e-003		26.2973	26.2973	2.1800e-003		26.3518
Worker	0.0838	0.0503	0.5372	1.7200e-003	0.2012	1.1900e-003	0.2024	0.0534	1.0900e-003	0.0545		171.9348	171.9348	3.9700e-003		172.0342
Total	**0.0862**	**0.1420**	**0.5567**	**1.9700e-003**	**0.2076**	**1.3700e-003**	**0.2090**	**0.0552**	**1.2600e-003**	**0.0565**		**198.2322**	**198.2322**	**6.1500e-003**		**198.3860**

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					9.1138	0.0000	9.1138	4.0963	0.0000	4.0963			0.0000			0.0000
Off-Road	5.3428	60.7861	21.8537	0.0570		2.6460	2.6460		2.4343	2.4343	0.0000	5,523.5047	5,523.5047	1.7864		5,568.1651
Total	**5.3428**	**60.7861**	**21.8537**	**0.0570**	**9.1138**	**2.6460**	**11.7598**	**4.0963**	**2.4343**	**6.5306**	**0.0000**	**5,523.5047**	**5,523.5047**	**1.7864**		**5,568.1651**

3.2 Site Preparation - 2021

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
Vendor	2.4800e-003	0.0917	0.0195	2.5000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0200e-003		26.2973	26.2973	2.1800e-003		26.3518
Worker	0.0838	0.0503	0.5372	1.7200e-003	0.2012	1.1900e-003	0.2024	0.0534	1.0900e-003	0.0545		171.9348	171.9348	3.9700e-003		172.0342
Total	**0.0862**	**0.1420**	**0.5567**	**1.9700e-003**	**0.2076**	**1.3700e-003**	**0.2090**	**0.0552**	**1.2600e-003**	**0.0565**		**198.2322**	**198.2322**	**6.1500e-003**		**198.3860**

3.3 Grading - 2021

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					11.3246	0.0000	11.3246	3.8828	0.0000	3.8828			0.0000			0.0000
Off-Road	3.3813	39.9534	16.3820	0.0439		1.6111	1.6111		1.4822	1.4822		4,250.3144	4,250.3144	1.3746		4,284.6803
Total	**3.3813**	**39.9534**	**16.3820**	**0.0439**	**11.3246**	**1.6111**	**12.9357**	**3.8828**	**1.4822**	**5.3650**		**4,250.3144**	**4,250.3144**	**1.3746**		**4,284.6803**

3.3 Grading - 2021

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
Vendor	2.4800e-003	0.0917	0.0195	2.5000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0200e-003		26.2973	26.2973	2.1800e-003		26.3518
Worker	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618
Total	**0.0723**	**0.1336**	**0.4672**	**1.6900e-003**	**0.1741**	**1.1700e-003**	**0.1752**	**0.0463**	**1.0800e-003**	**0.0474**		**169.5764**	**169.5764**	**5.4900e-003**		**169.7136**

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					4.4166	0.0000	4.4166	1.5143	0.0000	1.5143			0.0000			0.0000
Off-Road	3.3813	39.9534	16.3820	0.0439		1.6111	1.6111		1.4822	1.4822	0.0000	4,250.3144	4,250.3144	1.3746		4,284.6803
Total	**3.3813**	**39.9534**	**16.3820**	**0.0439**	**4.4166**	**1.6111**	**6.0277**	**1.5143**	**1.4822**	**2.9965**	**0.0000**	**4,250.3144**	**4,250.3144**	**1.3746**		**4,284.6803**

3.3 Grading - 2021

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
Vendor	2.4800e-003	0.0917	0.0195	2.5000e-004	6.4000e-003	1.8000e-004	6.5800e-003	1.8400e-003	1.7000e-004	2.0200e-003		26.2973	26.2973	2.1800e-003		26.3518
Worker	0.0698	0.0419	0.4476	1.4400e-003	0.1677	9.9000e-004	0.1687	0.0445	9.1000e-004	0.0454		143.2790	143.2790	3.3100e-003		143.3618
Total	**0.0723**	**0.1336**	**0.4672**	**1.6900e-003**	**0.1741**	**1.1700e-003**	**0.1752**	**0.0463**	**1.0800e-003**	**0.0474**		**169.5764**	**169.5764**	**5.4900e-003**		**169.7136**

3.4 Building Construction - 2021

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	2.0228	18.7492	17.6706	0.0288		1.0251	1.0251		0.9625	0.9625		2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**2.0228**	**18.7492**	**17.6706**	**0.0288**		**1.0251**	**1.0251**		**0.9625**	**0.9625**		**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

3.4 Building Construction - 2021

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
Vendor	0.0496	1.8349	0.3906	4.9900e-003	0.1281	3.6300e-003	0.1317	0.0369	3.4700e-003	0.0403		525.9464	525.9464	0.0436		527.0355
Worker	0.4187	0.2514	2.6859	8.6200e-003	1.0060	5.9300e-003	1.0119	0.2668	5.4600e-003	0.2723		859.6742	859.6742	0.0199		860.1708
Total	**0.4683**	**2.0862**	**3.0765**	**0.0136**	**1.1341**	**9.5600e-003**	**1.1436**	**0.3037**	**8.9300e-003**	**0.3126**		**1,385.6206**	**1,385.6206**	**0.0634**		**1,387.2064**

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	2.0228	18.7492	17.6706	0.0288		1.0251	1.0251		0.9625	0.9625	0.0000	2,736.0438	2,736.0438	0.6751		2,752.9212
Total	**2.0228**	**18.7492**	**17.6706**	**0.0288**		**1.0251**	**1.0251**		**0.9625**	**0.9625**	**0.0000**	**2,736.0438**	**2,736.0438**	**0.6751**		**2,752.9212**

3.4 Building Construction - 2021

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
Vendor	0.0496	1.8349	0.3906	4.9900e-003	0.1281	3.6300e-003	0.1317	0.0369	3.4700e-003	0.0403		525.9464	525.9464	0.0436		527.0355
Worker	0.4187	0.2514	2.6859	8.6200e-003	1.0060	5.9300e-003	1.0119	0.2668	5.4600e-003	0.2723		859.6742	859.6742	0.0199		860.1708
Total	**0.4683**	**2.0862**	**3.0765**	**0.0136**	**1.1341**	**9.5600e-003**	**1.1436**	**0.3037**	**8.9300e-003**	**0.3126**		**1,385.6206**	**1,385.6206**	**0.0634**		**1,387.2064**

3.4 Building Construction - 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	1.8146	16.7670	17.4392	0.0288		0.8645	0.8645		0.8122	0.8122		2,737.1520	2,737.1520	0.6711		2,753.9288
Total	**1.8146**	**16.7670**	**17.4392**	**0.0288**		**0.8645**	**0.8645**		**0.8122**	**0.8122**		**2,737.1520**	**2,737.1520**	**0.6711**		**2,753.9288**

3.4 Building Construction - 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
Vendor	0.0463	1.7287	0.3646	4.9400e-003	0.1281	3.0500e-003	0.1311	0.0369	2.9200e-003	0.0398		521.3543	521.3543	0.0413		522.3868
Worker	0.3928	0.2261	2.4736	8.3100e-003	1.0060	5.7700e-003	1.0118	0.2668	5.3100e-003	0.2721		828.3050	828.3050	0.0179		828.7516
Total	**0.4391**	**1.9548**	**2.8382**	**0.0133**	**1.1341**	**8.8200e-003**	**1.1429**	**0.3037**	**8.2300e-003**	**0.3119**		**1,349.6593**	**1,349.6593**	**0.0592**		**1,351.1384**

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	1.8146	16.7670	17.4392	0.0288		0.8645	0.8645		0.8122	0.8122	0.0000	2,737.1520	2,737.1520	0.6711		2,753.9288
Total	**1.8146**	**16.7670**	**17.4392**	**0.0288**		**0.8645**	**0.8645**		**0.8122**	**0.8122**	**0.0000**	**2,737.1520**	**2,737.1520**	**0.6711**		**2,753.9288**

3.4 Building Construction - 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
Vendor	0.0463	1.7287	0.3646	4.9400e-003	0.1281	3.0500e-003	0.1311	0.0369	2.9200e-003	0.0398		521.3543	521.3543	0.0413		522.3868
Worker	0.3928	0.2261	2.4736	8.3100e-003	1.0060	5.7700e-003	1.0118	0.2668	5.3100e-003	0.2721		828.3050	828.3050	0.0179		828.7516
Total	**0.4391**	**1.9548**	**2.8382**	**0.0133**	**1.1341**	**8.8200e-003**	**1.1429**	**0.3037**	**8.2300e-003**	**0.3119**		**1,349.6593**	**1,349.6593**	**0.0592**		**1,351.1384**

3.5 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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.2067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3095**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 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
Vendor	4.6300e-003	0.1729	0.0365	4.9000e-004	0.0128	3.1000e-004	0.0131	3.6900e-003	2.9000e-004	3.9800e-003		52.1354	52.1354	4.1300e-003		52.2387
Worker	0.0655	0.0377	0.4123	1.3800e-003	0.1677	9.6000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0508	138.0508	2.9800e-003		138.1253
Total	**0.0701**	**0.2106**	**0.4487**	**1.8700e-003**	**0.1805**	**1.2700e-003**	**0.1817**	**0.0482**	**1.1800e-003**	**0.0493**		**190.1863**	**190.1863**	**7.1100e-003**		**190.3639**

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	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.2067					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3095**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.5 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
Vendor	4.6300e-003	0.1729	0.0365	4.9000e-004	0.0128	3.1000e-004	0.0131	3.6900e-003	2.9000e-004	3.9800e-003		52.1354	52.1354	4.1300e-003		52.2387
Worker	0.0655	0.0377	0.4123	1.3800e-003	0.1677	9.6000e-004	0.1686	0.0445	8.9000e-004	0.0454		138.0508	138.0508	2.9800e-003		138.1253
Total	**0.0701**	**0.2106**	**0.4487**	**1.8700e-003**	**0.1805**	**1.2700e-003**	**0.1817**	**0.0482**	**1.1800e-003**	**0.0493**		**190.1863**	**190.1863**	**7.1100e-003**		**190.3639**

3.6 Architectural Coating - 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					
Archit. Coating	24.1890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2727	1.8780	2.4181	3.9600e-003		0.1090	0.1090		0.1090	0.1090		375.2641	375.2641	0.0244		375.8749
Total	**24.4618**	**1.8780**	**2.4181**	**3.9600e-003**		**0.1090**	**0.1090**		**0.1090**	**0.1090**		**375.2641**	**375.2641**	**0.0244**		**375.8749**

3.6 Architectural Coating - 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
Vendor	4.6300e-003	0.1729	0.0365	4.9000e-004	0.0128	3.1000e-004	0.0131	3.6900e-003	2.9000e-004	3.9800e-003		52.1354	52.1354	4.1300e-003		52.2387
Worker	0.0786	0.0452	0.4947	1.6600e-003	0.2012	1.1500e-003	0.2024	0.0534	1.0600e-003	0.0544		165.6610	165.6610	3.5700e-003		165.7503
Total	**0.0832**	**0.2181**	**0.5312**	**2.1500e-003**	**0.2140**	**1.4600e-003**	**0.2155**	**0.0571**	**1.3500e-003**	**0.0584**		**217.7964**	**217.7964**	**7.7000e-003**		**217.9890**

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					
Archit. Coating	24.1890					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2727	1.8780	2.4181	3.9600e-003		0.1090	0.1090		0.1090	0.1090	0.0000	375.2641	375.2641	0.0244		375.8749
Total	**24.4618**	**1.8780**	**2.4181**	**3.9600e-003**		**0.1090**	**0.1090**		**0.1090**	**0.1090**	**0.0000**	**375.2641**	**375.2641**	**0.0244**		**375.8749**

3.6 Architectural Coating - 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
Vendor	4.6300e-003	0.1729	0.0365	4.9000e-004	0.0128	3.1000e-004	0.0131	3.6900e-003	2.9000e-004	3.9800e-003		52.1354	52.1354	4.1300e-003		52.2387
Worker	0.0786	0.0452	0.4947	1.6600e-003	0.2012	1.1500e-003	0.2024	0.0534	1.0600e-003	0.0544		165.6610	165.6610	3.5700e-003		165.7503
Total	**0.0832**	**0.2181**	**0.5312**	**2.1500e-003**	**0.2140**	**1.4600e-003**	**0.2155**	**0.0571**	**1.3500e-003**	**0.0584**		**217.7964**	**217.7964**	**7.7000e-003**		**217.9890**

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	1.1583	3.4779	10.8062	0.0407	3.8495	0.0398	3.8893	1.0289	0.0375	1.0665		4,220.6212	4,220.6212	0.1395		4,224.1093
Unmitigated	1.1583	3.4779	10.8062	0.0407	3.8495	0.0398	3.8893	1.0289	0.0375	1.0665		4,220.6212	4,220.6212	0.1395		4,224.1093

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	476.00	529.10	408.20	1,619,392	1,619,392
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	476.00	529.10	408.20	1,619,392	1,619,392

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
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	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
Apartments Low Rise	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Other Non-Asphalt Surfaces	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Parking Lot	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898

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	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
NaturalGas Unmitigated	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267

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					
Apartments Low Rise	1872.7	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Other Non-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
Parking Lot	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		**0.0202**	**0.1726**	**0.0734**	**1.1000e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**220.3174**	**220.3174**	**4.2200e-003**	**4.0400e-003**	**221.6267**

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					
Apartments Low Rise	1.8727	0.0202	0.1726	0.0734	1.1000e-003		0.0140	0.0140		0.0140	0.0140		220.3174	220.3174	4.2200e-003	4.0400e-003	221.6267
Other Non-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
Parking Lot	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		**0.0202**	**0.1726**	**0.0734**	**1.1000e-003**		**0.0140**	**0.0140**		**0.0140**	**0.0140**		**220.3174**	**220.3174**	**4.2200e-003**	**4.0400e-003**	**221.6267**

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	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845
Unmitigated	1.7325	1.1403	5.8428	7.1700e-003		0.1169	0.1169		0.1169	0.1169	0.0000	1,386.1698	1,386.1698	0.0358	0.0252	1,394.5845

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	0.1193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1262	1.0782	0.4588	6.8800e-003		0.0872	0.0872		0.0872	0.0872	0.0000	1,376.4706	1,376.4706	0.0264	0.0252	1,384.6503
Landscaping	0.1635	0.0620	5.3840	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6992	9.6992	9.4000e-003		9.9342
Total	**1.7325**	**1.1403**	**5.8428**	**7.1600e-003**		**0.1169**	**0.1169**		**0.1169**	**0.1169**	**0.0000**	**1,386.1698**	**1,386.1698**	**0.0358**	**0.0252**	**1,394.5845**

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	0.1193					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.3235					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1262	1.0782	0.4588	6.8800e-003		0.0872	0.0872		0.0872	0.0872	0.0000	1,376.4706	1,376.4706	0.0264	0.0252	1,384.6503
Landscaping	0.1635	0.0620	5.3840	2.8000e-004		0.0298	0.0298		0.0298	0.0298		9.6992	9.6992	9.4000e-003		9.9342
Total	**1.7325**	**1.1403**	**5.8428**	**7.1600e-003**		**0.1169**	**0.1169**		**0.1169**	**0.1169**	**0.0000**	**1,386.1698**	**1,386.1698**	**0.0358**	**0.0252**	**1,394.5845**

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

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APPENDIX 3.2:

EMFAC2017 EMISSION RATES

EMFAC2017 Derived CalEEMod Annual Emission Rates: Year 2023[1,2]

Season	Pollutant	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	OBUS	UBUS	MCY	SBUS	MH
Annual	CH4_IDLEX	0	0	0	0	0.0045407	0.00276992	0.002755155	0.022399945	0.008522	0	0	0.0872051	0
Annual	CH4_RUNEX	0.0018869	0.0057489	0.0031844	0.0041642	0.0044198	0.003263925	0.00087349	0.027816115	0.0054045	3.0424882	0.3131324	0.0066033	0.0032743
Annual	CH4_STREX	0.0448692	0.0733726	0.0629169	0.0781102	0.0134844	0.007177894	0.007030234	2.14182E-07	0.0240057	0.0246221	0.2420258	0.008099	0
Annual	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.328949805	6.433638207	0.4864641	0	0	3.4287623	0
Annual	CO_RUNEX	0.560021	1.2218976	0.7892313	0.9170107	0.5983104	0.443005373	0.121131478	0.238528941	0.7023385	23.596827	18.854788	0.5536067	0.3331045
Annual	CO_STREX	2.0291591	2.2798463	2.5854594	2.9900286	0.8884942	0.47818962	0.809250221	0.004385463	2.6752142	1.8623285	8.642447	1.078573	0
Annual	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.2854915	1065.923835	64.367009	0	0	369.73833	0
Annual	CO2_NBIO_RUNEX	251.70403	298.86564	314.21685	396.16171	619.96277	614.9225059	911.0199741	1272.829483	1335.493	1635.6231	207.59836	1096.5469	929.32761
Annual	CO2_NBIO_STREX	52.262945	63.705824	67.25728	84.063345	9.9909554	6.424441145	7.214801684	0.03594404	21.276475	22.961833	60.360049	6.9242759	0
Annual	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.397207898	5.312422425	0.2257829	0	0	3.3195995	0
Annual	NOX_RUNEX	0.0309022	0.1047964	0.0645781	0.0871858	1.3894798	1.517354389	0.908191511	1.955483692	0.905988	0.3035805	1.125469	4.420865	4.2679083
Annual	NOX_STREX[3]	0.1657278	0.2618108	0.2551235	0.3291257	0.2837258	0.159545375	1.799471753	2.495253007	0.6856266	0.2242227	0.2630249	0.7800028	0
Annual	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000433919	0.002365147	7.511E-05	0	0	0.0033043	0
Annual	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060417566	0.13034	0.0918981	0.01176	0.7448002	0.13034
Annual	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035225137	0.012	0.0202294	0.004	0.0105986	0.016
Annual	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024179126	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Annual	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Annual	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000415148	0.002262832	7.186E-05	0	0	0.0031614	0
Annual	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025893242	0.05586	0.0393849	0.00504	0.3192001	0.05586
Annual	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008806284	0.003	0.0050573	0.001	0.0026497	0.004
Annual	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023133139	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Annual	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Annual	ROG_DIURN	0.0499353	0.1617031	0.0834193	0.1040066	0.0023924	0.001119316	0.00041816	2.61104E-06	0.0026672	0.0028048	1.4319645	0.0015764	0
Annual	ROG_HTSK	0.0863623	0.224901	0.1201124	0.1521245	0.0693882	0.033771174	0.014777615	9.67852E-05	0.0265187	0.0159707	0.7872755	0.0114418	0
Annual	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.015150214	0.435555976	0.0456612	0	0	0.4072026	0
Annual	ROG_RESTL	0.0401253	0.1141391	0.0708635	0.09308	0.0012616	0.000613159	0.000227643	1.60287E-06	0.0011772	0.0011467	0.7584722	0.0007923	0
Annual	ROG_RUNEX	0.0069514	0.0249376	0.0126	0.0170823	0.0538669	0.055274928	0.009544935	0.018413033	0.0303843	0.0485813	2.1137636	0.0924064	0.070494
Annual	ROG_RUNLS	0.1934756	0.7345866	0.3938448	0.4562317	0.4372965	0.194951955	0.073961783	0.000443814	0.2925608	0.0762512	1.766858	0.0695237	0
Annual	ROG_STREX	0.1913074	0.3650898	0.2841172	0.3772633	0.0668598	0.035024058	0.037511191	1.09632E-06	0.1278709	0.0951018	1.8332332	0.0473665	0
Annual	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.00063797	0.010008431	0.0006149	0	0	0.0035362	0
Annual	SO2_RUNEX	0.0024592	0.0029207	0.0030702	0.0038688	0.0060263	0.005916347	0.00865572	0.011844363	0.0129659	0.0063195	0.0020544	0.0104989	0.0087855
Annual	SO2_STREX	0.0005107	0.0006226	0.0006573	0.0008215	9.887E-05	6.35751E-05	7.13963E-05	3.55695E-07	0.0002105	0.0002272	0.0005973	6.852E-05	0
Annual	TOG_DIURN	0.0499652	0.1618001	0.0834693	0.104069	0.0023924	0.001119316	0.00041816	2.61104E-06	0.0026672	0.0028048	1.4319645	0.0015764	0
Annual	TOG_HTSK	0.086414	0.225036	0.1201844	0.1522157	0.0693882	0.033771174	0.014777615	9.67852E-05	0.0265187	0.0159707	0.7872755	0.0114418	0
Annual	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.020335748	0.498029629	0.0615992	0	0	0.5877605	0
Annual	TOG_RESTL	0.0401494	0.1142076	0.070906	0.0931359	0.0012616	0.000613159	0.000227643	1.60287E-06	0.0011772	0.0011467	0.7584722	0.0007923	0
Annual	TOG_RUNEX	0.0101114	0.0363937	0.0183641	0.0248389	0.0650001	0.064111366	0.011716585	0.048106314	0.042616	3.1108101	2.6116906	0.1099741	0.0802528
Annual	TOG_RUNLS	0.1935917	0.7350273	0.3940811	0.4565054	0.4372965	0.194951955	0.073961783	0.000443814	0.2925608	0.0762512	1.766858	0.0695237	0
Annual	TOG_STREX	0.2096036	0.4000067	0.31129	0.4133425	0.0732031	0.038346935	0.041070033	1.20033E-06	0.1400025	0.1041245	1.995157	0.0518603	0
Summer	CH4_IDLEX	0	0	0	0	0.0045537	0.002777346	0.002627006	0.023685478	0.0085919	0	0	0.087323	0
Summer	CH4_RUNEX	0.0021288	0.0064142	0.0035754	0.00468	0.0044899	0.003286251	0.00088813	0.027816513	0.0055394	3.0425325	0.3087008	0.0066875	0.0032743
Summer	CH4_STREX	0.0389698	0.0632511	0.0545439	0.0676753	0.0129677	0.00690337	0.006757077	2.04342E-07	0.0229107	0.0223864	0.2137359	0.0067519	0
Summer	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.286623132	6.346404591	0.4831512	0	0	3.3921972	0
Summer	CO_RUNEX	0.6718832	1.444288	0.9408609	1.0908713	0.6064749	0.44537467	0.122787353	0.238667787	0.7182675	23.599015	18.832855	0.5628972	0.3331045
Summer	CO_STREX	1.7035307	1.9077361	2.1628263	2.4949482	0.8424303	0.453635343	0.76370611	0.004138722	2.4874475	1.5837573	7.9028329	0.7742141	0
Summer	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.23807783	1052.827751	63.701705	0	0	378.97922	0
Summer	CO2_NBIO_RUNEX	272.11086	320.05904	334.37657	417.65631	619.97723	614.9266661	911.022875	1272.829712	1335.521	1635.6271	207.41131	1096.5634	929.32761
Summer	CO2_NBIO_STREX	51.649898	62.92991	66.443304	83.08804	9.9086217	6.380643186	7.137174571	0.035552778	20.958077	22.490884	58.436811	6.4152164	0
Summer	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.389589606	5.06332578	0.2145979	0	0	3.3986484	0
Summer	NOX_RUNEX	0.0280097	0.0940928	0.0582614	0.0787008	1.3091179	1.433264131	0.855681654	1.848376656	0.8404265	0.2953035	0.9735285	4.1579413	4.0281165
Summer	NOX_STREX[3]	0.1544099	0.2438047	0.2376668	0.3065529	0.2725695	0.153283811	1.796581904	2.495247894	0.67484	0.2132216	0.2477416	0.7742504	0
Summer	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000368743	0.002078293	6.674E-05	0	0	0.0027928	0
Summer	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060417566	0.13034	0.0918981	0.01176	0.7448002	0.13034
Summer	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035225137	0.012	0.0202294	0.004	0.0105986	0.016
Summer	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024179126	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Summer	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Summer	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000352791	0.001988387	6.385E-05	0	0	0.0026719	0
Summer	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025893242	0.05586	0.0393849	0.00504	0.3192001	0.05586
Summer	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008806284	0.003	0.0050573	0.001	0.0026497	0.004
Summer	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023133139	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Summer	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Summer	ROG_DIURN	0.092411	0.3004602	0.1538291	0.1910835	0.0042442	0.001991577	0.000750934	4.90319E-06	0.0046974	0.0049809	2.749938	0.0027601	0
Summer	ROG_HTSK	0.0964851	0.2626975	0.1350376	0.1681545	0.0783689	0.038223824	0.016691363	0.000106277	0.02873	0.0185244	1.093855	0.0118519	0
Summer	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.014777375	0.461157561	0.046602	0	0	0.4069309	0
Summer	ROG_RESTL	0.074744	0.2153647	0.1301545	0.1692383	0.0024046	0.001167999	0.000445854	3.30486E-06	0.0022654	0.0022658	1.7203704	0.0014667	0
Summer	ROG_RUNEX	0.0077545	0.027671	0.0140193	0.0190131	0.0542184	0.055368784	0.009608999	0.018415253	0.0310306	0.0487059	2.0708739	0.0928205	0.070494
Summer	ROG_RUNLS	0.19018	0.7222288	0.3867896	0.4487595	0.4382743	0.195546185	0.074182136	0.000449203	0.292559	0.0739941	1.737429	0.0635263	0
Summer	ROG_STREX	0.1642963	0.3120517	0.243675	0.3234745	0.0640835	0.033570914	0.035891613	1.04898E-06	0.121682	0.0863448	1.6073261	0.0394336	0
Summer	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.000637618	0.009885111	0.0006086	0	0	0.0036235	0
Summer	SO2_RUNEX	0.0026586	0.0031278	0.0032672	0.0040789	0.0060265	0.005916388	0.008655749	0.011844366	0.0129662	0.0063196	0.0020525	0.0104991	0.0087855
Summer	SO2_STREX	0.0005048	0.000615	0.0006493	0.000812	9.805E-05	6.31416E-05	7.06281E-05	3.51824E-07	0.0002074	0.0002226	0.0005783	6.348E-05	0
Summer	TOG_DIURN	0.0924663	0.3006404	0.1539213	0.1911981	0.0042442	0.001991577	0.000750934	4.90319E-06	0.0046974	0.0049809	2.749938	0.0027601	0
Summer	TOG_HTSK	0.0965429	0.2628551	0.1351186	0.1682553	0.0783689	0.038223824	0.016691363	0.000106277	0.02873	0.0185244	1.093855	0.0118519	0
Summer	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.019726007	0.527271847	0.0626703	0	0	0.5874511	0
Summer	TOG_RESTL	0.0747888	0.2154939	0.1302326	0.1693398	0.0024046	0.001167999	0.000445854	3.30486E-06	0.0022654	0.0022658	1.7203704	0.0014667	0
Summer	TOG_RUNEX	0.0112836	0.0403843	0.0204362	0.0276549	0.065513	0.064248322	0.011810066	0.048109554	0.0435591	3.1109919	2.5604951	0.1105783	0.0802528
Summer	TOG_RUNLS	0.1902941	0.7226621	0.3870217	0.4490288	0.4382743	0.195546185	0.074182136	0.000449203	0.292559	0.0739941	1.737429	0.0635263	0
Summer	TOG_STREX	0.1800093	0.3418961	0.26698	0.3544098	0.0701634	0.036755925	0.039296798	1.14851E-06	0.1332265	0.0945367	1.7493542	0.0431748	0

Winter	CH4_IDLEX	0	0	0	0	0.004543	0.002771192	0.002945617	0.018584837	0.0084633	0	0	0.0872067	0
Winter	CH4_RUNEX	0.0018546	0.0056563	0.0031317	0.0040923	0.0044277	0.003266732	0.000874173	0.000819608	0.0054162	3.0424922	0.3105787	0.006602	0.0032743
Winter	CH4_STREX	0.0448619	0.0733484	0.06291	0.0781049	0.0133912	0.007129132	0.006964358	2.12516E-07	0.0239298	0.0244988	0.2370663	0.0082436	0
Winter	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.388116692	6.514513971	0.4910392	0	0	3.4792571	0
Winter	CO_RUNEX	0.539678	1.180697	0.7614855	0.884759	0.5991695	0.443274557	0.121271705	0.153089453	0.703653	23.59702	18.300696	0.5534118	0.3331045
Winter	CO_STREX	2.0132412	2.2625156	2.5675453	2.9698032	0.8802741	0.47392663	0.800617995	0.004338734	2.6656906	1.8457548	8.4278924	1.1017425	0
Winter	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.34688641	1077.398907	65.285763	0	0	356.97711	0
Winter	CO2_NBIO_RUNEX	248.26101	295.28652	310.81441	392.53295	619.96429	614.9229798	911.0202216	1253.680895	1335.4953	1635.6235	206.64372	1096.5466	929.32761
Winter	CO2_NBIO_STREX	52.236878	63.676368	67.227734	84.02981	9.9762095	6.416799952	7.200173203	0.035869944	21.259945	22.933868	59.88215	6.9638689	0
Winter	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.40772782	5.618352499	0.2412289	0	0	3.2104368	0
Winter	NOX_RUNEX	0.029509	0.100183	0.0616871	0.0832989	1.3670637	1.49381553	0.892924017	1.918074232	0.8881268	0.3014555	1.0889414	4.3545929	4.1977547
Winter	NOX_STREX[3]	0.164118	0.2593714	0.2526727	0.3259915	0.2794792	0.157150746	1.798611157	2.495251484	0.6823205	0.2222737	0.2604454	0.7802853	0
Winter	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000523924	0.002699758	8.667E-05	0	0	0.0040108	0
Winter	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060043994	0.13034	0.0918981	0.01176	0.7448002	0.13034
Winter	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035007311	0.012	0.0202294	0.004	0.0105986	0.016
Winter	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024151342	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Winter	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Winter	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000501259	0.002582967	8.292E-05	0	0	0.0038373	0
Winter	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.02573314	0.05586	0.0393849	0.00504	0.3192001	0.05586
Winter	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008751828	0.003	0.0050573	0.001	0.0026497	0.004
Winter	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023106557	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Winter	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Winter	ROG_DIURN	0.0488148	0.1633364	0.0798345	0.0974958	0.0024967	0.001135244	0.000435792	2.68249E-06	0.0027829	0.0028434	1.6393559	0.0014837	0
Winter	ROG_HTSK	0.0944738	0.2576047	0.1320133	0.1644796	0.0804822	0.03841713	0.016334791	0.000107927	0.028432	0.0178481	1.0540129	0.0117059	0
Winter	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.015676089	0.400126443	0.0443619	0	0	0.4075779	0
Winter	ROG_RESTL	0.0401785	0.1138154	0.071025	0.0934274	0.0013209	0.000634648	0.000238868	1.72859E-06	0.0012515	0.0012014	0.7628485	0.0008183	0
Winter	ROG_RUNEX	0.0068278	0.0245071	0.0123808	0.0167676	0.0539028	0.055285876	0.009550806	0.017311118	0.0304402	0.0485932	2.0925849	0.0924026	0.070494
Winter	ROG_RUNLS	0.2190298	0.8575349	0.4555568	0.5238872	0.4706234	0.210639325	0.08059738	0.000472322	0.3114386	0.0890146	2.0230662	0.0843655	0
Winter	ROG_STREX	0.1911347	0.3645853	0.2838611	0.376922	0.0663485	0.034760684	0.037229432	1.08808E-06	0.1274435	0.0945968	1.7917479	0.0482208	0
Winter	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.000638416	0.010178731	0.0006236	0	0	0.0034157	0
Winter	SO2_RUNEX	0.0024256	0.0028857	0.0030369	0.0038333	0.0060263	0.005916352	0.008655723	0.011844363	0.0129659	0.0063195	0.0020449	0.0104989	0.0087855
Winter	SO2_STREX	0.0005105	0.0006223	0.000657	0.0008212	9.872E-05	6.34994E-05	7.12516E-05	3.54962E-07	0.0002104	0.0002269	0.0005926	6.891E-05	0
Winter	TOG_DIURN	0.0488441	0.1634344	0.0798823	0.0975543	0.0024967	0.001135244	0.000435792	2.68249E-06	0.0027829	0.0028434	1.6393559	0.0014837	0
Winter	TOG_HTSK	0.0945304	0.2577593	0.1320924	0.1645782	0.0804822	0.03841713	0.016334791	0.000107927	0.028432	0.0178481	1.0540129	0.0117059	0
Winter	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.021193826	0.455513497	0.0601201	0	0	0.5881877	0
Winter	TOG_RESTL	0.0402026	0.1138837	0.0710676	0.0934835	0.0013209	0.000634648	0.000238868	1.72859E-06	0.0012515	0.0012014	0.7628485	0.0008183	0
Winter	TOG_RUNEX	0.0099311	0.0357655	0.0180442	0.0243809	0.0650526	0.064127342	0.011725152	0.019738418	0.0426976	3.1108276	2.5860036	0.1099684	0.0802528
Winter	TOG_RUNLS	0.2191612	0.8580494	0.4558302	0.5242015	0.4706234	0.210639325	0.08059738	0.000472322	0.3114386	0.0890146	2.0230662	0.0843655	0
Winter	TOG_STREX	0.2094144	0.3994539	0.3110094	0.4129687	0.0726433	0.038058574	0.040761542	1.19131E-06	0.1395346	0.1035715	1.9500346	0.0527957	0

1 Source: California Air Resources Board. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/; California Air Pollution Control Officers Association (CAPCOA). 2017, November. California Emissions Estimator Model User's Guide, Version 2016.3.2, Appendix A.

2 Unless otherwise noted, per CalEEMod methodology, the calculated CalEEMod emission rates are derived from the emission rates obtained using the EMFAC2017 Web Database for the Riverside (SC) region .

3 Because EMFAC2017 provides vehicle trips data for MHDT and HHDT diesel trucks, the formula provided in Appendix A of the CalEEMod User's Guide in calculating the NO_x STREX emission rates are utilized.

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APPENDIX 3.3:

SCAQMD BRIEF OF AMICUS CURIAE

S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
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SOUTH COAST AIR QUALITY
MANAGEMENT DISTICT

BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

---

[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

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Appendix 3

Monte Vista Ranch Air Toxic and Criteria Pollutant Health Risk Assessment

Monte Vista Ranch

AIR TOXIC AND CRITERIA POLLUTANT HEALTH RISK ASSESSMENT

CITY OF WILDOMAR

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MAY 27, 2021

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LIST OF ABBREVIATED TERMS

(1)	Reference
AADT	Annual Average Daily Traffic Volumes
ARB	Air Resources Board
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
CPF	Cancer Potency Factor
EPA	Environmental Protection Agency
HRA	Health Risk Assessment
LDA	Light Duty Auto
LDT	Light Duty Truck
LHD	Light Heavy Duty
MCY	Motorcycle
MDV	Medium Duty Vehicle
NO2	Nitrogen Dioxide
OBUS	Other Bus
OLM	Ozone Limiting
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts per Million
Project	Crestview Apartments
PVMRM	Plume Volume Molar Ratio Methods
REL	Reference Exposure Level
RME	Reasonable Maximum Exposure
SBUS	School Bus
SCAQMD	South Coast Air Quality Management District
TACs	Toxic Air Contaminants
UBUS	Urban Bus
URF	Unit Risk Factor
UTM	Universal Traverse Mercator

EXECUTIVE SUMMARY

In 2005, the California Air Resources Board (ARB) promulgated an advisory recommendation to avoid setting sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. The ARB indicates that due to traffic-generated pollutants, there is an estimated increased cancer risk incidence of 300 to 1,700 per million within this domain. At some point however, the increased cancer risk incidence due the effects of freeway/roadway corridor pollutants become indistinguishable from the ambient air quality condition. In this regard, the effects of freeway/roadway-source pollutants that may impact the Project site are already acknowledged and accounted for within the ambient air quality discussions presented within this Section. More specifically, the MATES-IV Study data for the Project site comprehensively reflects increased TAC-source cancer risks affecting the City and Project site, inclusive of increased cancer risks due to freeway sources.

The 2005 ARB guidance noted previously, information made available through the MATES-IV Study, and configuration and design of the Project would suggest that further assessment of freeway-source pollutant impacts is not warranted. Notwithstanding, this Off-Site Freeway-Source Air Toxic and Criteria Pollutant Health Risk Assessment has been prepared for the Project and is intended to:

- Comply with and support CEQA Section 15003 (i) policies addressing adequacy, completeness, and a good-faith effort at full disclosure;
- Disaggregate potential freeway-source air pollutant health effects from other background conditions identified in the MATES IV Study; and
- Identify means to reduce the specific effects of freeway-source pollutants at the Project site.

Findings and conclusions of this Assessment are summarized below.

SUMMARY OF FINDINGS

For carcinogenic exposures resulting from exposure to toxics from the freeway, the summation of risk for the maximum exposed residential receptor totaled 1.81 in one million and will not exceed the SCAQMD significance threshold of 10 in one million.

For chronic noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. For acute exposures, the hazard indices for the identified averaging times did not exceed unity. Therefore, noncarcinogenic hazards are calculated to be within acceptable limits and a less than significant impact would occur.

For the maximum exposed residential receptor, results of the analysis predicted freeway emissions will produce PM10 concentrations of 0.27 μg/m3 and 0.19 μg/m3 for the 24-hour and annual averaging times. These values will not exceed the SCAQMD significance thresholds of 2.5 μg/m3 and 1.0 μg/m3, respectively.

For PM2.5, a maximum 24-hour average concentration of 0.18 μg/m3 was predicted. This value also will not exceed the identified significance threshold of 2.5 μg/m3.

The maximum modeled 1-hour average concentration for CO of 0.03 parts per million (ppm), when added to an existing background concentration of 1.6 ppm, would equal a total Project concentration of 1.63 ppm. This would not cause an exceedance of the California Ambient Air Quality Standards (CAAQS) of 20 ppm. For the 8-hour averaging time, the maximum predicted concentration of 0.02 ppm, when added to an existing background level of 0.8 ppm, would equal a total Project concentration of 0.82 ppm. This would not cause an exceedance of the CAAQS of 9 ppm.

For NO2, a maximum one-hour concentration of 0.002 ppm was predicted. This concentration, when added to a background concentration of 0.049 ppm, would equal a total Project concentration of 0.051 ppm. This would not cause an exceedance of the CAAQS of 0.18 ppm.

As noted, short duration (i.e., 1 and 8-hour) exposures associated with both toxic and criteria pollutants are within acceptable limits. As such, less than significant impacts are anticipated to residents who would access and utilize outdoor amenities.

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1 INTRODUCTION

In 2005, the California Air Resources Board (ARB) promulgated an advisory recommendation to avoid setting sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day or rural roads with 50,000 vehicles per day. According to the ARB, the increased cancer risk is 300 to 1,700 per million within this domain. The strongest association of traffic related emissions with adverse health outcomes was seen within 300 feet of roadways with high truck densities. Notwithstanding, the ARB notes that a site-specific analysis would be required to determine the actual risk near a particular land use and should consider factors such as prevailing wind direction, local topography and climate.

In consideration of the above referenced requirement, the assessment and dispersion modeling methodologies used in the preparation of this report were composed of all relevant and appropriate procedures presented by the U.S. Environmental Protection Agency, California Environmental Protection Agency and South Coast Air Quality Management District (SCAQMD). The methodologies and assumptions offered under this regulatory guidance were used to ensure that the assessment effectively quantified residential exposures associated with the generation of contaminant emissions from adjacent mobile source activity.

This report summarizes the protocol used to evaluate contaminant exposures and presents the results of the health risk assessment (HRA) prepared by Urban Crossroads, Inc., for the proposed Monte Vista Ranch development (referred to as "Project).

1.1 SITE LOCATION

The proposed Project site is generally located on the northeast corner of Monte Vista Drive (Dr.) and Summer Sage Dr. in the City of Wildomar, as shown on Exhibit 1-A. The Project site is currently vacant. The Project site is currently designated for Commercial Retail (CR) uses (1). The Project site is surrounded by residential uses to the north, vacant land to the east, a church to the south, and Interstate 15 (I-15) is to the east.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates a preliminary site plan for the Project. The Project is anticipated to be developed within a single phase with an opening year of 2023. The Project is proposed to consist of 65 multifamily housing (low-rise) residential dwelling units (DUs).

As required by the California Building Energy Efficiency Standards (Title 24, Part 6 of California Code of Regulations (CCR)), the Project will install air filtration systems with efficiencies equal to or exceeding a Minimum Efficiency Reporting Value (MERV) 13 as defined by the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 52.2. (2)[1].

1 The use of MERV filtration systems to reduce DPM and particulates has been successfully implemented by several lead agencies, including, but not limited to: City of Los Angeles, City of Claremont, City of Irvine, City of Glendale, City of Berkley, City of Oakland, and the Los Angeles Unified School District (LAUSD). The average particle size efficiency (PSE) removal for MERV 13 as defined by the 2019 Title 24 standards is approximately 50% for 0.3 to 1.0 $\mu g/m^3$ (DPM), 85% for 1.0 to 3.0 $\mu g/m^3$ (PM2.5), and 90% for 3.0 to 10.0 $\mu g/m^3$ (PM10) (2).

EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN



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2 SOURCE IDENTIFICATION

The California Department of Transportation (Caltrans), Traffic and Vehicle Data Systems Unit collects and maintains traffic volume counts for vehicles traversing the California state highway system. Table 2-1 presents the annual average daily traffic volumes (AADT) for the freeway segment considered in the assessment. Data for mainline AADTs on I-15 Freeway was obtained from the Caltrans Traffic and Vehicle Data Systems Unit (3).

TABLE 2-1 FREEWAY TRAFFIC VOLUMES

Roadway Segment	Postmile	Annual Average Daily Traffic (AADT)
Route 15	15.071	132,000

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3 SOURCE CHARACTERIZATION

In urban communities, vehicle emissions contribute significantly to localized concentrations of air contaminants. Typically, emissions generated from these sources are characterized by vehicle mix, the rate pollutants are generated during the course of travel and the number of vehicles traversing the roadway network.

Currently, emission factors are generated from a series of computer based programs to produce a composite emission rate for vehicles traveling at various speeds within a defined geographical area or along a discrete roadway segment. To account for the emission standards imposed on the California fleet, the ARB has developed the EMFAC2017 emission factor model. EMFAC2017 was utilized to identify pollutant emission rates for total organic gases (TOG), diesel particulates, particulates (PM10 and PM2.5), carbon monoxide (CO) and nitrogen oxide (NOx) compounds (4). To produce a representative vehicle fleet distribution, the assessment utilized ARB's Riverside County vehicle population estimates for the 2023 calendar year, consistent with the Project's anticipated Opening Year for analytical purposes. This approach provides an estimate of vehicle mix associated with operational profiles at the link or intersection level. Table 3-1 lists the identified fleet mix considered in the assessment.

Based upon the freeway traffic volumes and vehicle population profiles noted above, discrete traffic counts were identified for each roadway segment. Diesel vehicles account for 5.89 percent of the total on-road mobile fleet. For chronic (long term) and acute (e.g., 1-hour) exposures, AADT values were averaged to produce representative hourly traffic volumes.

TABLE 3-1: VEHICLE FLEET MIX PROFILE

Vehicle class	Riverside County		
	Fuel	Population	Percent
HHDT	DSL	30,105.33	1.83%
HHDT	GAS	7.25	<0.01%
HHDT	NG	475.17	0.03%
LDA	DSL	9,168.64	0.56%
LDA	ELEC	26,966.54	1.64%
LDA	GAS	856,686.66	52.09%
LDT1	DSL	27.67	<0.01%
LDT1	ELEC	1,400.87	0.09%
LDT1	GAS	91,795.44	5.58%
LDT2	DSL	2,114.87	0.13%
LDT2	ELEC	5,632.28	0.34%
LDT2	GAS	279,134.24	16.97%
LHDT1	DSL	20,679.42	1.26%
LHDT1	GAS	19,906.64	1.21%
LHDT2	DSL	8,191.81	0.50%
LHDT2	GAS	3,254.07	0.20%
MCY	GAS	38,462.34	2.34%
MDV	DSL	5,571.60	0.34%
MDV	ELEC	3,781.17	0.23%
MDV	GAS	211,076.48	12.84%
MH	DSL	2,557.32	0.16%
MH	GAS	5,153.31	0.31%
MHDT	DSL	16,728.05	1.02%
MHDT	GAS	2,330.19	0.14%
OBUS	DSL	411.97	0.03%
OBUS	GAS	588.62	0.04%
SBUS	DSL	1,243.24	0.08%
SBUS	GAS	551.57	0.03%
UBUS	DSL	0.14	<0.01%
UBUS	ELEC	4.06	<0.01%
UBUS	GAS	168.34	0.01%
UBUS	NG	317.87	0.02%

Note: Vehicle category descriptions can be found on the California Air Resources Board website at http://www.arb.ca.gov/msei/modeling.htm.

An average route speed pf 65 mph was utilized for vehicles traversing the main highway link (I-15).

For particulates (PM10 and PM2.5), emissions were quantified through the reentrainment of paved roadway dust. The predictive emission equation developed by the U.S. Environmental Protection Agency (AP-42, Section 13.2.1) was utilized to generate particulate source strength (5). To account for the mass rate of emissions entrained from the roadway surface, the contribution from exhaust, break and tire wear were added to the AP-42 emission factor equation.

A list of compounds associated with mobile source emissions is presented in Table 3-3. Appendix 3.1 presents the on-road emission rate calculation worksheets for the freeway segments considered in the assessment.

TABLE 3-3: COMPOUNDS EMITTED FROM ON ROAD MOBILE SOURCE ACTIVITY

Source	Pollutant
Freeway	Benzene Formaldehyde 1,3-Butadiene Acetaldehyde Acrolein Diesel Particulates Reentrained Particulates (PM10, PM2.5) Carbon Monoxide Nitrogen Dioxide

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4 EXPOSURE QUANTIFICATION

In order to assess the impact of emitted compounds on individuals who reside at the proposed apartment complex, air quality modeling utilizing the AMS/EPA Regulatory Model AERMOD was performed to assess the downwind extent of mobile source emissions associated with travel on I-215 and the I-215/Baxter Road On and Off-Ramps. AERMOD's air dispersion algorithms are based upon a planetary boundary layer turbulence structure and scaling concepts, including the treatment of surface and elevated sources in simple and complex terrain.

The model offers additional flexibility by allowing the user to assign initial vertical and lateral dispersion parameters for sources representative of a localized mobile fleet. For this assessment, the volume source algorithm was utilized to model the emissions generated from on-road mobile source activity.

The model utilizes the ARM2 protocol to perform the NOx to NO2 conversion as recommended by the SCAQMD.

Air dispersion models require additional input parameters including pollutant emission data and local meteorology. Due to the their sensitivity to individual meteorological parameters such as wind speed and direction, the U.S. Environmental Protection Agency recommends that meteorological data used as input into dispersion models be selected on the basis of relative spatial and temporal conditions that exist in the area of concern. In response to this recommendation, the nearest meteorological data available from the SCAQMD Elsinore Meteorological Data Station (Source Receptor Area 25), was used to represent local weather conditions and prevailing winds. Five years (2012-2016) of available AERMOD meteorological data was utilized in the modeling, which is the latest available information from SCAQMD.

The modeling analysis also considered the spatial distribution of mobile source activity traversing the freeway in relation to the proposed site. To accommodate a Cartesian grid format, direction dependent calculations were obtained by identifying the universal transverse mercator (UTM) coordinates for each volume source location. On-site receptors were placed to provide coverage across the identified residential portion of the site. A ground level receptor height was assumed as a conservative measure. A graphical representation of the source-receptor grid network is presented in Exhibit 4-A. A complete listing of model input/output files are provided in electronic format in Appendix 4.1.

EXHIBIT 4-A: MODELED SOURCES AND RECEPTORS



5 RISK CHARACTERIZATION

5.1 CARCINOGENIC CHEMICAL RISK

The SCAQMD CEQA Air Quality Handbook (1993) states that emissions of toxic air contaminants (TACs) are considered significant if a HRA shows an increased risk of greater than ten in one million. Based on guidance from the SCAQMD in the document Health Risk Assessment Guidance for Analyzing Cancer Risks from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis (6), for purposes of this analysis, ten (10) in one million is used as the cancer risk threshold for the proposed Project.

Excess cancer risks are estimated as the upper-bound incremental probability that an individual will develop cancer over a lifetime as a direct result of exposure to potential carcinogens over a specified exposure duration. The estimated risk is expressed as a unitless probability. The cancer risk attributed to a chemical is calculated by multiplying the chemical intake or dose at the human exchange boundaries (e.g., lungs) by the chemical-specific cancer potency factor (CPF). A risk level of 1 in a million implies a likelihood that up to one person, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. This risk would be an excess cancer risk that is in addition to any cancer risk borne by a person not exposed to these air toxics.

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. Under a deterministic approach (i.e., point estimate methodology), the cancer risk probability is determined by multiplying the chemical's annual concentration by its unit risk factor (URF). The URF is a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It represents an upper bound estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a 70 year lifetime. The URFs utilized in the assessment and corresponding cancer potency factors were obtained from the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values*.

Notwithstanding, it is the intent of the HRA to provide cumulative risk estimates from near-field on-road sources that are reflective of anticipated exposures experienced at a given residential occupancy. As such, a review of relevant guidance was conducted to determine applicability of the use of early life exposure adjustments to identified carcinogens. For risk assessments conducted under the auspices of The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly, Statutes of 1987; Health and Safety Code Section 44300 et seq.) a weighting factor is applied to all carcinogens regardless of purported mechanism of action. However, for this assessment, the HRA relied upon U.S. Environmental Protection Agency guidance relating to the use of early life exposure adjustment factors (Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens, EPA/630/R-003F) whereby adjustment factors are only considered when carcinogens act "through the mutagenic mode of action." A mutagen is a physical or chemical agent that changes genetic material, such as DNA, increasing

the frequency of mutations to produce carcinogenic effects. The U.S. Environmental Protection Agency has identified 19 compounds that elicit a mutagenic mode of action for carcinogenesis. None of the gaseous compounds considered in the HRA elicit a mutagenic mode of action and, therefore, early life exposure adjustments were not considered. For diesel particulates, polycyclic aromatic hydrocarbons (PAHs) and their derivatives, which are known to exhibit a mutagenic mode of action, comprise < 1% of the exhaust particulate mass. To date, the U.S. Environmental Agency reports that whole diesel engine exhaust has not been shown to elicit a mutagenic mode of action.

Accordingly, the health risks to children were not underestimated in the Health Risks Assessment. As discussed, the use of age-weighted factors is not required because none of the gaseous compounds considered in the HRA elicit a primary mutagenic mode of action and none of the pollutants considered are listed by the EPA as having a primary mutagenic mode of action. Therefore, early life exposure adjustments were not considered in accordance with U.S. EPA guidance relating to the use of early life exposure adjustment factors. This analysis appropriately accounts for potential health risk to future residents at the project site.

To effectively quantify dose, the procedure requires the incorporation of several discrete exposure variates. Once determined, contaminant dose is multiplied by the cancer potency factor (CPF) in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to assess exposures associated with the proposed residential population, the following dose algorithm was utilized.

$$CDI = (C_{air} \times EF \times ED \times IR) / (BW \times AT)$$

Where:

CDI = chronic daily intake (mg/kg/day)

C_{air} = concentration of contaminant in air (mg/m^3)

EF = exposure frequency (days/year)

ED = exposure duration (years)

IR = inhalation rate (m^3/day)

BW = body weight (kg)

AT = averaging time (days)

To represent residential exposures, the assessment employed the U.S. Environmental Protection Agency's guidance to develop viable dose estimates based on reasonable maximum exposures (RME). Specifically, activity patterns for population mobility recommended by the U.S. Environmental Protection Agency and presented in the *Exposure Factors Handbook* were utilized. As a result, lifetime risk values for residents were adjusted to account for an exposure duration of 350 days per year for 30 years (i.e., 95th percentile). These values are consistent with the California Environmental Quality Act which considers the evaluation of environmental effects of

proposed projects in a manner that reflects both reasonable and feasible assumptions. For body weight and inhalation, the assessment employed average adult values of 70 kilograms and 20 cubic meters per day, respectively.

For carcinogenic exposures resulting from exposure to toxics from the freeway, the summation of risk for the maximum exposed residential receptor totaled 1.81 in one million and will not exceed the SCAQMD significance threshold of 10 in one million. Appendix 5.1 includes the detailed emissions and risk calculation outputs.

The use of MERV filtration systems to reduce DPM and particulates has been successfully implemented by several lead agencies, including, but not limited to: City of Los Angeles, City of Claremont, City of Irvine, City of Glendale, City of Berkley, City of Oakland, and the Los Angeles Unified School District (LAUSD). The average particle size efficiency (PSE) removal for MERV 13 as defined by the 2019 Title 24 standards is approximately 50% for 0.3 to 1.0 $\mu g/m^3$ (DPM), 85% for 1.0 to 3.0 $\mu g/m^3$ (PM2.5), and 90% for 3.0 to 10.0 $\mu g/m^3$ (PM10) (2).

5.2 NON-CARCINOGENIC EXPOSURES

An evaluation of the potential noncancerous effects of contaminant exposures was also conducted. Under the point estimate approach, adverse health effects are evaluated by comparing the concentration of each compound with the appropriate Reference Exposure Level (REL). Available REL's presented in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values were considered in the assessment.*

To quantify noncarcinogenic impacts, the hazard index approach was used. The hazard index assumes that subthreshold exposures adversely affect a specific organ or organ system (i.e., toxicological endpoint). For each discrete pollutant exposure, target organs presented in regulatory guidance were utilized.

To calculate the hazard index, the pollutant concentration or dose is divided by the appropriate toxicity value. For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds one (i.e., unity), a health hazard is presumed to exist. For chronic exposures, REL's were converted to units expressed in mg/kg/day to accommodate the above referenced intake algorithm. To assess acute noncancer impacts, the maximum pollutant concentration is divided by the REL for the corresponding averaging time (e.g., 1-hour). No exposure adjustments are considered for short duration exposures.

Appendix 5.1 summarizes the REL's and corresponding reference dose values used in the evaluation of chronic noncarcinogenic and acute exposures. The noncancer hazard quotient for identified compounds generated from each source and a summation for each toxicological endpoint are presented on this table.

For chronic noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than the threshold of 1.0 for all exposure scenarios. For acute exposures, the hazard indices for the identified averaging times did not exceed the threshold of 1.0. Therefore, acute

and chronic non-carcinogenic hazards were predicted to be within acceptable limits and are less than significant.

5.3 POTENTIAL CANCER AND NON-CANCER RISKS[2]

For carcinogenic exposures the summation of risk for the maximum exposed residential receptor totaled 2.36 in one million, which does not exceed the threshold of 10 in one million. At this same location, non-cancer risks were estimated to be less than 1.0 for all toxicological endpoints.

5.4 CRITERIA POLLUTANT EXPOSURES

The State of California has promulgated strict ambient air quality standards for various pollutants. These standards were established to safeguard the public's health and welfare with specific emphasis on protecting those individuals susceptible to respiratory distress, such as asthmatics, the young, the elderly and those with existing conditions which may be affected by increased pollutant concentrations. However, recent research has shown that unhealthful respiratory responses occur with exposures to pollutants at levels that only marginally exceed clean air standards. Table 5-1 presents the CAAQS for the criteria pollutants considered in the assessment.

Pollutant emissions are considered to have a significant effect on the environment if they result in concentrations that create either a violation of an ambient air quality standard, contribute to an existing air quality violation or expose sensitive receptors to substantive pollutant concentrations. Should ambient air quality already exceed existing standards, the SCAQMD has established significance criteria for selected compounds to account for the continued degradation of local air quality. Background concentrations are based upon the highest observed value for the most recent three year period.

For PM_{10} emissions, background concentrations representative of the project area exceed the CAAQS for the 24-hour and annual averaging times. As a result, a significant impact is achieved when pollutant concentrations produce a measurable change over existing background levels. Although background concentrations exceed the CAAQS annual averaging time for fine particulates, no measurable change criteria currently exists. As a result, the SCAQMD significance threshold of 2.5 $\mu g/m^3$ for the 24-hour averaging time is used to assess $PM_{2.5}$ impacts.

For the CO 1 and 8-hour averaging times and NO_2 1-hour averaging time, background concentrations are below the current air quality standards. As such, significance is achieved when pollutant concentrations add to existing levels and create an exceedance of the CAAQS. Table 5-2 shows the pollutant concentrations collected at the nearest available monitoring site to the Project for the last three years of available data. Table 5-3 outlines the relevant significance thresholds considered to affect local air quality.

2 SCAQMD guidance does not require assessment of the potential health risk to on-site workers. Excerpts from the document OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines—The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments (OEHHA 2003), also indicate that it is not necessary to examine the health effects to on-site workers unless required by RCRA (Resource Conservation and Recovery Act) / CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) or the worker resides on-site.

TABLE 5-1: CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Standard	Health Effects
Particulates (PM10)	>50 μg/m3 (24 hr avg.) >20 μg/m3 (Annual)	1) Excess deaths from short-term exposures and the exacerbation of symptoms in sensitive individuals with respiratory disease. 2) Excess seasonal declines in pulmonary function especially in children.
Particulates (PM2.5)	>12 μg/m3 (Annual)	1) Excess deaths and illness from long-term exposures and the exacerbation of symptoms in sensitive individuals with respiratory and cardio pulmonary disease.
Carbon Monoxide (CO)	>9.0 ppm (8 hr avg.) >20.0 ppm (1 hr avg.)	1) Aggravation of angina pectoris and other aspects of coronary heart disease. 2) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease. 3) Impairment of central nervous system functions. 4) Possible increased risk to fetuses.
Nitrogen Dioxide (NO2)	>0.18 ppm (1 hr avg.)	1) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups. 2) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes.

Abbreviations: ppm: parts per million; μg/m3: micrograms per cubic meter.
Source: California Code of Regulations, Title 17, Section 70200.

TABLE 5-2: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2012-2014[3]

Pollutant/ Averaging Time	Year			
	2017	2018	2019	Maximum
Particulates (PM_{10}) 24-Hour	133	104	93	133
Particulates ($PM_{2.5}$) 24-Hour	19.5	20.8	20.8	20.8
Carbon Monoxide (CO) 1-Hour 8-Hour	1.2 0.8	1.1 0.8	1.6 0.7	1.6 0.8
Nitrogen Dioxide (NO_2) 1-Hour	0.049	0.041	0.038	0.049

Note: PM_{10} concentrations are expressed in micrograms per cubic meter ($\mu g/m^3$). All others are expressed in parts per million (ppm).
Source: U.S. Environmental Protection Agency http://www.epa.gov/airdata/ad_rep_mon.html

TABLE 5-3: SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Averaging Time	Pollutant Concentration
Particulates (PM10) Particulates (PM2.5)	24-Hours	2.5 μg/m3
Particulates (PM10)	Annual	1.0 μg/m3
Carbon Monoxide (CO)	1/8-Hours	SCAQMD is in attainment; impacts are significant if they cause or contribute to an exceedance of the following attainment standards 20 ppm (1-hour) and 9 ppm (8-hour).
Nitrogen Dioxide (NO2)	1-Hour	SCAQMD is in attainment; impacts are significant if they cause or contribute to an exceedance of the following attainment standard 0.18 ppm.

Abbreviations: ppm: parts per million; μg/m3: micrograms per cubic meter
Source: South Coast Air Quality Management District.

For the maximum exposed residential receptor, results of the analysis predicted freeway emissions will produce PM10 concentrations of 0.27 μg/m3 and 0.19 μg/m3 for the 24-hour and annual averaging times. These values will not exceed the SCAQMD significance thresholds of 2.5 μg/m3 and 1.0 μg/m3, respectively.

For PM2.5, a maximum 24-hour average concentration of 0.18 μg/m3 was predicted. This value also will not exceed the identified significance threshold of 2.5 μg/m3.

[3] PM10, PM2.5, CO, and NO2 data obtained from the SRA25 monitoring station.

The maximum modeled 1-hour average concentration for CO of 0.03 parts per million (ppm), when added to an existing background concentration of 1.6 ppm, would equal a total Project concentration of 1.63 ppm. This would not cause an exceedance of the California Ambient Air Quality Standards (CAAQS) of 20 ppm. For the 8-hour averaging time, the maximum predicted concentration of 0.02 ppm, when added to an existing background level of 0.8 ppm, would equal a total Project concentration of 0.82 ppm. This would not cause an exceedance of the CAAQS of 9 ppm.

For NO2, a maximum one-hour concentration of 0.003 ppm was predicted. This concentration, when added to a background concentration of 0.049 ppm, would equal a total Project concentration of 0.051 ppm. This would not cause an exceedance of the CAAQS of 0.18 ppm.

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6 FINDINGS & CONCLUSIONS

For carcinogenic exposures resulting from exposure to toxics from the freeway, the summation of risk for the maximum exposed residential receptor totaled 1.81 in one million and will not exceed the SCAQMD significance threshold of 10 in one million.

For chronic noncarcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. For acute exposures, the hazard indices for the identified averaging times did not exceed unity. Therefore, noncarcinogenic hazards are calculated to be within acceptable limits and a less than significant impact would occur.

For the maximum exposed residential receptor, results of the analysis predicted freeway emissions will produce PM10 concentrations of 0.27 μg/m3 and 1.9 μg/m3 for the 24-hour and annual averaging times. These values will not exceed the SCAQMD significance thresholds of 2.5 μg/m3 and 1.0 μg/m3, respectively.

For PM2.5, a maximum 24-hour average concentration of 0.18 μg/m3 was predicted. This value also will not exceed the identified significance threshold of 2.5 μg/m3.

The maximum modeled 1-hour average concentration for CO of 0.03 parts per million (ppm), when added to an existing background concentration of 1.6 ppm, would equal a total Project concentration of 1.63 ppm. This would not cause an exceedance of the California Ambient Air Quality Standards (CAAQS) of 20 ppm. For the 8-hour averaging time, the maximum predicted concentration of 0.02 ppm, when added to an existing background level of 0.8 ppm, would equal a total Project concentration of 0.82 ppm. This would not cause an exceedance of the CAAQS of 9 ppm.

For NO2, a maximum one-hour concentration of 0.003 ppm was predicted. This concentration, when added to a background concentration of 0.049 ppm, would equal a total Project concentration of 0.051 ppm. This would not cause an exceedance of the CAAQS of 0.18 ppm.

As noted, short duration (i.e., 1 and 8-hour) exposures associated with both toxic and criteria pollutants are within acceptable limits. As such, less than significant impacts are anticipated to residents who would access and utilize outdoor amenities.

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7 REFERENCES

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8 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Monte Vista Ranch Project. The information contained in this health risk assessment is based on the best available data at the time of preparation. If you have any questions, please contact me at (949) 660-1994.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

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University of California, Irvine • June 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June 2013
Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August 2007
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APPENDIX 3.1:

EMISSION RATE CALCULATION WORKSHEETS

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Running Rate Emission Summary

Criteria	65 mph
CO	0.938
NOx	0.148
PM10	0.0024
PM2.5	0.0023
TOG GAS	0.003
TOG DSL	0.028
DSL Particulate	0.023

TW/BW Emission Summary

	TW	BW	Total
PM10	0.009	0.040	0.049
PM2.5	0.002	0.017	0.019

EMFAC2017
Worksheet
(65 mph)

EMFAC2017 Emission Rates
Region Type: County
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Pollutant Classification: Criteria

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed	Population	Wt Frac	CO_RUNEX	CO_RUNEX AVE	NOX_RUNEX	NOx_RUNEX AVE	PM10_RUNEX	PM10_RUNEX AVE	PM10_PMTW	PM10_PMTW_AVE	PM10_PMBW	PM10_PMBW_AVE	PM2_5_RUNEX	PM2_5_RUNEX_AVE	PM2_5_PMTW	PM2_5_PMTW_AVE	PM2_5_PMBW	PM2_5_PMBW_AVE
Riverside	2023	Annual	HHDT	DSL	Aggregated	65	30105.330	0.0183	0.1338817	0.00245094	1.9479506	0.03566065	0.0358661	0.00065659	0.0360	0.00065904	0.06174	0.001130259	0.0343146	0.000628188	0.0090	0.000164761	0.02646	0.000484397
Riverside	2023	Annual	HHDT	GAS	Aggregated	65	7.253	0.0000	19.7852836	0.00008726	2.8667831	0.00001264	0.0010099	0.00000000	0.0200	0.00000009	0.06174	0.000000272	0.0009286	0.000000004	0.0050	0.000000022	0.02646	0.000000117
Riverside	2023	Annual	HHDT	NG	Aggregated	65	475.174	0.0003	0.0000000	0.00000000	0.0000000	0.00000000	0.0000000	0.00000000	0.0360	0.00001040	0.06174	0.000017840	0.0000000	0.000000000	0.0090	0.000002601	0.02646	0.000007646
Riverside	2023	Annual	LDA	DSL	Aggregated	65	9168.644	0.0056	0.0987213	0.00055041	0.0301033	0.00016784	0.0031878	0.00001777	0.0080	0.00004460	0.03675	0.000204895	0.0030499	0.000017004	0.0020	0.000011151	0.01575	0.000087812
Riverside	2023	Annual	LDA	ELEC	Aggregated	65	26966.543	0.0164		0.00000000		0.00000000		0.00000000	0.0080	0.00000000	0.03675	0.000000000		0.000000000	0.0020	0.000000000	0.01575	0.000258270
Riverside	2023	Annual	LDA	GAS	Aggregated	65	856686.664	0.5209	0.3707334	0.19313083	0.0248221	0.01293091	0.0011123	0.00057945	0.0080	0.00416754	0.03675	0.019144643	0.0010227	0.000532779	0.0020	0.001041885	0.01575	0.008204847
Riverside	2023	Annual	LDT1	DSL	Aggregated	65	27.674	0.0000	1.2555826	0.00002113	0.0773836	0.00001476	0.1160107	0.00000195	0.0080	0.00000013	0.03675	0.000000618	0.1109921	0.000001868	0.0020	0.000000034	0.01575	0.000000265
Riverside	2023	Annual	LDT1	ELEC	Aggregated	65	1400.871	0.0009		0.00000000		0.00000000		0.00000000	0.0080	0.00000000	0.03675	0.000000000		0.000000000	0.0020	0.000001704	0.01575	0.000013417
Riverside	2023	Annual	LDT1	GAS	Aggregated	65	91795.441	0.0558	0.7041615	0.03930622	0.0773877	0.00431977	0.0014551	0.00008122	0.0080	0.00044656	0.03675	0.002051381	0.0013379	0.000074681	0.0020	0.000111640	0.01575	0.000879163
Riverside	2023	Annual	LDT2	DSL	Aggregated	65	2114.869	0.0013	0.0685405	0.00008815	0.0263211	0.00003385	0.0034940	0.00000449	0.0080	0.00001029	0.03675	0.000047262	0.0033429	0.000004299	0.0020	0.000002572	0.01575	0.000020255
Riverside	2023	Annual	LDT2	ELEC	Aggregated	65	5632.283	0.0034		0.00000000		0.00000000		0.00000000	0.0080	0.00000000	0.03675	0.000000000		0.000000000	0.0020	0.000006850	0.01575	0.000053943
Riverside	2023	Annual	LDT2	GAS	Aggregated	65	279134.241	0.1697	0.5129245	0.08706316	0.0507482	0.00861394	0.0011601	0.00019691	0.0080	0.00135791	0.03675	0.006237900	0.0010667	0.000181055	0.0020	0.000339478	0.01575	0.002673386
Riverside	2023	Annual	LHDT1	DSL	Aggregated	65	20679.417	0.0126	0.4759316	0.00598482	1.8280043	0.02298706	0.0152909	0.00019228	0.0120	0.00015090	0.07644	0.000961229	0.0146294	0.000183965	0.0030	0.000037725	0.03276	0.000411955
Riverside	2023	Annual	LHDT1	GAS	Aggregated	65	19906.643	0.0121	0.4741688	0.00573983	0.1375970	0.00166562	0.0010408	0.00001260	0.0080	0.00009684	0.07644	0.000925309	0.0009570	0.000011585	0.0020	0.000024210	0.03276	0.000396561
Riverside	2023	Annual	LHDT2	DSL	Aggregated	65	8191.805	0.0050	0.4105645	0.00204517	1.5159165	0.00755132	0.0160512	0.00007996	0.0120	0.00005978	0.08918	0.000444237	0.0153568	0.000076498	0.0030	0.000014944	0.03822	0.000190387
Riverside	2023	Annual	LHDT2	GAS	Aggregated	65	3254.072	0.0020	0.2499792	0.00049465	0.1274795	0.00025225	0.0009216	0.00000182	0.0080	0.00001583	0.08918	0.000176467	0.0008474	0.000001677	0.0020	0.000003958	0.03822	0.000075629
Riverside	2023	Annual	MCY	GAS	Aggregated	65	38462.339	0.0234	22.1598905	0.51828808	1.1941807	0.02793018	0.0019774	0.00004625	0.0040	0.00009355	0.01176	0.000275050	0.0018461	0.000043177	0.0010	0.000023389	0.00504	0.000117878
Riverside	2023	Annual	MDV	DSL	Aggregated	65	5571.599	0.0034	0.1019918	0.00034555	0.0296533	0.00010047	0.0029597	0.00001003	0.0080	0.00002710	0.03675	0.000124510	0.0028317	0.000009594	0.0020	0.000006776	0.01575	0.000053362
Riverside	2023	Annual	MDV	ELEC	Aggregated	65	3781.166	0.0023		0.00000000		0.00000000		0.00000000	0.0080	0.00000000	0.03675	0.000000000		0.000000000	0.0020	0.000004599	0.01575	0.000036214
Riverside	2023	Annual	MDV	GAS	Aggregated	65	211076.478	0.1284	0.5730961	0.07355890	0.0645809	0.00828919	0.0011657	0.00014963	0.0080	0.00102683	0.03675	0.004716992	0.0010718	0.000137575	0.0020	0.000256707	0.01575	0.002021568
Riverside	2023	Annual	MH	DSL	Aggregated	65	2557.316	0.0016	0.2798905	0.00043525	3.6471349	0.00567158	0.1448975	0.00022533	0.0160	0.00002488	0.13034	0.000202689	0.1386293	0.000215579	0.0040	0.000006220	0.05586	0.000086867
Riverside	2023	Annual	MH	GAS	Aggregated	65	5153.309	0.0031	0.8881284	0.00278311	0.2817338	0.00088286	0.0010569	0.00000331	0.0120	0.00003760	0.13034	0.000408443	0.0009718	0.000003045	0.0030	0.000009401	0.05586	0.000175047
Riverside	2023	Annual	MHDT	DSL	Aggregated	65	16728.048	0.0102	0.0508071	0.00051682	1.0280959	0.01045796	0.0154905	0.00015757	0.0120	0.00012207	0.13034	0.001325839	0.0148204	0.000150755	0.0030	0.000030516	0.05586	0.000568217
Riverside	2023	Annual	MHDT	GAS	Aggregated	65	2330.191	0.0014	0.6234172	0.00088336	0.2564868	0.00036343	0.0009538	0.00000135	0.0120	0.00001700	0.13034	0.000184687	0.0008770	0.000001243	0.0030	0.000004251	0.05586	0.000079152
Riverside	2023	Annual	OBUS	DSL	Aggregated	65	411.971	0.0003	0.0769685	0.00001928	1.3310580	0.00033345	0.0218016	0.00000546	0.0120	0.00000301	0.13034	0.000032652	0.0208585	0.000005225	0.0030	0.000000752	0.05586	0.000013994
Riverside	2023	Annual	OBUS	GAS	Aggregated	65	588.625	0.0004	0.6808516	0.00024370	0.2752858	0.00009853	0.0008603	0.00000031	0.0120	0.00000430	0.13034	0.000046653	0.0007910	0.000000283	0.0030	0.000001074	0.05586	0.000019994
Riverside	2023	Annual	SBUS	DSL	Aggregated	65	1243.240	0.0008	0.0000000	0.00000000	0.0000000	0.00000000	0.0000000	0.00000000	0.0120	0.00000907	0.7448	0.000563070	0.0000000	0.000000000	0.0030	0.000002268	0.3192	0.000241316
Riverside	2023	Annual	SBUS	GAS	Aggregated	65	551.566	0.0003		0.00000000		0.00000000		0.00000000	0.0080	0.00000268	0.74479999	0.000249807		0.000000000	0.0020	0.000000671	0.319199996	0.000107060
Riverside	2023	Annual	UBUS	DSL	Aggregated	65	0.142	0.0000	0.0182046	0.00000000	0.1552355	0.00000001	0.0135842	0.00000000	0.0120	0.00000000	0.130353035	0.000000011	0.0129966	0.000000001	0.0030	0.000000000	0.055865587	0.000000005
Riverside	2023	Annual	UBUS	ELEC	Aggregated	65	4.058	0.0000		0.00000000		0.00000000		0.00000000	0.0120	0.00000000	0.130353035	0.000000000		0.000000000	0.0030	0.000000007	0.055865587	0.000000138
Riverside	2023	Annual	UBUS	GAS	Aggregated	65	168.336	0.0001	0.0862032	0.00000882	0.0505798	0.00000518	0.0010245	0.00000010	0.0095	0.00000098	0.105101287	0.000010759	0.0009420	0.000000096	0.0024	0.000000244	0.045043409	0.000004611
Riverside	2023	Annual	UBUS	NG	Aggregated	65	317.868	0.0002	18.9477779	0.00366246	0.1497559	0.00002895	0.0038178	0.00000074	0.0294	0.00000569	0.080533528	0.000015567	0.0036527	0.000000706	0.0074	0.000001422	0.034514369	0.000006671
							1644493	1.0		0.938		0.148		0.0024		0.008		0.039		0.0023		0.002		0.017

EMFAC2017
Worksheet
(65 mph)

EMFAC2017 Emission Rates
Region Type: County
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Pollutant Classification: TOG GAS

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	Wt Frac	TOG_RUNEX (gms/mile)	TOG_RUNEX AVE (gms/mile)
Riverside	2023	Annual	HHDT	GAS	Aggregated	65	7.253	0.0000	0.4062822	0.0000
Riverside	2023	Annual	LDA	GAS	Aggregated	65	856686.664	0.5677	0.0068469	0.0039
Riverside	2023	Annual	LDT1	GAS	Aggregated	65	91795.441	0.0608	0.0222072	0.0014
Riverside	2023	Annual	LDT2	GAS	Aggregated	65	279134.241	0.1850	0.0129272	0.0024
Riverside	2023	Annual	LHDT1	GAS	Aggregated	65	19906.643	0.0132	0.0242293	0.0003
Riverside	2023	Annual	LHDT2	GAS	Aggregated	65	3254.072	0.0022	0.0145870	0.0000
Riverside	2023	Annual	MCY	GAS	Aggregated	65	38462.339	0.0255	2.6981765	0.0688
Riverside	2023	Annual	MDV	GAS	Aggregated	65	211076.478	0.1399	0.0167355	0.0023
Riverside	2023	Annual	MH	GAS	Aggregated	65	5153.309	0.0034	0.0464214	0.0002
Riverside	2023	Annual	MHDT	GAS	Aggregated	65	2330.191	0.0015	0.0426254	0.0001
Riverside	2023	Annual	OBUS	GAS	Aggregated	65	588.625	0.0004	0.0455421	0.0000
Riverside	2023	Annual	SBUS	GAS	Aggregated	65	551.566	0.0004		0.0000
Riverside	2023	Annual	UBUS	GAS	Aggregated	65	168.336	0.0001	0.0052927	0.0000
							1509115	1.0		0.079

EMFAC2017 Emission Rates
Region Type: County
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Pollutant Classification: TOG DSL

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	Wt Frac	TOG_RUNEX (gms/mile)	TOG_RUNEX AVE (gms/mile)
Riverside	2023	Annual	HHDT	DSL	Aggregated	65	30105.330	0.3110	0.0221783	0.0069
Riverside	2023	Annual	LDA	DSL	Aggregated	65	9168.644	0.0947	0.0061017	0.0006
Riverside	2023	Annual	LDT1	DSL	Aggregated	65	27.674	0.0003	0.1733391	0.0000
Riverside	2023	Annual	LDT2	DSL	Aggregated	65	2114.869	0.0218	0.0082679	0.0002
Riverside	2023	Annual	LHDT1	DSL	Aggregated	65	20679.417	0.2136	0.0718202	0.0153
Riverside	2023	Annual	LHDT2	DSL	Aggregated	65	8191.805	0.0846	0.0630037	0.0053
Riverside	2023	Annual	MDV	DSL	Aggregated	65	5571.599	0.0576	0.0058209	0.0003
Riverside	2023	Annual	MH	DSL	Aggregated	65	2557.316	0.0264	0.0687904	0.0018
Riverside	2023	Annual	MHDT	DSL	Aggregated	65	16728.048	0.1728	0.0096388	0.0017
Riverside	2023	Annual	OBUS	DSL	Aggregated	65	411.971	0.0043	0.0133353	0.0001
Riverside	2023	Annual	SBUS	DSL	Aggregated	65	1243.240	0.0128	0.0000000	0.0000
Riverside	2023	Annual	UBUS	DSL	Aggregated	65	0.142	0.0000	0.0166242	0.0000
							96800	1.0		0.032

EMFAC2017 Emission Rates
Region Type: County
Region: Riverside (SC)
Calendar Year: 2023
Season: Annual
Vehicle Classification: EMFAC2007 Categories
Pollutant Classification: DSL Particulate

Region	CalYr	Season	Veh_Class	Fuel	MdlYr	Speed (miles/hr)	Population (vehicles)	Wt Frac	PM10_RUNEX (gms/mile)	PM10_RUNEX AVE (gms/mile)
Riverside	2023	Annual	LDA	DSL	Aggregated	65	30105.330	0.3110	0.0358661	0.0112
Riverside	2023	Annual	LDT1	DSL	Aggregated	65	9168.644	0.0947	0.0031878	0.0003
Riverside	2023	Annual	LDT2	DSL	Aggregated	65	27.674	0.0003	0.1160107	0.0000
Riverside	2023	Annual	LHDT1	DSL	Aggregated	65	2114.869	0.0218	0.0034940	0.0001
Riverside	2023	Annual	LHDT2	DSL	Aggregated	65	20679.417	0.2136	0.0152909	0.0033
Riverside	2023	Annual	MDV	DSL	Aggregated	65	8191.805	0.0846	0.0160512	0.0014
Riverside	2023	Annual	MH	DSL	Aggregated	65	5571.599	0.0576	0.0029597	0.0002
Riverside	2023	Annual	MHDT	DSL	Aggregated	65	2557.316	0.0264	0.1448975	0.0038
Riverside	2023	Annual	HHDT	DSL	Aggregated	65	16728.048	0.1728	0.0154905	0.0027
Riverside	2023	Annual	OBUS	DSL	Aggregated	65	411.971	0.0043	0.0218016	0.0001
Riverside	2023	Annual	SBUS	DSL	Aggregated	65	1243.240	0.0128	0.0000000	0.0000
Riverside	2023	Annual	UBUS	DSL	Aggregated	65	0.142	0.0000	0.0135842	0.0000
							96800	1.0		0.023

Toxic Emission Factor Profile Worksheet

TOG -Toxic Emissions

Gasoline/Toxic Fractions/Hot Stabilized Exhaust

Year	Benzene	Formaldehyde	1,3-Butadiene	Acetaldehyde	Acrolein
2004	0.028414	0.021422	0.006603	0.005511	0.001533
2005	0.028205	0.021200	0.006551	0.005450	0.001520
2006	0.027938	0.021000	0.006483	0.005350	0.001510
2007	0.027660	0.020700	0.006410	0.005250	0.001490
2008	0.027338	0.020300	0.006326	0.005120	0.001470
2009	0.026849	0.019800	0.006190	0.004870	0.001450
2010	0.026521	0.019400	0.006105	0.004750	0.001430
2011	0.026521	0.019400	0.006105	0.004750	0.001430
2012	0.025656	0.018500	0.005873	0.004370	0.001380
2013	0.025656	0.018500	0.005873	0.004370	0.001380
2014	0.025656	0.018500	0.005873	0.004370	0.001380
2015	0.024349	0.017100	0.005530	0.003850	0.001310
2016	0.024349	0.017100	0.005530	0.003850	0.001310
2017	0.024349	0.017100	0.005530	0.003850	0.001310
2018	0.022182	0.014700	0.004944	0.002860	0.001130
2019	0.022182	0.014700	0.004944	0.002860	0.001130
2020	0.021079	0.013600	0.004659	0.002450	0.001130
2021	0.021079	0.013600	0.004659	0.002450	0.001130
2022	0.021079	0.013600	0.004659	0.002450	0.001130
2023	0.021079	0.013600	0.004659	0.002450	0.001130
2024	0.021079	0.013600	0.004659	0.002450	0.001130
2025	0.021079	0.013600	0.004659	0.002450	0.001130
2026	0.021079	0.013600	0.004659	0.002450	0.001130
2027	0.021079	0.013600	0.004659	0.002450	0.001130
2028	0.021079	0.013600	0.004659	0.002450	0.001130
2029	0.021079	0.013600	0.004659	0.002450	0.001130
2030	0.021079	0.013600	0.004659	0.002450	0.001130

Analysis Year

2023	0.021079	0.013600	0.004659	0.002450	0.001130

TOG Emisson Rate - gr/mi

Speed (MPH)	Acceleration	0.205
	Deceleration	0.950
	45	0.086
	65	0.079

Toxic Emission Rate - gr/mi	Acceleration	0.008798
Speed (MPH)	Deceleration	0.040772
	45	0.003691
	65	0.003405

Weight Fraction / Speciation

Benzene	0.491
Formaldehyde	0.317
1,3-Butadiene	0.109
Acetaldehyde	0.057
Acrolein	0.026

Toxic Emission Factor Profile Worksheet

TOG -Toxic Emissions

Diesel/Toxic Fractions/Hot Stabilized Exhaust

Year	Benzene	Formaldehyde	1,3-Butadiene	Acetaldehyde	Acrolein
2004	0.020009	0.147133	0.001900	0.073526	0
2005	0.020009	0.147133	0.001900	0.073526	0
2006	0.020009	0.147133	0.001900	0.073526	0
2007	0.020009	0.147133	0.001900	0.073526	0
2008	0.020009	0.147133	0.001900	0.073526	0
2009	0.020009	0.147133	0.001900	0.073526	0
2010	0.020009	0.147133	0.001900	0.073526	0
2011	0.020009	0.147133	0.001900	0.073526	0
2012	0.020009	0.147133	0.001900	0.073526	0
2013	0.020009	0.147133	0.001900	0.073526	0
2014	0.020009	0.147133	0.001900	0.073526	0
2015	0.020009	0.147133	0.001900	0.073526	0
2016	0.020009	0.147133	0.001900	0.073526	0
2017	0.020009	0.147133	0.001900	0.073526	0
2018	0.020009	0.147133	0.001900	0.073526	0
2019	0.020009	0.147133	0.001900	0.073526	0
2020	0.020009	0.147133	0.001900	0.073526	0
2021	0.020009	0.147133	0.001900	0.073526	0
2022	0.020009	0.147133	0.001900	0.073526	0
2023	0.020009	0.147133	0.001900	0.073526	0
2024	0.020009	0.147133	0.001900	0.073526	0
2025	0.020009	0.147133	0.001900	0.073526	0
2026	0.020009	0.147133	0.001900	0.073526	0
2027	0.020009	0.147133	0.001900	0.073526	0
2028	0.020009	0.147133	0.001900	0.073526	0
2029	0.020009	0.147133	0.001900	0.073526	0
2030	0.020009	0.147133	0.001900	0.073526	0

Analysis Year					
2023	0.020009	0.147133	0.001900	0.073526	0.000000

TOG Emisson Rate - gr/mi

Speed (MPH)		
	Acceleration	0.266
	Deceleration	2.123
	45	0.112
	65	0.117

Toxic Emission Rate - gr/mi		
Speed (MPH)	Acceleration	0.064523
	Deceleration	0.514972
	45	0.027168
	65	0.028380

Weight Fraction / Speciation

Benzene	0.082
Formaldehyde	0.607
1,3-Butadiene	0.008
Acetaldehyde	0.303
Acrolein	0.000

Source: TOG/toxic fractions from UC Davis-Caltrans Air Quality Project, *Estimating Mobile Source Air Toxic Emissions: A Step-by-Step Project Analysis Methodology*. Task Order No. 61.

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

CO Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Pollutant Mass Emission Rate (gr/mi)	0.938

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.45401
Pollutant Emission Rate (gr/sec/source)	1.08E-02

SB Route 15

CO Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Pollutant Mass Emission Rate (gr/mi)	0.938

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.45401
Pollutant Emission Rate (gr/sec/source)	1.08E-02

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

NOx Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Pollutant Mass Emission Rate (gr/mi)	0.148

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.07184
Pollutant Emission Rate (gr/sec/source)	1.71E-03

SB Route 15

NOx Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Pollutant Mass Emission Rate (gr/mi)	0.148

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.07184
Pollutant Emission Rate (gr/sec/source)	1.71E-03

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

PM10 Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Particle Size Multiplier (g/mi)	1.0
Road Surface Silt Loading (g/m2)	0.02
Average Vehicle Weight (tons)	2.7
Emfac2017 Emissions Run (g/mi)	0.002
Emfac2017 Emissions TW/BW (g/mi)	0.049
PM10 Reentrainment Mass Emission Rate (gr/mi)	0.130

For PM10 Reentrainment: Mass Emission Rate (gr/mile) = ((Particulate PM10 Base Emission Factor) x (Road Surface Silt Loading)$^{0.91}$ x (Gross Vehicle Weight)$^{1.02}$) + (Emfac2011 Emissions)
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

PM10 Reentrainment Emission Rate (gr/sec)	0.062785
PM10 Reentrainment Emission Rate (gr/sec/source)	1.49E-03

SB Route 15

PM10 Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Particle Size Multiplier (g/mi)	1.0
Road Surface Silt Loading (g/m2)	0.02
Average Vehicle Weight (tons)	2.7
Emfac2017 Emissions Run (g/mi)	0.002
Emfac2017 Emissions TW/BW (g/mi)	0.049
PM10 Reentrainment Mass Emission Rate (gr/mi)	0.130

For PM10 Reentrainment: Mass Emission Rate (gr/mile) = ((Particulate PM10 Base Emission Factor) x (Road Surface Silt Loading)$^{0.91}$ x (Gross Vehicle Weight)$^{1.02}$) + (Emfac2011 Emissions)
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

PM10 Reentrainment Emission Rate (gr/sec)	0.062785
PM10 Reentrainment Emission Rate (gr/sec/source)	1.49E-03

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

PM2.5 Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Particle Size Multiplier (g/mi)	0.25
Road Surface Silt Loading (g/m2)	0.02
Average Vehicle Weight (tons)	2.7
Emfac2017 Emissions Run (g/mi)	0.019
Emfac2017 Emissions TW/BW (g/mi)	0.019
PM10 Reentrainment Mass Emission Rate (gr/mi)	0.058

For PM10 Reentrainment: Mass Emission Rate (gr/mile) = ((Particulate PM10 Base Emission Factor) x (Road Surface Silt Loading)$^{0.91}$ x (Gross Vehicle Weight)$^{1.02}$) + (Emfac2011 Emissions)
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

PM10 Reentrainment Emission Rate (gr/sec)	0.027879
PM10 Reentrainment Emission Rate (gr/sec/source)	6.64E-04

SB Route 15

PM2.5 Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2750.0
Particle Size Multiplier (g/mi)	0.25
Road Surface Silt Loading (g/m2)	0.02
Average Vehicle Weight (tons)	2.7
Emfac2017 Emissions Run (g/mi)	0.019
Emfac2017 Emissions TW/BW (g/mi)	0.019
PM10 Reentrainment Mass Emission Rate (gr/mi)	0.058

For PM10 Reentrainment: Mass Emission Rate (gr/mile) = ((Particulate PM10 Base Emission Factor) x (Road Surface Silt Loading)$^{0.91}$ x (Gross Vehicle Weight)$^{1.02}$) + (Emfac2011 Emissions)
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

PM10 Reentrainment Emission Rate (gr/sec)	0.027879
PM10 Reentrainment Emission Rate (gr/sec/source)	6.64E-04

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

TOG GAS Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2588.1
Pollutant Mass Emission Rate (gr/mi)	0.003405

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00155
Pollutant Emission Rate (gr/sec/source)	3.69E-05

SB Route 15

TOG GAS Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	2588.1
Pollutant Mass Emission Rate (gr/mi)	0.003405

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00155
Pollutant Emission Rate (gr/sec/source)	3.69E-05

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

TOG DSL Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	161.9
Pollutant Mass Emission Rate (gr/mi)	0.022959

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00065
Pollutant Emission Rate (gr/sec/source)	1.56E-05

SB Route 15

TOG DSL Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	161.9
Pollutant Mass Emission Rate (gr/mi)	0.022959

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00065
Pollutant Emission Rate (gr/sec/source)	1.56E-05

On-Road Mobile Sources
Emission Rate Computation

NB Route 15

DSL Particulate Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	161.9
Pollutant Mass Emission Rate (gr/mi)	0.023

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00065
Pollutant Emission Rate (gr/sec/source)	1.56E-05

SB Route 15

DSL Particulate Emissions

Number of Sources	42
Link Length (meters)	1020.0
Volume/Baseline (VPH)	161.9
Pollutant Mass Emission Rate (gr/mi)	0.023

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Pollutant Emission Rate (gr/sec)	0.00065
Pollutant Emission Rate (gr/sec/source)	1.56E-05

Riverside County Vehicle Population

All	1644493.2
DSL	96800.1

Chronic Diesel Fleet Mix (weight fraction) 0.0589

Link Counts	Sources	AADT	VPH all	VPH gas	VPH diesel
NB Route 15		66000	2750.0	2588.1	161.9
SB Route 15		66000	2750.0	2588.1	161.9
NB ON		2460	102.5	96.5	6.0
NB OFF		6259	260.8	245.4	15.4
SB ON		5364	223.5	210.3	13.2
SB OFF		2247	93.6	88.1	5.5

	NO2 Conversion	
	µg/m3	ppm
1	5.04	0.00268

	CO Conversion	
	µg/m3	ppm
1	35.61	0.03110
8	27.58	0.02408

APPENDIX 4.1:

AERMOD MODEL INPUT/OUTPUT FILE

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```
** Lakes Environmental AERMOD MPI
**
**************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 5/27/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ADI
**
**************************************
**
**
**************************************
** AERMOD CONTROL PATHWAY
**************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
   MODELOPT DFAULT CONC
   AVERTIME ANNUAL
   URBANOPT 2189641
   POLLUTID DPM
   RUNORNOT RUN
   ERRORFIL DPM.ERR
CO FINISHED
**
**************************************
** AERMOD SOURCE PATHWAY
**************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00065
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ------------------------------------------------------------------
```

```
   LOCATION L0000736     VOLUME   474909.733 3720511.459 420.87
   LOCATION L0000737     VOLUME   474924.446 3720492.134 420.84
   LOCATION L0000738     VOLUME   474939.158 3720472.809 420.81
   LOCATION L0000739     VOLUME   474953.870 3720453.484 420.79
   LOCATION L0000740     VOLUME   474968.582 3720434.158 420.76
   LOCATION L0000741     VOLUME   474983.294 3720414.833 420.73
   LOCATION L0000742     VOLUME   474998.006 3720395.508 420.71
   LOCATION L0000743     VOLUME   475012.718 3720376.183 420.68
   LOCATION L0000744     VOLUME   475027.430 3720356.858 420.66
   LOCATION L0000745     VOLUME   475042.142 3720337.533 420.63
   LOCATION L0000746     VOLUME   475056.854 3720318.207 420.60
   LOCATION L0000747     VOLUME   475071.566 3720298.882 420.58
   LOCATION L0000748     VOLUME   475086.278 3720279.557 420.55
   LOCATION L0000749     VOLUME   475100.990 3720260.232 420.52
   LOCATION L0000750     VOLUME   475115.702 3720240.907 420.50
   LOCATION L0000751     VOLUME   475130.414 3720221.582 420.47
   LOCATION L0000752     VOLUME   475145.126 3720202.256 420.44
   LOCATION L0000753     VOLUME   475159.839 3720182.931 420.42
   LOCATION L0000754     VOLUME   475174.551 3720163.606 420.39
   LOCATION L0000755     VOLUME   475189.263 3720144.281 420.36
   LOCATION L0000756     VOLUME   475203.975 3720124.956 420.34
   LOCATION L0000757     VOLUME   475218.687 3720105.631 420.31
   LOCATION L0000758     VOLUME   475233.399 3720086.305 420.29
   LOCATION L0000759     VOLUME   475248.111 3720066.980 420.26
   LOCATION L0000760     VOLUME   475262.823 3720047.655 420.23
   LOCATION L0000761     VOLUME   475277.535 3720028.330 420.21
   LOCATION L0000762     VOLUME   475292.247 3720009.005 420.18
   LOCATION L0000763     VOLUME   475306.959 3719989.680 420.15
   LOCATION L0000764     VOLUME   475321.671 3719970.354 420.13
   LOCATION L0000765     VOLUME   475336.383 3719951.029 420.10
   LOCATION L0000766     VOLUME   475351.095 3719931.704 420.07
   LOCATION L0000767     VOLUME   475365.807 3719912.379 420.05
   LOCATION L0000768     VOLUME   475380.519 3719893.054 420.02
   LOCATION L0000769     VOLUME   475395.232 3719873.729 419.99
   LOCATION L0000770     VOLUME   475409.944 3719854.403 419.97
   LOCATION L0000771     VOLUME   475424.656 3719835.078 419.94
   LOCATION L0000772     VOLUME   475439.368 3719815.753 419.92
   LOCATION L0000773     VOLUME   475454.080 3719796.428 419.89
   LOCATION L0000774     VOLUME   475468.792 3719777.103 419.86
   LOCATION L0000775     VOLUME   475483.504 3719757.778 419.84
   LOCATION L0000776     VOLUME   475498.216 3719738.452 419.81
   LOCATION L0000777     VOLUME   475512.928 3719719.127 419.78
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
```

```
** EMISSION RATE = 0.00065
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0000778     VOLUME   474874.109 3720484.354 419.96
   LOCATION L0000779     VOLUME   474888.821 3720465.029 419.89
   LOCATION L0000780     VOLUME   474903.533 3720445.703 419.82
   LOCATION L0000781     VOLUME   474918.245 3720426.378 419.75
   LOCATION L0000782     VOLUME   474932.958 3720407.053 419.68
   LOCATION L0000783     VOLUME   474947.670 3720387.728 419.60
   LOCATION L0000784     VOLUME   474962.382 3720368.403 419.53
   LOCATION L0000785     VOLUME   474977.094 3720349.078 419.46
   LOCATION L0000786     VOLUME   474991.806 3720329.752 419.39
   LOCATION L0000787     VOLUME   475006.518 3720310.427 419.31
   LOCATION L0000788     VOLUME   475021.230 3720291.102 419.24
   LOCATION L0000789     VOLUME   475035.942 3720271.777 419.17
   LOCATION L0000790     VOLUME   475050.654 3720252.452 419.10
   LOCATION L0000791     VOLUME   475065.366 3720233.127 419.03
   LOCATION L0000792     VOLUME   475080.078 3720213.801 418.95
   LOCATION L0000793     VOLUME   475094.790 3720194.476 418.88
   LOCATION L0000794     VOLUME   475109.502 3720175.151 418.81
   LOCATION L0000795     VOLUME   475124.214 3720155.826 418.74
   LOCATION L0000796     VOLUME   475138.926 3720136.501 418.67
   LOCATION L0000797     VOLUME   475153.638 3720117.176 418.59
   LOCATION L0000798     VOLUME   475168.351 3720097.850 418.52
   LOCATION L0000799     VOLUME   475183.063 3720078.525 418.45
   LOCATION L0000800     VOLUME   475197.775 3720059.200 418.38
   LOCATION L0000801     VOLUME   475212.487 3720039.875 418.30
   LOCATION L0000802     VOLUME   475227.199 3720020.550 418.23
   LOCATION L0000803     VOLUME   475241.911 3720001.225 418.16
   LOCATION L0000804     VOLUME   475256.623 3719981.899 418.09
   LOCATION L0000805     VOLUME   475271.335 3719962.574 418.02
   LOCATION L0000806     VOLUME   475286.047 3719943.249 417.94
   LOCATION L0000807     VOLUME   475300.759 3719923.924 417.87
   LOCATION L0000808     VOLUME   475315.471 3719904.599 417.80
   LOCATION L0000809     VOLUME   475330.183 3719885.274 417.73
   LOCATION L0000810     VOLUME   475344.895 3719865.948 417.66
   LOCATION L0000811     VOLUME   475359.607 3719846.623 417.58
   LOCATION L0000812     VOLUME   475374.319 3719827.298 417.51
   LOCATION L0000813     VOLUME   475389.032 3719807.973 417.44
   LOCATION L0000814     VOLUME   475403.744 3719788.648 417.37
   LOCATION L0000815     VOLUME   475418.456 3719769.323 417.29
   LOCATION L0000816     VOLUME   475433.168 3719749.997 417.22
   LOCATION L0000817     VOLUME   475447.880 3719730.672 417.15
   LOCATION L0000818     VOLUME   475462.592 3719711.347 417.08
   LOCATION L0000819     VOLUME   475477.304 3719692.022 417.01
** END OF LINE VOLUME SOURCE ID = SLINE2
```

```
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0000736     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000737     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000738     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000739     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000740     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000741     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000742     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000743     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000744     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000745     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000746     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000747     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000748     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000749     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000750     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000751     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000752     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000753     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000754     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000755     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000756     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000757     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000758     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000759     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000760     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000761     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000762     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000763     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000764     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000765     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000766     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000767     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000768     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000769     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000770     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000771     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000772     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000773     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000774     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000775     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000776     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000777     0.0000154762      3.49     11.30      3.25
** ----------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0000778     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000779     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000780     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000781     0.0000154762      3.49     11.30      3.25
```

```
   SRCPARAM L0000782     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000783     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000784     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000785     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000786     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000787     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000788     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000789     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000790     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000791     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000792     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000793     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000794     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000795     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000796     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000797     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000798     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000799     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000800     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000801     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000802     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000803     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000804     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000805     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000806     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000807     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000808     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000809     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000810     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000811     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000812     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000813     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000814     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000815     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000816     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000817     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000818     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000819     0.0000154762      3.49     11.30      3.25
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED DPM.ROU
```

```
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
** AUTO-GENERATED PLOTFILES
   PLOTFILE   ANNUAL ALL DPM.AD\AN00GALL.PLT 31
   SUMMFILE DPM.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 *********************************
 *** SETUP Finishes Successfully ***
 *********************************
```

```
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
                          ***        06/09/21
 *** AERMET - VERSION  16216 ***   ***
                         ***        13:23:38

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  DPM

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
```

```
                and:     84 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   DPM.ERR

 **File for Summary of Results:   DPM.SUM

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
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*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. SCALAR CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE VARY BY
L0000736	0	0.15476E-04	474909.7	3720511.5	420.9	3.49	11.30	3.25	YES
L0000737	0	0.15476E-04	474924.4	3720492.1	420.8	3.49	11.30	3.25	YES
L0000738	0	0.15476E-04	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES
L0000739	0	0.15476E-04	474953.9	3720453.5	420.8	3.49	11.30	3.25	YES
L0000740	0	0.15476E-04	474968.6	3720434.2	420.8	3.49	11.30	3.25	YES
L0000741	0	0.15476E-04	474983.3	3720414.8	420.7	3.49	11.30	3.25	YES
L0000742	0	0.15476E-04	474998.0	3720395.5	420.7	3.49	11.30	3.25	YES
L0000743	0	0.15476E-04	475012.7	3720376.2	420.7	3.49	11.30	3.25	YES
L0000744	0	0.15476E-04	475027.4	3720356.9	420.7	3.49	11.30	3.25	YES
L0000745	0	0.15476E-04	475042.1	3720337.5	420.6	3.49	11.30	3.25	YES
L0000746	0	0.15476E-04	475056.9	3720318.2	420.6	3.49	11.30	3.25	YES
L0000747	0	0.15476E-04	475071.6	3720298.9	420.6	3.49	11.30	3.25	YES
L0000748	0	0.15476E-04	475086.3	3720279.6	420.6	3.49	11.30	3.25	YES
L0000749	0	0.15476E-04	475101.0	3720260.2	420.5	3.49	11.30	3.25	YES
L0000750	0	0.15476E-04	475115.7	3720240.9	420.5	3.49	11.30	3.25	YES
L0000751	0	0.15476E-04	475130.4	3720221.6	420.5	3.49	11.30	3.25	YES
L0000752	0	0.15476E-04	475145.1	3720202.3	420.4	3.49	11.30	3.25	YES
L0000753	0	0.15476E-04	475159.8	3720182.9	420.4	3.49	11.30	3.25	YES
L0000754	0	0.15476E-04	475174.6	3720163.6	420.4	3.49	11.30	3.25	YES

```
 L0000755         0   0.15476E-04  475189.3 3720144.3   420.4     3.49    11.30
3.25     YES
 L0000756         0   0.15476E-04  475204.0 3720125.0   420.3     3.49    11.30
3.25     YES
 L0000757         0   0.15476E-04  475218.7 3720105.6   420.3     3.49    11.30
3.25     YES
 L0000758         0   0.15476E-04  475233.4 3720086.3   420.3     3.49    11.30
3.25     YES
 L0000759         0   0.15476E-04  475248.1 3720067.0   420.3     3.49    11.30
3.25     YES
 L0000760         0   0.15476E-04  475262.8 3720047.7   420.2     3.49    11.30
3.25     YES
 L0000761         0   0.15476E-04  475277.5 3720028.3   420.2     3.49    11.30
3.25     YES
 L0000762         0   0.15476E-04  475292.2 3720009.0   420.2     3.49    11.30
3.25     YES
 L0000763         0   0.15476E-04  475307.0 3719989.7   420.2     3.49    11.30
3.25     YES
 L0000764         0   0.15476E-04  475321.7 3719970.4   420.1     3.49    11.30
3.25     YES
 L0000765         0   0.15476E-04  475336.4 3719951.0   420.1     3.49    11.30
3.25     YES
 L0000766         0   0.15476E-04  475351.1 3719931.7   420.1     3.49    11.30
3.25     YES
 L0000767         0   0.15476E-04  475365.8 3719912.4   420.1     3.49    11.30
3.25     YES
 L0000768         0   0.15476E-04  475380.5 3719893.1   420.0     3.49    11.30
3.25     YES
 L0000769         0   0.15476E-04  475395.2 3719873.7   420.0     3.49    11.30
3.25     YES
 L0000770         0   0.15476E-04  475409.9 3719854.4   420.0     3.49    11.30
3.25     YES
 L0000771         0   0.15476E-04  475424.7 3719835.1   419.9     3.49    11.30
3.25     YES
 L0000772         0   0.15476E-04  475439.4 3719815.8   419.9     3.49    11.30
3.25     YES
 L0000773         0   0.15476E-04  475454.1 3719796.4   419.9     3.49    11.30
3.25     YES
 L0000774         0   0.15476E-04  475468.8 3719777.1   419.9     3.49    11.30
3.25     YES
 L0000775         0   0.15476E-04  475483.5 3719757.8   419.8     3.49    11.30
3.25     YES
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
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*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. SCALAR CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE VARY BY
L0000776	0	0.15476E-04	475498.2	3719738.5	419.8	3.49	11.30	3.25	YES
L0000777	0	0.15476E-04	475512.9	3719719.1	419.8	3.49	11.30	3.25	YES
L0000778	0	0.15476E-04	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES
L0000779	0	0.15476E-04	474888.8	3720465.0	419.9	3.49	11.30	3.25	YES
L0000780	0	0.15476E-04	474903.5	3720445.7	419.8	3.49	11.30	3.25	YES
L0000781	0	0.15476E-04	474918.2	3720426.4	419.8	3.49	11.30	3.25	YES
L0000782	0	0.15476E-04	474933.0	3720407.1	419.7	3.49	11.30	3.25	YES
L0000783	0	0.15476E-04	474947.7	3720387.7	419.6	3.49	11.30	3.25	YES
L0000784	0	0.15476E-04	474962.4	3720368.4	419.5	3.49	11.30	3.25	YES
L0000785	0	0.15476E-04	474977.1	3720349.1	419.5	3.49	11.30	3.25	YES
L0000786	0	0.15476E-04	474991.8	3720329.8	419.4	3.49	11.30	3.25	YES
L0000787	0	0.15476E-04	475006.5	3720310.4	419.3	3.49	11.30	3.25	YES
L0000788	0	0.15476E-04	475021.2	3720291.1	419.2	3.49	11.30	3.25	YES
L0000789	0	0.15476E-04	475035.9	3720271.8	419.2	3.49	11.30	3.25	YES
L0000790	0	0.15476E-04	475050.7	3720252.5	419.1	3.49	11.30	3.25	YES
L0000791	0	0.15476E-04	475065.4	3720233.1	419.0	3.49	11.30	3.25	YES
L0000792	0	0.15476E-04	475080.1	3720213.8	418.9	3.49	11.30	3.25	YES
L0000793	0	0.15476E-04	475094.8	3720194.5	418.9	3.49	11.30	3.25	YES
L0000794	0	0.15476E-04	475109.5	3720175.2	418.8	3.49	11.30	3.25	YES

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 L0000795         0   0.15476E-04  475124.2 3720155.8   418.7     3.49    11.30
3.25     YES
 L0000796         0   0.15476E-04  475138.9 3720136.5   418.7     3.49    11.30
3.25     YES
 L0000797         0   0.15476E-04  475153.6 3720117.2   418.6     3.49    11.30
3.25     YES
 L0000798         0   0.15476E-04  475168.4 3720097.8   418.5     3.49    11.30
3.25     YES
 L0000799         0   0.15476E-04  475183.1 3720078.5   418.4     3.49    11.30
3.25     YES
 L0000800         0   0.15476E-04  475197.8 3720059.2   418.4     3.49    11.30
3.25     YES
 L0000801         0   0.15476E-04  475212.5 3720039.9   418.3     3.49    11.30
3.25     YES
 L0000802         0   0.15476E-04  475227.2 3720020.5   418.2     3.49    11.30
3.25     YES
 L0000803         0   0.15476E-04  475241.9 3720001.2   418.2     3.49    11.30
3.25     YES
 L0000804         0   0.15476E-04  475256.6 3719981.9   418.1     3.49    11.30
3.25     YES
 L0000805         0   0.15476E-04  475271.3 3719962.6   418.0     3.49    11.30
3.25     YES
 L0000806         0   0.15476E-04  475286.0 3719943.2   417.9     3.49    11.30
3.25     YES
 L0000807         0   0.15476E-04  475300.8 3719923.9   417.9     3.49    11.30
3.25     YES
 L0000808         0   0.15476E-04  475315.5 3719904.6   417.8     3.49    11.30
3.25     YES
 L0000809         0   0.15476E-04  475330.2 3719885.3   417.7     3.49    11.30
3.25     YES
 L0000810         0   0.15476E-04  475344.9 3719865.9   417.7     3.49    11.30
3.25     YES
 L0000811         0   0.15476E-04  475359.6 3719846.6   417.6     3.49    11.30
3.25     YES
 L0000812         0   0.15476E-04  475374.3 3719827.3   417.5     3.49    11.30
3.25     YES
 L0000813         0   0.15476E-04  475389.0 3719808.0   417.4     3.49    11.30
3.25     YES
 L0000814         0   0.15476E-04  475403.7 3719788.6   417.4     3.49    11.30
3.25     YES
 L0000815         0   0.15476E-04  475418.5 3719769.3   417.3     3.49    11.30
3.25     YES
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*
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*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0000816	0	0.15476E-04	475433.2	3719750.0	417.2	3.49	11.30	3.25	YES	
L0000817	0	0.15476E-04	475447.9	3719730.7	417.2	3.49	11.30	3.25	YES	
L0000818	0	0.15476E-04	475462.6	3719711.3	417.1	3.49	11.30	3.25	YES	
L0000819	0	0.15476E-04	475477.3	3719692.0	417.0	3.49	11.30	3.25	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	L0000736 , L0000737 , L0000738 , L0000739 , L0000740 , L0000741 , L0000742 , L0000743 ,
	L0000744 , L0000745 , L0000746 , L0000747 , L0000748 , L0000749 , L0000750 , L0000751 ,
	L0000752 , L0000753 , L0000754 , L0000755 , L0000756 , L0000757 , L0000758 , L0000759 ,
	L0000760 , L0000761 , L0000762 , L0000763 , L0000764 , L0000765 , L0000766 , L0000767 ,
	L0000768 , L0000769 , L0000770 , L0000771 , L0000772 , L0000773 , L0000774 , L0000775 ,

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	2189641.	L0000736 , L0000737 , L0000738 , L0000739 , L0000740 , L0000741 , L0000742 , L0000743 ,
		L0000744 , L0000745 , L0000746 , L0000747 , L0000748 , L0000749 , L0000750 , L0000751 ,
		L0000752 , L0000753 , L0000754 , L0000755 , L0000756 , L0000757 , L0000758 , L0000759 ,
		L0000760 , L0000761 , L0000762 , L0000763 , L0000764 , L0000765 , L0000766 , L0000767 ,
		L0000768 , L0000769 , L0000770 , L0000771 , L0000772 , L0000773 , L0000774 , L0000775 ,
		L0000776 , L0000777 , L0000778 , L0000779 , L0000780 ,

L0000781   , L0000782   , L0000783   ,

             L0000784   , L0000785   , L0000786   , L0000787   , L0000788   ,
L0000789   , L0000790   , L0000791   ,

             L0000792   , L0000793   , L0000794   , L0000795   , L0000796   ,
L0000797   , L0000798   , L0000799   ,

             L0000800   , L0000801   , L0000802   , L0000803   , L0000804   ,
L0000805   , L0000806   , L0000807   ,

             L0000808   , L0000809   , L0000810   , L0000811   , L0000812   ,
L0000813   , L0000814   , L0000815   ,

             L0000816   , L0000817   , L0000818   , L0000819   ,

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                    (METERS)

     (475305.9, 3720344.0,   427.3,   742.0,   0.0);   (475307.5,
3720352.7,   428.8,   742.0,   0.0);
     (475308.7, 3720358.7,   430.1,   742.0,   0.0);   (475310.2,
3720364.6,   431.7,   742.0,   0.0);
     (475310.6, 3720371.0,   433.2,   742.0,   0.0);   (475296.4,
3720324.2,   426.2,   742.0,   0.0);
     (475303.9, 3720325.8,   426.6,   742.0,   0.0);   (475311.0,
3720326.6,   427.1,   742.0,   0.0);
     (475317.0, 3720327.4,   427.5,   742.0,   0.0);   (475299.5,
3720298.8,   426.0,   742.0,   0.0);
     (475307.9, 3720300.0,   426.4,   742.0,   0.0);   (475314.2,
3720301.2,   426.7,   742.0,   0.0);
     (475322.1, 3720301.2,   427.1,   742.0,   0.0);   (475344.7,
3720261.2,   432.2,   742.0,   0.0);
     (475345.5, 3720253.6,   432.5,   742.0,   0.0);   (475346.3,
3720248.5,   432.5,   742.0,   0.0);
     (475346.7, 3720241.3,   432.3,   742.0,   0.0);   (475303.5,
3720274.6,   426.9,   742.0,   0.0);
     (475311.0, 3720274.2,   427.3,   742.0,   0.0);   (475317.4,
3720276.2,   427.4,   742.0,   0.0);
     (475324.9, 3720276.6,   427.7,   742.0,   0.0);   (475305.5,
3720250.1,   428.3,   742.0,   0.0);
     (475313.4, 3720252.0,   428.9,   742.0,   0.0);   (475321.0,

```
3720251.6,     429.3,     742.0,       0.0);
     ( 475328.5, 3720252.8,     429.8,     742.0,       0.0);         ( 475339.9,
3720321.0,     430.1,     742.0,       0.0);
     ( 475347.8, 3720323.0,     431.6,     742.0,       0.0);         ( 475355.3,
3720322.6,     432.9,     742.0,       0.0);
     ( 475362.9, 3720323.8,     434.4,     742.0,       0.0);         ( 475368.9,
3720324.6,     435.6,     742.0,       0.0);
     ( 475367.4, 3720354.3,     435.4,     742.0,       0.0);         ( 475338.4,
3720350.8,     431.9,     742.0,       0.0);
     ( 475346.3, 3720352.7,     433.3,     742.0,       0.0);         ( 475353.8,
3720352.3,     433.8,     742.0,       0.0);
     ( 475361.4, 3720353.5,     434.7,     742.0,       0.0);         ( 475372.2,
3720387.2,     439.0,     742.0,       0.0);
     ( 475343.1, 3720383.7,     438.3,     742.0,       0.0);         ( 475351.1,
3720385.6,     438.0,     742.0,       0.0);
     ( 475358.6, 3720385.2,     438.3,     742.0,       0.0);         ( 475366.1,
3720386.4,     438.7,     742.0,       0.0);
     ( 475383.6, 3720372.2,     438.6,     742.0,       0.0);         ( 475391.5,
3720374.1,     438.9,     742.0,       0.0);
     ( 475399.0, 3720373.8,     439.3,     742.0,       0.0);         ( 475406.6,
3720374.9,     439.6,     742.0,       0.0);
     ( 475386.3, 3720344.8,     436.7,     742.0,       0.0);         ( 475394.2,
3720346.8,     437.9,     742.0,       0.0);
     ( 475401.7, 3720346.4,     439.4,     742.0,       0.0);         ( 475409.3,
3720347.6,     440.8,     742.0,       0.0);
     ( 475389.8, 3720319.8,     440.5,     742.0,       0.0);         ( 475397.8,
3720321.8,     441.2,     742.0,       0.0);
     ( 475405.3, 3720321.4,     442.1,     742.0,       0.0);         ( 475412.8,
3720322.6,     442.9,     742.0,       0.0);
     ( 475393.4, 3720294.1,     439.8,     742.0,       0.0);         ( 475401.3,
3720296.0,     440.6,     742.0,       0.0);
     ( 475408.9, 3720295.6,     441.1,     742.0,       0.0);         ( 475416.4,
3720296.8,     441.8,     742.0,       0.0);
     ( 475373.8, 3720263.6,     436.9,     742.0,       0.0);         ( 475374.6,
3720256.1,     437.0,     742.0,       0.0);
     ( 475375.4, 3720250.9,     436.8,     742.0,       0.0);         ( 475375.8,
3720243.8,     436.5,     742.0,       0.0);
     ( 475399.1, 3720264.8,     439.4,     742.0,       0.0);         ( 475399.9,
3720257.3,     439.4,     742.0,       0.0);
     ( 475400.7, 3720252.1,     439.1,     742.0,       0.0);         ( 475401.1,
3720245.0,     438.6,     742.0,       0.0);
     ( 475345.1, 3720307.9,     431.1,     742.0,       0.0);         ( 475346.3,
3720287.7,     431.4,     742.0,       0.0);
     ( 475369.3, 3720311.5,     436.2,     742.0,       0.0);         ( 475370.9,
3720292.5,     436.5,     742.0,       0.0);
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
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 *** AERMET - VERSION  16216 ***   ***
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*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

```
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
Met Version: 16216
Profile file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3171 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN

Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.3	0.065	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	78.	9.1	284.2	5.5
12	01	01	1	02	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	69.	9.1	283.8	5.5
12	01	01	1	03	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	286.	9.1	282.5	5.5
12	01	01	1	04	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	348.	9.1	282.5	5.5
12	01	01	1	05	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	17.	9.1	282.0	5.5
12	01	01	1	06	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	161.	9.1	282.0	5.5
12	01	01	1	07	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	273.	9.1	282.0	5.5
12	01	01	1	08	-3.6	0.091	-9.000	-9.000	-999.	66.	18.3	0.23	2.69	0.54	0.90	113.	9.1	283.8	5.5
12	01	01	1	09	39.6	0.087	0.358	0.016	40.	61.	-1.4	0.23	2.69	0.33	0.40	336.	9.1	285.9	5.5
12	01	01	1	10	110.7	0.206	0.740	0.007	127.	225.	-6.9	0.23	2.69	0.25	1.30	158.	9.1	291.4	5.5
12	01	01	1	11	161.7	0.105	1.203	0.005	374.	87.	-1.0	0.23	2.69	0.23	0.40	33.	9.1	297.0	5.5
12	01	01	1	12	185.5	0.271	1.535	0.005	676.	339.	-9.3	0.23	2.69	0.22	1.80	313.	9.1	298.8	5.5
12	01	01	1	13	183.9	0.219	1.828	0.005	1154.	247.	-4.9	0.23	2.69	0.22	1.30	250.	9.1	300.4	5.5
12	01	01	1	14	156.6	0.266	1.869	0.005	1446.	330.	-10.4	0.23	2.69	0.23	1.80	217.	9.1	301.4	5.5
12	01	01	1	15	104.7	0.256	1.677	0.005	1562.	311.	-13.8	0.23	2.69	0.27	1.80	248.	9.1	302.0	5.5
12	01	01	1	16	32.7	0.319	1.147	0.005	1596.	433.	-85.9	0.23	2.69	0.36	2.70	235.	9.1	302.0	5.5
12	01	01	1	17	-15.5	0.190	-9.000	-9.000	-999.	208.	39.6	0.23	2.69	0.63	1.80	46.	9.1	299.2	5.5
12	01	01	1	18	-4.1	0.092	-9.000	-9.000	-999.	73.	16.2	0.23	2.69	1.00	0.90	107.	9.1	294.9	5.5
12	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	2.69						

```
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
                          ***        06/09/21
 *** AERMET - VERSION  16216 ***   ***
                         ***        13:23:38

                                    PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5
YEARS FOR SOURCE GROUP: ALL      ***
                                    INCLUDING SOURCE(S):     L0000736    , L0000737
 , L0000738    , L0000739    , L0000740    ,
                  L0000741    , L0000742    , L0000743    , L0000744    , L0000745
 , L0000746    , L0000747    , L0000748    ,
                  L0000749    , L0000750    , L0000751    , L0000752    , L0000753
 , L0000754    , L0000755    , L0000756    ,
                  L0000757    , L0000758    , L0000759    , L0000760    , L0000761
 , L0000762    , L0000763    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF DPM      IN MICROGRAMS/M**3
                    **

       X-COORD (M)   Y-COORD (M)        CONC                        X-COORD (M)
Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - -
         475305.88    3720344.02        0.01388                      475307.47
3720352.74        0.01316
```

```
         475308.66    3720358.69        0.01254                    475310.24
3720364.64        0.01188
         475310.64    3720370.98        0.01130                    475296.37
3720324.20        0.01552
         475303.90    3720325.78        0.01494                    475311.04
3720326.58        0.01442
         475316.98    3720327.37        0.01398                    475299.54
3720298.82        0.01672
         475307.87    3720300.01        0.01603                    475314.21
3720301.20        0.01551
         475322.14    3720301.20        0.01496                    475344.74
3720261.16        0.01410
         475345.53    3720253.63        0.01430                    475346.32
3720248.47        0.01449
         475346.72    3720241.34        0.01485                    475303.50
3720274.64        0.01770
         475311.04    3720274.24        0.01706                    475317.38
3720276.23        0.01647
         475324.91    3720276.62        0.01587                    475305.49
3720250.06        0.01877
         475313.42    3720252.04        0.01781                    475320.95
3720251.65        0.01708
         475328.48    3720252.84        0.01630                    475339.88
3720321.02        0.01254
         475347.81    3720323.00        0.01177                    475355.34
3720322.61        0.01116
         475362.87    3720323.80        0.01053                    475368.92
3720324.59        0.01004
         475367.41    3720354.32        0.00938                    475338.37
3720350.76        0.01118
         475346.30    3720352.74        0.01053                    475353.83
3720352.35        0.01018
         475361.36    3720353.54        0.00973                    475372.17
3720387.23        0.00791
         475343.13    3720383.66        0.00883                    475351.06
3720385.64        0.00863
         475358.59    3720385.25        0.00839                    475366.12
3720386.44        0.00812
         475383.57    3720372.17        0.00799                    475391.50
3720374.15        0.00772
         475399.03    3720373.76        0.00752                    475406.56
3720374.95        0.00729
         475386.27    3720344.81        0.00882                    475394.20
3720346.79        0.00835
         475401.73    3720346.40        0.00792                    475409.26
3720347.59        0.00749
         475389.83    3720319.83        0.00853                    475397.76
3720321.81        0.00816
         475405.29    3720321.42        0.00782                    475412.82
3720322.61        0.00750
```

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***

                                    ** CONC OF DPM   IN MICROGRAMS/M**3
               **

                        NETWORK
GROUP ID   AVERAGE CONC   RECEPTOR (XR, YR,
ZELEV, ZHILL, ZFLAG) OF TYPE GRID-ID
- -
- - - - - - - - - - - - - - - - - - -

ALL   1ST HIGHEST VALUE IS   0.01877 AT (475305.49, 3720250.06,
428.34,   742.00,   0.00) DC
          2ND HIGHEST VALUE IS   0.01781 AT (475313.42, 3720252.04,
428.85,   742.00,   0.00) DC
          3RD HIGHEST VALUE IS   0.01770 AT (475303.50, 3720274.64,
426.93,   742.00,   0.00) DC
          4TH HIGHEST VALUE IS   0.01708 AT (475320.95, 3720251.65,
429.31,   742.00,   0.00) DC
          5TH HIGHEST VALUE IS   0.01706 AT (475311.04, 3720274.24,
427.30,   742.00,   0.00) DC
          6TH HIGHEST VALUE IS   0.01672 AT (475299.54, 3720298.82,
426.00,   742.00,   0.00) DC

         475393.40   3720294.06   0.00912   475401.33
3720296.04   0.00869
         475408.86   3720295.65   0.00839   475416.39
3720296.84   0.00805
         475373.78   3720263.64   0.01129   475374.57
3720256.11   0.01147
         475375.36   3720250.95   0.01164   475375.76
3720243.82   0.01195
         475399.15   3720264.83   0.00971   475399.94
3720257.30   0.00988
         475400.73   3720252.14   0.01003   475401.13
3720245.01   0.01032
         475345.13   3720307.94   0.01253   475346.32
3720287.72   0.01315
         475369.32   3720311.51   0.01023   475370.90
3720292.48   0.01064

```
          7TH HIGHEST VALUE IS       0.01647 AT (  475317.38,  3720276.23,
427.43,   742.00,    0.00)  DC
          8TH HIGHEST VALUE IS       0.01630 AT (  475328.48,  3720252.84,
429.81,   742.00,    0.00)  DC
          9TH HIGHEST VALUE IS       0.01603 AT (  475307.87,  3720300.01,
426.39,   742.00,    0.00)  DC
         10TH HIGHEST VALUE IS       0.01587 AT (  475324.91,  3720276.62,
427.72,   742.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\DPM\DPM.ISC
                           ***        06/09/21
 *** AERMET - VERSION  16216 ***   ***
                           ***       13:23:38

                                    PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of         1763 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of          884 Calm Hours Identified

 A Total of          879 Missing Hours Identified (  2.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
```

```
** Lakes Environmental AERMOD MPI
**
**************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\TOGGAS\TOGGAS.ADI
**
**************************************
**
**
**************************************
** AERMOD CONTROL PATHWAY
**************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\TOGGAS\TOGGAS.ISC
   MODELOPT DFAULT CONC
   AVERTIME 1 8 ANNUAL
   URBANOPT 2189641
   POLLUTID TOGGAS
   RUNORNOT RUN
   ERRORFIL TOGGAS.ERR
CO FINISHED
**
**************************************
** AERMOD SOURCE PATHWAY
**************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00155
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ------------------------------------------------------------------
```

```
   LOCATION L0000778     VOLUME   474909.733 3720511.459 420.52
   LOCATION L0000779     VOLUME   474924.446 3720492.134 420.06
   LOCATION L0000780     VOLUME   474939.158 3720472.809 420.76
   LOCATION L0000781     VOLUME   474953.870 3720453.484 421.00
   LOCATION L0000782     VOLUME   474968.582 3720434.158 421.00
   LOCATION L0000783     VOLUME   474983.294 3720414.833 421.45
   LOCATION L0000784     VOLUME   474998.006 3720395.508 421.94
   LOCATION L0000785     VOLUME   475012.718 3720376.183 422.43
   LOCATION L0000786     VOLUME   475027.430 3720356.858 422.33
   LOCATION L0000787     VOLUME   475042.142 3720337.533 422.29
   LOCATION L0000788     VOLUME   475056.854 3720318.207 422.07
   LOCATION L0000789     VOLUME   475071.566 3720298.882 422.17
   LOCATION L0000790     VOLUME   475086.278 3720279.557 422.00
   LOCATION L0000791     VOLUME   475100.990 3720260.232 422.05
   LOCATION L0000792     VOLUME   475115.702 3720240.907 421.50
   LOCATION L0000793     VOLUME   475130.414 3720221.582 421.26
   LOCATION L0000794     VOLUME   475145.126 3720202.256 421.72
   LOCATION L0000795     VOLUME   475159.839 3720182.931 422.19
   LOCATION L0000796     VOLUME   475174.551 3720163.606 422.00
   LOCATION L0000797     VOLUME   475189.263 3720144.281 422.63
   LOCATION L0000798     VOLUME   475203.975 3720124.956 423.61
   LOCATION L0000799     VOLUME   475218.687 3720105.631 424.59
   LOCATION L0000800     VOLUME   475233.399 3720086.305 426.09
   LOCATION L0000801     VOLUME   475248.111 3720066.980 427.28
   LOCATION L0000802     VOLUME   475262.823 3720047.655 427.77
   LOCATION L0000803     VOLUME   475277.535 3720028.330 427.37
   LOCATION L0000804     VOLUME   475292.247 3720009.005 426.19
   LOCATION L0000805     VOLUME   475306.959 3719989.680 426.27
   LOCATION L0000806     VOLUME   475321.671 3719970.354 426.21
   LOCATION L0000807     VOLUME   475336.383 3719951.029 425.87
   LOCATION L0000808     VOLUME   475351.095 3719931.704 425.76
   LOCATION L0000809     VOLUME   475365.807 3719912.379 425.66
   LOCATION L0000810     VOLUME   475380.519 3719893.054 424.87
   LOCATION L0000811     VOLUME   475395.232 3719873.729 424.30
   LOCATION L0000812     VOLUME   475409.944 3719854.403 423.49
   LOCATION L0000813     VOLUME   475424.656 3719835.078 423.13
   LOCATION L0000814     VOLUME   475439.368 3719815.753 422.54
   LOCATION L0000815     VOLUME   475454.080 3719796.428 421.82
   LOCATION L0000816     VOLUME   475468.792 3719777.103 421.67
   LOCATION L0000817     VOLUME   475483.504 3719757.778 420.86
   LOCATION L0000818     VOLUME   475498.216 3719738.452 420.26
   LOCATION L0000819     VOLUME   475512.928 3719719.127 420.21
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
```

```
** EMISSION RATE = 0.00155
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0000820     VOLUME   474874.109 3720484.354 420.00
   LOCATION L0000821     VOLUME   474888.821 3720465.029 420.00
   LOCATION L0000822     VOLUME   474903.533 3720445.703 420.00
   LOCATION L0000823     VOLUME   474918.245 3720426.378 420.28
   LOCATION L0000824     VOLUME   474932.958 3720407.053 420.77
   LOCATION L0000825     VOLUME   474947.670 3720387.728 420.55
   LOCATION L0000826     VOLUME   474962.382 3720368.403 420.75
   LOCATION L0000827     VOLUME   474977.094 3720349.078 421.24
   LOCATION L0000828     VOLUME   474991.806 3720329.752 421.34
   LOCATION L0000829     VOLUME   475006.518 3720310.427 421.18
   LOCATION L0000830     VOLUME   475021.230 3720291.102 421.12
   LOCATION L0000831     VOLUME   475035.942 3720271.777 421.20
   LOCATION L0000832     VOLUME   475050.654 3720252.452 421.61
   LOCATION L0000833     VOLUME   475065.366 3720233.127 421.24
   LOCATION L0000834     VOLUME   475080.078 3720213.801 420.73
   LOCATION L0000835     VOLUME   475094.790 3720194.476 420.00
   LOCATION L0000836     VOLUME   475109.502 3720175.151 420.00
   LOCATION L0000837     VOLUME   475124.214 3720155.826 420.58
   LOCATION L0000838     VOLUME   475138.926 3720136.501 421.63
   LOCATION L0000839     VOLUME   475153.638 3720117.176 421.45
   LOCATION L0000840     VOLUME   475168.351 3720097.850 421.51
   LOCATION L0000841     VOLUME   475183.063 3720078.525 422.22
   LOCATION L0000842     VOLUME   475197.775 3720059.200 423.31
   LOCATION L0000843     VOLUME   475212.487 3720039.875 424.79
   LOCATION L0000844     VOLUME   475227.199 3720020.550 424.95
   LOCATION L0000845     VOLUME   475241.911 3720001.225 425.12
   LOCATION L0000846     VOLUME   475256.623 3719981.899 424.79
   LOCATION L0000847     VOLUME   475271.335 3719962.574 424.48
   LOCATION L0000848     VOLUME   475286.047 3719943.249 424.12
   LOCATION L0000849     VOLUME   475300.759 3719923.924 423.90
   LOCATION L0000850     VOLUME   475315.471 3719904.599 423.47
   LOCATION L0000851     VOLUME   475330.183 3719885.274 423.30
   LOCATION L0000852     VOLUME   475344.895 3719865.948 422.50
   LOCATION L0000853     VOLUME   475359.607 3719846.623 421.70
   LOCATION L0000854     VOLUME   475374.319 3719827.298 421.19
   LOCATION L0000855     VOLUME   475389.032 3719807.973 421.04
   LOCATION L0000856     VOLUME   475403.744 3719788.648 420.62
   LOCATION L0000857     VOLUME   475418.456 3719769.323 419.77
   LOCATION L0000858     VOLUME   475433.168 3719749.997 419.19
   LOCATION L0000859     VOLUME   475447.880 3719730.672 417.98
   LOCATION L0000860     VOLUME   475462.592 3719711.347 417.27
   LOCATION L0000861     VOLUME   475477.304 3719692.022 417.12
** END OF LINE VOLUME SOURCE ID = SLINE2
```

```
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0000778     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000779     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000780     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000781     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000782     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000783     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000784     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000785     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000786     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000787     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000788     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000789     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000790     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000791     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000792     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000793     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000794     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000795     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000796     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000797     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000798     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000799     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000800     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000801     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000802     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000803     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000804     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000805     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000806     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000807     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000808     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000809     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000810     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000811     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000812     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000813     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000814     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000815     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000816     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000817     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000818     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000819     0.0000369048      3.49     11.30      3.25
** ------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0000820     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000821     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000822     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000823     0.0000369048      3.49     11.30      3.25
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   SRCPARAM L0000824     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000825     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000826     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000827     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000828     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000829     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000830     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000831     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000832     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000833     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000834     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000835     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000836     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000837     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000838     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000839     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000840     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000841     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000842     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000843     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000844     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000845     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000846     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000847     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000848     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000849     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000850     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000851     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000852     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000853     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000854     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000855     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000856     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000857     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000858     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000859     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000860     0.0000369048      3.49     11.30      3.25
   SRCPARAM L0000861     0.0000369048      3.49     11.30      3.25
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED TOGGAS.ROU
```

```
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   1 ALL 1ST TOGGAS.AD\01H1GALL.PLT 31
   PLOTFILE   8 ALL 1ST TOGGAS.AD\08H1GALL.PLT 32
   PLOTFILE   ANNUAL ALL TOGGAS.AD\AN00GALL.PLT 33
   SUMMFILE TOGGAS.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET
```

```
 **********************************
 *** SETUP Finishes Successfully ***
 **********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                     ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09

                                  PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  TOGGAS

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR
     and Calculates ANNUAL Averages
```

```
 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     84 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   TOGGAS.ERR

 **File for Summary of Results:   TOGGAS.SUM
```

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0000778	0	0.36905E-04	474909.7	3720511.5	420.5	3.49	11.30	3.25	YES	
L0000779	0	0.36905E-04	474924.4	3720492.1	420.1	3.49	11.30	3.25	YES	
L0000780	0	0.36905E-04	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES	
L0000781	0	0.36905E-04	474953.9	3720453.5	421.0	3.49	11.30	3.25	YES	
L0000782	0	0.36905E-04	474968.6	3720434.2	421.0	3.49	11.30	3.25	YES	
L0000783	0	0.36905E-04	474983.3	3720414.8	421.4	3.49	11.30	3.25	YES	
L0000784	0	0.36905E-04	474998.0	3720395.5	421.9	3.49	11.30	3.25	YES	
L0000785	0	0.36905E-04	475012.7	3720376.2	422.4	3.49	11.30	3.25	YES	
L0000786	0	0.36905E-04	475027.4	3720356.9	422.3	3.49	11.30	3.25	YES	
L0000787	0	0.36905E-04	475042.1	3720337.5	422.3	3.49	11.30	3.25	YES	
L0000788	0	0.36905E-04	475056.9	3720318.2	422.1	3.49	11.30	3.25	YES	
L0000789	0	0.36905E-04	475071.6	3720298.9	422.2	3.49	11.30	3.25	YES	
L0000790	0	0.36905E-04	475086.3	3720279.6	422.0	3.49	11.30	3.25	YES	
L0000791	0	0.36905E-04	475101.0	3720260.2	422.1	3.49	11.30	3.25	YES	
L0000792	0	0.36905E-04	475115.7	3720240.9	421.5	3.49	11.30	3.25	YES	

L0000793	0	0.36905E-04	475130.4	3720221.6	421.3	3.49	11.30	3.25 YES
L0000794	0	0.36905E-04	475145.1	3720202.3	421.7	3.49	11.30	3.25 YES
L0000795	0	0.36905E-04	475159.8	3720182.9	422.2	3.49	11.30	3.25 YES
L0000796	0	0.36905E-04	475174.6	3720163.6	422.0	3.49	11.30	3.25 YES
L0000797	0	0.36905E-04	475189.3	3720144.3	422.6	3.49	11.30	3.25 YES
L0000798	0	0.36905E-04	475204.0	3720125.0	423.6	3.49	11.30	3.25 YES
L0000799	0	0.36905E-04	475218.7	3720105.6	424.6	3.49	11.30	3.25 YES
L0000800	0	0.36905E-04	475233.4	3720086.3	426.1	3.49	11.30	3.25 YES
L0000801	0	0.36905E-04	475248.1	3720067.0	427.3	3.49	11.30	3.25 YES
L0000802	0	0.36905E-04	475262.8	3720047.7	427.8	3.49	11.30	3.25 YES
L0000803	0	0.36905E-04	475277.5	3720028.3	427.4	3.49	11.30	3.25 YES
L0000804	0	0.36905E-04	475292.2	3720009.0	426.2	3.49	11.30	3.25 YES
L0000805	0	0.36905E-04	475307.0	3719989.7	426.3	3.49	11.30	3.25 YES
L0000806	0	0.36905E-04	475321.7	3719970.4	426.2	3.49	11.30	3.25 YES
L0000807	0	0.36905E-04	475336.4	3719951.0	425.9	3.49	11.30	3.25 YES
L0000808	0	0.36905E-04	475351.1	3719931.7	425.8	3.49	11.30	3.25 YES
L0000809	0	0.36905E-04	475365.8	3719912.4	425.7	3.49	11.30	3.25 YES
L0000810	0	0.36905E-04	475380.5	3719893.1	424.9	3.49	11.30	3.25 YES
L0000811	0	0.36905E-04	475395.2	3719873.7	424.3	3.49	11.30	3.25 YES
L0000812	0	0.36905E-04	475409.9	3719854.4	423.5	3.49	11.30	3.25 YES
L0000813	0	0.36905E-04	475424.7	3719835.1	423.1	3.49	11.30	3.25 YES
L0000814	0	0.36905E-04	475439.4	3719815.8	422.5	3.49	11.30	3.25 YES
L0000815	0	0.36905E-04	475454.1	3719796.4	421.8	3.49	11.30	3.25 YES
L0000816	0	0.36905E-04	475468.8	3719777.1	421.7	3.49	11.30	3.25 YES
L0000817	0	0.36905E-04	475483.5	3719757.8	420.9	3.49	11.30	3.25 YES

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0000818	0	0.36905E-04	475498.2	3719738.5	420.3	3.49	11.30	3.25	YES	
L0000819	0	0.36905E-04	475512.9	3719719.1	420.2	3.49	11.30	3.25	YES	
L0000820	0	0.36905E-04	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES	
L0000821	0	0.36905E-04	474888.8	3720465.0	420.0	3.49	11.30	3.25	YES	
L0000822	0	0.36905E-04	474903.5	3720445.7	420.0	3.49	11.30	3.25	YES	
L0000823	0	0.36905E-04	474918.2	3720426.4	420.3	3.49	11.30	3.25	YES	
L0000824	0	0.36905E-04	474933.0	3720407.1	420.8	3.49	11.30	3.25	YES	
L0000825	0	0.36905E-04	474947.7	3720387.7	420.6	3.49	11.30	3.25	YES	
L0000826	0	0.36905E-04	474962.4	3720368.4	420.8	3.49	11.30	3.25	YES	
L0000827	0	0.36905E-04	474977.1	3720349.1	421.2	3.49	11.30	3.25	YES	
L0000828	0	0.36905E-04	474991.8	3720329.8	421.3	3.49	11.30	3.25	YES	
L0000829	0	0.36905E-04	475006.5	3720310.4	421.2	3.49	11.30	3.25	YES	
L0000830	0	0.36905E-04	475021.2	3720291.1	421.1	3.49	11.30	3.25	YES	
L0000831	0	0.36905E-04	475035.9	3720271.8	421.2	3.49	11.30	3.25	YES	
L0000832	0	0.36905E-04	475050.7	3720252.5	421.6	3.49	11.30	3.25	YES	

L0000833	0	0.36905E-04	475065.4	3720233.1	421.2	3.49	11.30	3.25 YES
L0000834	0	0.36905E-04	475080.1	3720213.8	420.7	3.49	11.30	3.25 YES
L0000835	0	0.36905E-04	475094.8	3720194.5	420.0	3.49	11.30	3.25 YES
L0000836	0	0.36905E-04	475109.5	3720175.2	420.0	3.49	11.30	3.25 YES
L0000837	0	0.36905E-04	475124.2	3720155.8	420.6	3.49	11.30	3.25 YES
L0000838	0	0.36905E-04	475138.9	3720136.5	421.6	3.49	11.30	3.25 YES
L0000839	0	0.36905E-04	475153.6	3720117.2	421.4	3.49	11.30	3.25 YES
L0000840	0	0.36905E-04	475168.4	3720097.8	421.5	3.49	11.30	3.25 YES
L0000841	0	0.36905E-04	475183.1	3720078.5	422.2	3.49	11.30	3.25 YES
L0000842	0	0.36905E-04	475197.8	3720059.2	423.3	3.49	11.30	3.25 YES
L0000843	0	0.36905E-04	475212.5	3720039.9	424.8	3.49	11.30	3.25 YES
L0000844	0	0.36905E-04	475227.2	3720020.5	424.9	3.49	11.30	3.25 YES
L0000845	0	0.36905E-04	475241.9	3720001.2	425.1	3.49	11.30	3.25 YES
L0000846	0	0.36905E-04	475256.6	3719981.9	424.8	3.49	11.30	3.25 YES
L0000847	0	0.36905E-04	475271.3	3719962.6	424.5	3.49	11.30	3.25 YES
L0000848	0	0.36905E-04	475286.0	3719943.2	424.1	3.49	11.30	3.25 YES
L0000849	0	0.36905E-04	475300.8	3719923.9	423.9	3.49	11.30	3.25 YES
L0000850	0	0.36905E-04	475315.5	3719904.6	423.5	3.49	11.30	3.25 YES
L0000851	0	0.36905E-04	475330.2	3719885.3	423.3	3.49	11.30	3.25 YES
L0000852	0	0.36905E-04	475344.9	3719865.9	422.5	3.49	11.30	3.25 YES
L0000853	0	0.36905E-04	475359.6	3719846.6	421.7	3.49	11.30	3.25 YES
L0000854	0	0.36905E-04	475374.3	3719827.3	421.2	3.49	11.30	3.25 YES
L0000855	0	0.36905E-04	475389.0	3719808.0	421.0	3.49	11.30	3.25 YES
L0000856	0	0.36905E-04	475403.7	3719788.6	420.6	3.49	11.30	3.25 YES
L0000857	0	0.36905E-04	475418.5	3719769.3	419.8	3.49	11.30	3.25 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ	URBAN SOURCE ID	EMISSION RATE SCALAR VARY BY
L0000858	0	0.36905E-04	475433.2	3719750.0	419.2	3.49	11.30	3.25	YES	
L0000859	0	0.36905E-04	475447.9	3719730.7	418.0	3.49	11.30	3.25	YES	
L0000860	0	0.36905E-04	475462.6	3719711.3	417.3	3.49	11.30	3.25	YES	
L0000861	0	0.36905E-04	475477.3	3719692.0	417.1	3.49	11.30	3.25	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	L0000778 , L0000779 , L0000780 , L0000781 , L0000782 , L0000783 , L0000784 , L0000785 ,
	L0000786 , L0000787 , L0000788 , L0000789 , L0000790 , L0000791 , L0000792 , L0000793 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES
***

URBAN ID	URBAN POP	SOURCE IDs
	2189641.	L0000778 , L0000779 , L0000780 , L0000781 , L0000782 , L0000783 , L0000784 , L0000785 ,
		L0000786 , L0000787 , L0000788 , L0000789 , L0000790 , L0000791 , L0000792 , L0000793 ,
		L0000794 , L0000795 , L0000796 , L0000797 , L0000798 , L0000799 , L0000800 , L0000801 ,

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             L0000802    , L0000803    , L0000804    , L0000805    , L0000806    ,
L0000807    , L0000808    , L0000809    ,

             L0000810    , L0000811    , L0000812    , L0000813    , L0000814    ,
L0000815    , L0000816    , L0000817    ,

             L0000818    , L0000819    , L0000820    , L0000821    , L0000822    ,
L0000823    , L0000824    , L0000825    ,

             L0000826    , L0000827    , L0000828    , L0000829    , L0000830    ,
L0000831    , L0000832    , L0000833    ,

             L0000834    , L0000835    , L0000836    , L0000837    , L0000838    ,
L0000839    , L0000840    , L0000841    ,

             L0000842    , L0000843    , L0000844    , L0000845    , L0000846    ,
L0000847    , L0000848    , L0000849    ,

             L0000850    , L0000851    , L0000852    , L0000853    , L0000854    ,
L0000855    , L0000856    , L0000857    ,

             L0000858    , L0000859    , L0000860    , L0000861    ,
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                      ***       03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***       07:41:09

                                  PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                    (METERS)

     ( 475305.9, 3720344.0,     427.3,     742.0,       0.0);         ( 475307.5,
3720352.7,     428.8,     742.0,       0.0);
     ( 475308.7, 3720358.7,     430.1,     742.0,       0.0);         ( 475310.2,
3720364.6,     431.7,     742.0,       0.0);
     ( 475310.6, 3720371.0,     433.2,     742.0,       0.0);         ( 475296.4,
3720324.2,     426.2,     742.0,       0.0);
     ( 475303.9, 3720325.8,     426.6,     742.0,       0.0);         ( 475311.0,
3720326.6,     427.1,     742.0,       0.0);
     ( 475317.0, 3720327.4,     427.5,     742.0,       0.0);         ( 475299.5,
3720298.8,     426.0,     742.0,       0.0);
     ( 475307.9, 3720300.0,     426.4,     742.0,       0.0);         ( 475314.2,
3720301.2,     426.7,     742.0,       0.0);
     ( 475322.1, 3720301.2,     427.1,     742.0,       0.0);         ( 475344.7,
3720261.2,     432.2,     742.0,       0.0);
     ( 475345.5, 3720253.6,     432.5,     742.0,       0.0);         ( 475346.3,
```

3720248.5,   432.5,   742.0,   0.0);
     (475346.7, 3720241.3,   432.3,   742.0,   0.0);   (475303.5,
3720274.6,   426.9,   742.0,   0.0);
     (475311.0, 3720274.2,   427.3,   742.0,   0.0);   (475317.4,
3720276.2,   427.4,   742.0,   0.0);
     (475324.9, 3720276.6,   427.7,   742.0,   0.0);   (475305.5,
3720250.1,   428.3,   742.0,   0.0);
     (475313.4, 3720252.0,   428.9,   742.0,   0.0);   (475321.0,
3720251.6,   429.3,   742.0,   0.0);
     (475328.5, 3720252.8,   429.8,   742.0,   0.0);   (475339.9,
3720321.0,   430.1,   742.0,   0.0);
     (475347.8, 3720323.0,   431.6,   742.0,   0.0);   (475355.3,
3720322.6,   432.9,   742.0,   0.0);
     (475362.9, 3720323.8,   434.4,   742.0,   0.0);   (475368.9,
3720324.6,   435.6,   742.0,   0.0);
     (475367.4, 3720354.3,   435.4,   742.0,   0.0);   (475338.4,
3720350.8,   431.9,   742.0,   0.0);
     (475346.3, 3720352.7,   433.3,   742.0,   0.0);   (475353.8,
3720352.3,   433.8,   742.0,   0.0);
     (475361.4, 3720353.5,   434.7,   742.0,   0.0);   (475372.2,
3720387.2,   439.0,   742.0,   0.0);
     (475343.1, 3720383.7,   438.3,   742.0,   0.0);   (475351.1,
3720385.6,   438.0,   742.0,   0.0);
     (475358.6, 3720385.2,   438.3,   742.0,   0.0);   (475366.1,
3720386.4,   438.7,   742.0,   0.0);
     (475383.6, 3720372.2,   438.6,   742.0,   0.0);   (475391.5,
3720374.1,   438.9,   742.0,   0.0);
     (475399.0, 3720373.8,   439.3,   742.0,   0.0);   (475406.6,
3720374.9,   439.6,   742.0,   0.0);
     (475386.3, 3720344.8,   436.7,   742.0,   0.0);   (475394.2,
3720346.8,   437.9,   742.0,   0.0);
     (475401.7, 3720346.4,   439.4,   742.0,   0.0);   (475409.3,
3720347.6,   440.8,   742.0,   0.0);
     (475389.8, 3720319.8,   440.5,   742.0,   0.0);   (475397.8,
3720321.8,   441.2,   742.0,   0.0);
     (475405.3, 3720321.4,   442.1,   742.0,   0.0);   (475412.8,
3720322.6,   442.9,   742.0,   0.0);
     (475393.4, 3720294.1,   439.8,   742.0,   0.0);   (475401.3,
3720296.0,   440.6,   742.0,   0.0);
     (475408.9, 3720295.6,   441.1,   742.0,   0.0);   (475416.4,
3720296.8,   441.8,   742.0,   0.0);
     (475373.8, 3720263.6,   436.9,   742.0,   0.0);   (475374.6,
3720256.1,   437.0,   742.0,   0.0);
     (475375.4, 3720250.9,   436.8,   742.0,   0.0);   (475375.8,
3720243.8,   436.5,   742.0,   0.0);
     (475399.1, 3720264.8,   439.4,   742.0,   0.0);   (475399.9,
3720257.3,   439.4,   742.0,   0.0);
     (475400.7, 3720252.1,   439.1,   742.0,   0.0);   (475401.1,
3720245.0,   438.6,   742.0,   0.0);
     (475345.1, 3720307.9,   431.1,   742.0,   0.0);   (475346.3,

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

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           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1
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NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23,
10.80,

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
Met Version: 16216
Profile file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3171 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN

Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.3	0.065	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	78.	9.1	284.2	5.5
12	01	01	1	02	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	69.	9.1	283.8	5.5
12	01	01	1	03	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	286.	9.1	282.5	5.5
12	01	01	1	04	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	348.	9.1	282.5	5.5
12	01	01	1	05	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	17.	9.1	282.0	5.5
12	01	01	1	06	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	161.	9.1	282.0	5.5
12	01	01	1	07	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	273.	9.1	282.0	5.5
12	01	01	1	08	-3.6	0.091	-9.000	-9.000	-999.	66.	18.3	0.23	2.69	0.54	0.90	113.	9.1	283.8	5.5
12	01	01	1	09	39.6	0.087	0.358	0.016	40.	61.	-1.4	0.23	2.69	0.33	0.40	336.	9.1	285.9	5.5
12	01	01	1	10	110.7	0.206	0.740	0.007	127.	225.	-6.9	0.23	2.69	0.25	1.30	158.	9.1	291.4	5.5
12	01	01	1	11	161.7	0.105	1.203	0.005	374.	87.	-1.0	0.23	2.69	0.23	0.40	33.	9.1	297.0	5.5
12	01	01	1	12	185.5	0.271	1.535	0.005	676.	339.	-9.3	0.23	2.69	0.22	1.80	313.	9.1	298.8	5.5
12	01	01	1	13	183.9	0.219	1.828	0.005	1154.	247.	-4.9	0.23	2.69	0.22	1.30	250.	9.1	300.4	5.5
12	01	01	1	14	156.6	0.266	1.869	0.005	1446.	330.	-10.4	0.23	2.69	0.23	1.80	217.	9.1	301.4	5.5
12	01	01	1	15	104.7	0.256	1.677	0.005	1562.	311.	-13.8	0.23	2.69						

```
0.27    1.80  248.    9.1  302.0    5.5
 12 01 01   1 16   32.7  0.319  1.147  0.005 1596.  433.    -85.9  0.23   2.69
0.36    2.70  235.    9.1  302.0    5.5
 12 01 01   1 17  -15.5  0.190 -9.000 -9.000 -999.  208.     39.6  0.23   2.69
0.63    1.80   46.    9.1  299.2    5.5
 12 01 01   1 18   -4.1  0.092 -9.000 -9.000 -999.   73.     16.2  0.23   2.69
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                      ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09

                                  PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5
YEARS FOR SOURCE GROUP: ALL      ***
                                  INCLUDING SOURCE(S):     L0000778    , L0000779
 , L0000780    , L0000781    , L0000782    ,
                   L0000783    , L0000784    , L0000785    , L0000786    , L0000787
 , L0000788    , L0000789    , L0000790    ,
                   L0000791    , L0000792    , L0000793    , L0000794    , L0000795
 , L0000796    , L0000797    , L0000798    ,
                   L0000799    , L0000800    , L0000801    , L0000802    , L0000803
 , L0000804    , L0000805    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                           ** CONC OF TOGGAS   IN MICROGRAMS/M**3
```

**

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
475305.88	3720344.02	0.03410	475307.47	3720352.74	0.03258
475308.66	3720358.69	0.03128	475310.24	3720364.64	0.02967
475310.64	3720370.98	0.02825	475296.37	3720324.20	0.03800
475303.90	3720325.78	0.03663	475311.04	3720326.58	0.03547
475316.98	3720327.37	0.03447	475299.54	3720298.82	0.04094
475307.87	3720300.01	0.03933	475314.21	3720301.20	0.03813
475322.14	3720301.20	0.03688	475344.74	3720261.16	0.03599
475345.53	3720253.63	0.03653	475346.32	3720248.47	0.03707
475346.72	3720241.34	0.03805	475303.50	3720274.64	0.04362
475311.04	3720274.24	0.04213	475317.38	3720276.23	0.04070
475324.91	3720276.62	0.03933	475305.49	3720250.06	0.04677
475313.42	3720252.04	0.04459	475320.95	3720251.65	0.04300
475328.48	3720252.84	0.04117	475339.88	3720321.02	0.03153
475347.81	3720323.00	0.02971	475355.34	3720322.61	0.02825
475362.87	3720323.80	0.02673	475368.92	3720324.59	0.02553
475367.41	3720354.32	0.02374	475338.37	3720350.76	0.02810
475346.30	3720352.74	0.02654	475353.83	3720352.35	0.02569
475361.36	3720353.54	0.02459	475372.17	3720387.23	0.01998
475343.13	3720383.66	0.02227	475351.06	3720385.64	0.02177
475358.59	3720385.25	0.02117	475366.12	3720386.44	0.02051
475383.57	3720372.17	0.02024	475391.50	3720374.15	0.01957
475399.03	3720373.76	0.01905	475406.56	3720374.95	0.01849

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         475386.27    3720344.81        0.02240                      475394.20
3720346.79        0.02121
         475401.73    3720346.40        0.02014                      475409.26
3720347.59        0.01907
         475389.83    3720319.83        0.02179                      475397.76
3720321.81        0.02084
         475405.29    3720321.42        0.01998                      475412.82
3720322.61        0.01914
         475393.40    3720294.06        0.02338                      475401.33
3720296.04        0.02229
         475408.86    3720295.65        0.02152                      475416.39
3720296.84        0.02065
         475373.78    3720263.64        0.02908                      475374.57
3720256.11        0.02959
         475375.36    3720250.95        0.03006                      475375.76
3720243.82        0.03090
         475399.15    3720264.83        0.02503                      475399.94
3720257.30        0.02551
         475400.73    3720252.14        0.02594                      475401.13
3720245.01        0.02671
         475345.13    3720307.94        0.03167                      475346.32
3720287.72        0.03331
         475369.32    3720311.51        0.02608                      475370.90
3720292.48        0.02722
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                    ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        07:41:09

                                   PAGE  11
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                               *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     L0000778    , L0000779
 , L0000780    , L0000781    , L0000782    ,
                 L0000783    , L0000784    , L0000785    , L0000786    , L0000787
 , L0000788    , L0000789    , L0000790    ,
                 L0000791    , L0000792    , L0000793    , L0000794    , L0000795
 , L0000796    , L0000797    , L0000798    ,
                 L0000799    , L0000800    , L0000801    , L0000802    , L0000803
 , L0000804    , L0000805    ,  . . .      ,

                                          *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF TOGGAS   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)             X-COORD (M)
```

Y-COORD (M)   CONC   (YYMMDDHH)
- -
- -
475305.88   3720344.02   0.08771 (14113016)   475307.47
3720352.74   0.08444 (14113016)
475308.66   3720358.69   0.08206 (14113016)   475310.24
3720364.64   0.08119 (14081619)
475310.64   3720370.98   0.08078 (14081619)   475296.37
3720324.20   0.09778 (14113016)
475303.90   3720325.78   0.09392 (14113016)   475311.04
3720326.58   0.09068 (14113016)
475316.98   3720327.37   0.08807 (14113016)   475299.54
3720298.82   0.10509 (14113016)
475307.87   3720300.01   0.10051 (14113016)   475314.21
3720301.20   0.09714 (14113016)
475322.14   3720301.20   0.09366 (14113016)   475344.74
3720261.16   0.09716 (13091419)
475345.53   3720253.63   0.09858 (13091419)   475346.32
3720248.47   0.09967 (15082920)
475346.72   3720241.34   0.10161 (15082920)   475303.50
3720274.64   0.11216 (14113016)
475311.04   3720274.24   0.10807 (14113016)   475317.38
3720276.23   0.10403 (14113016)
475324.91   3720276.62   0.10019 (14113016)   475305.49
3720250.06   0.12158 (14113016)
475313.42   3720252.04   0.11569 (14113016)   475320.95
3720251.65   0.11144 (14113016)
475328.48   3720252.84   0.10679 (14113016)   475339.88
3720321.02   0.08192 (14091419)
475347.81   3720323.00   0.08234 (14091419)   475355.34
3720322.61   0.08204 (14091419)
475362.87   3720323.80   0.08103 (14091419)   475368.92
3720324.59   0.07987 (14091419)
475367.41   3720354.32   0.07515 (14081619)   475338.37
3720350.76   0.07901 (14091419)
475346.30   3720352.74   0.07809 (14081619)   475353.83
3720352.35   0.07720 (14081619)
475361.36   3720353.54   0.07610 (14081619)   475372.17
3720387.23   0.07269 (12100118)
475343.13   3720383.66   0.07666 (12100118)   475351.06
3720385.64   0.07513 (12100118)
475358.59   3720385.25   0.07437 (12100118)   475366.12
3720386.44   0.07340 (12100118)
475383.57   3720372.17   0.07304 (12100118)   475391.50
3720374.15   0.07198 (12100118)
475399.03   3720373.76   0.07128 (12100118)   475406.56
3720374.95   0.07040 (12100118)
475386.27   3720344.81   0.07461 (12100118)   475394.20
3720346.79   0.07440 (12100118)
475401.73   3720346.40   0.07415 (12100118)   475409.26

```
 3720347.59        0.07322  (12100118)
       475389.83   3720319.83        0.07892  (14083021)               475397.76
 3720321.81        0.07751  (14083021)
       475405.29   3720321.42        0.07632  (14083021)               475412.82
 3720322.61        0.07529  (12081622)
       475393.40   3720294.06        0.08241  (14082719)               475401.33
 3720296.04        0.08084  (15060905)
       475408.86   3720295.65        0.07974  (15060905)               475416.39
 3720296.84        0.07838  (15060905)
       475373.78   3720263.64        0.09110  (12080119)               475374.57
 3720256.11        0.09268  (12080119)
       475375.36   3720250.95        0.09354  (12080119)               475375.76
 3720243.82        0.09480  (12080119)
       475399.15   3720264.83        0.08687  (12080119)               475399.94
 3720257.30        0.08814  (12080119)
       475400.73   3720252.14        0.08894  (12080119)               475401.13
 3720245.01        0.09016  (12080119)
       475345.13   3720307.94        0.08568  (14091419)               475346.32
 3720287.72        0.08968  (14091419)
       475369.32   3720311.51        0.08164  (14091419)               475370.90
 3720292.48        0.08505  (12080119)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                     ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09

                                  PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000778    , L0000779
 , L0000780    , L0000781    , L0000782    ,
                  L0000783    , L0000784    , L0000785    , L0000786    , L0000787
 , L0000788    , L0000789    , L0000790    ,
                  L0000791    , L0000792    , L0000793    , L0000794    , L0000795
 , L0000796    , L0000797    , L0000798    ,
                  L0000799    , L0000800    , L0000801    , L0000802    , L0000803
 , L0000804    , L0000805    ,  . . .      ,

                                          *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                       ** CONC OF TOGGAS   IN MICROGRAMS/M**3
                   **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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       475305.88   3720344.02        0.07263  (15122224)              475307.47
3720352.74        0.07377  (15122224)
       475308.66   3720358.69        0.07371  (15122224)              475310.24
3720364.64        0.07313  (15122224)
       475310.64   3720370.98        0.07186  (15122224)              475296.37
3720324.20        0.07214c (14112608)
       475303.90   3720325.78        0.06973c (14112608)              475311.04
3720326.58        0.07122  (15122224)
       475316.98   3720327.37        0.07421  (15122224)              475299.54
3720298.82        0.07745c (14112608)
       475307.87   3720300.01        0.07460c (14112608)              475314.21
3720301.20        0.07248c (14112608)
       475322.14   3720301.20        0.07371  (15122224)              475344.74
3720261.16        0.08071  (14111124)
       475345.53   3720253.63        0.08204  (14111124)              475346.32
3720248.47        0.08284  (14111124)
       475346.72   3720241.34        0.08417  (14111124)              475303.50
3720274.64        0.08262c (14112608)
       475311.04   3720274.24        0.08485  (15122224)              475317.38
3720276.23        0.08315  (13011024)
       475324.91   3720276.62        0.08198  (15122224)              475305.49
3720250.06        0.09416  (15122224)
       475313.42   3720252.04        0.09194  (15122224)              475320.95
3720251.65        0.08979  (15122224)
       475328.48   3720252.84        0.08735  (15122224)              475339.88
3720321.02        0.07382  (15122224)
       475347.81   3720323.00        0.07232  (15122224)              475355.34
3720322.61        0.07113  (15121108)
       475362.87   3720323.80        0.06999  (15121108)              475368.92
3720324.59        0.06861  (15121108)
       475367.41   3720354.32        0.06598  (15121108)              475338.37
3720350.76        0.07065  (15122224)
       475346.30   3720352.74        0.06898  (15122224)              475353.83
3720352.35        0.06808  (15121108)
       475361.36   3720353.54        0.06697  (15121108)              475372.17
3720387.23        0.06084  (15122424)
       475343.13   3720383.66        0.06398  (15122424)              475351.06
3720385.64        0.06319  (15122424)
       475358.59   3720385.25        0.06241  (15122424)              475366.12
3720386.44        0.06154  (15122424)
       475383.57   3720372.17        0.06096  (15122424)              475391.50
3720374.15        0.06008  (15122424)
       475399.03   3720373.76        0.05940  (15122424)              475406.56
3720374.95        0.05863  (15122424)
       475386.27   3720344.81        0.06422  (15121108)              475394.20
3720346.79        0.06235  (15121108)
       475401.73   3720346.40        0.06096  (15122424)              475409.26
3720347.59        0.05962  (15122424)
       475389.83   3720319.83        0.06334  (15122424)              475397.76
3720321.81        0.06205  (15122424)
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       475405.29   3720321.42        0.06075  (15122424)               475412.82
 3720322.61        0.05938  (15122424)
       475393.40   3720294.06        0.06556  (15122424)               475401.33
 3720296.04        0.06419  (15122424)
       475408.86   3720295.65        0.06317  (15122424)               475416.39
 3720296.84        0.06190  (15122424)
       475373.78   3720263.64        0.07449  (14111124)               475374.57
 3720256.11        0.07559  (14111124)
       475375.36   3720250.95        0.07635  (14111124)               475375.76
 3720243.82        0.07753  (14111124)
       475399.15   3720264.83        0.06875  (14111124)               475399.94
 3720257.30        0.06980  (14111124)
       475400.73   3720252.14        0.07062  (14111124)               475401.13
 3720245.01        0.07192  (14111124)
       475345.13   3720307.94        0.07507  (15122224)               475346.32
 3720287.72        0.07697  (15122224)
       475369.32   3720311.51        0.06933  (15121108)               475370.90
 3720292.48        0.07072  (15121108)
↟ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                     ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09

                                  PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                  *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***


                                   ** CONC OF TOGGAS   IN MICROGRAMS/M**3
              **


                        NETWORK
GROUP ID                      AVERAGE CONC               RECEPTOR  (XR, YR,
ZELEV, ZHILL, ZFLAG)  OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - -

ALL       1ST HIGHEST VALUE IS       0.04677 AT (  475305.49,  3720250.06,
428.34,   742.00,    0.00)  DC
          2ND HIGHEST VALUE IS       0.04459 AT (  475313.42,  3720252.04,
428.85,   742.00,    0.00)  DC
          3RD HIGHEST VALUE IS       0.04362 AT (  475303.50,  3720274.64,
426.93,   742.00,    0.00)  DC
          4TH HIGHEST VALUE IS       0.04300 AT (  475320.95,  3720251.65,
429.31,   742.00,    0.00)  DC
          5TH HIGHEST VALUE IS       0.04213 AT (  475311.04,  3720274.24,
427.30,   742.00,    0.00)  DC
```

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          6TH HIGHEST VALUE IS       0.04117 AT (  475328.48,  3720252.84,
429.81,   742.00,    0.00)  DC
          7TH HIGHEST VALUE IS       0.04094 AT (  475299.54,  3720298.82,
426.00,   742.00,    0.00)  DC
          8TH HIGHEST VALUE IS       0.04070 AT (  475317.38,  3720276.23,
427.43,   742.00,    0.00)  DC
          9TH HIGHEST VALUE IS       0.03933 AT (  475324.91,  3720276.62,
427.72,   742.00,    0.00)  DC
         10TH HIGHEST VALUE IS       0.03933 AT (  475307.87,  3720300.01,
426.39,   742.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                     ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09

                                  PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                  ** CONC OF TOGGAS   IN MICROGRAMS/M**3
              **

                                                    DATE
                                       NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       0.12158  ON 14113016: AT (  475305.49,
3720250.06,   428.34,   742.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\TOGGAS\TOGGAS.ISC                     ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:41:09
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 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF TOGGAS   IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE	NETWORK CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	0.09416	ON 15122224:	AT (475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC	

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   2 Warning Message(s)
 A Total of   1763 Informational Message(s)

 A Total of   43848 Hours Were Processed

 A Total of   884 Calm Hours Identified

 A Total of   879 Missing Hours Identified (2.00 Percent)

    ******** FATAL ERROR MESSAGES ********

```
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************

** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\DIESELTOG\DIESELTOG.ADI
**
****************************************
**
**
****************************************
** AERMOD CONTROL PATHWAY
****************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\DIESELTOG\DIESELTOG.ISC
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   URBANOPT 2189641
   POLLUTID TOGDSL
   RUNORNOT RUN
   ERRORFIL DIESELTOG.ERR
CO FINISHED
**
****************************************
** AERMOD SOURCE PATHWAY
****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ----------------------------------------------------------------------
```

```
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00065
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0000862     VOLUME   474909.733 3720511.459 420.52
   LOCATION L0000863     VOLUME   474924.446 3720492.134 420.06
   LOCATION L0000864     VOLUME   474939.158 3720472.809 420.76
   LOCATION L0000865     VOLUME   474953.870 3720453.484 421.00
   LOCATION L0000866     VOLUME   474968.582 3720434.158 421.00
   LOCATION L0000867     VOLUME   474983.294 3720414.833 421.45
   LOCATION L0000868     VOLUME   474998.006 3720395.508 421.94
   LOCATION L0000869     VOLUME   475012.718 3720376.183 422.43
   LOCATION L0000870     VOLUME   475027.430 3720356.858 422.33
   LOCATION L0000871     VOLUME   475042.142 3720337.533 422.29
   LOCATION L0000872     VOLUME   475056.854 3720318.207 422.07
   LOCATION L0000873     VOLUME   475071.566 3720298.882 422.17
   LOCATION L0000874     VOLUME   475086.278 3720279.557 422.00
   LOCATION L0000875     VOLUME   475100.990 3720260.232 422.05
   LOCATION L0000876     VOLUME   475115.702 3720240.907 421.50
   LOCATION L0000877     VOLUME   475130.414 3720221.582 421.26
   LOCATION L0000878     VOLUME   475145.126 3720202.256 421.72
   LOCATION L0000879     VOLUME   475159.839 3720182.931 422.19
   LOCATION L0000880     VOLUME   475174.551 3720163.606 422.00
   LOCATION L0000881     VOLUME   475189.263 3720144.281 422.63
   LOCATION L0000882     VOLUME   475203.975 3720124.956 423.61
   LOCATION L0000883     VOLUME   475218.687 3720105.631 424.59
   LOCATION L0000884     VOLUME   475233.399 3720086.305 426.09
   LOCATION L0000885     VOLUME   475248.111 3720066.980 427.28
   LOCATION L0000886     VOLUME   475262.823 3720047.655 427.77
   LOCATION L0000887     VOLUME   475277.535 3720028.330 427.37
   LOCATION L0000888     VOLUME   475292.247 3720009.005 426.19
   LOCATION L0000889     VOLUME   475306.959 3719989.680 426.27
   LOCATION L0000890     VOLUME   475321.671 3719970.354 426.21
   LOCATION L0000891     VOLUME   475336.383 3719951.029 425.87
   LOCATION L0000892     VOLUME   475351.095 3719931.704 425.76
   LOCATION L0000893     VOLUME   475365.807 3719912.379 425.66
   LOCATION L0000894     VOLUME   475380.519 3719893.054 424.87
   LOCATION L0000895     VOLUME   475395.232 3719873.729 424.30
   LOCATION L0000896     VOLUME   475409.944 3719854.403 423.49
   LOCATION L0000897     VOLUME   475424.656 3719835.078 423.13
   LOCATION L0000898     VOLUME   475439.368 3719815.753 422.54
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   LOCATION L0000899     VOLUME   475454.080 3719796.428 421.82
   LOCATION L0000900     VOLUME   475468.792 3719777.103 421.67
   LOCATION L0000901     VOLUME   475483.504 3719757.778 420.86
   LOCATION L0000902     VOLUME   475498.216 3719738.452 420.26
   LOCATION L0000903     VOLUME   475512.928 3719719.127 420.21
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.00065
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0000904     VOLUME   474874.109 3720484.354 420.00
   LOCATION L0000905     VOLUME   474888.821 3720465.029 420.00
   LOCATION L0000906     VOLUME   474903.533 3720445.703 420.00
   LOCATION L0000907     VOLUME   474918.245 3720426.378 420.28
   LOCATION L0000908     VOLUME   474932.958 3720407.053 420.77
   LOCATION L0000909     VOLUME   474947.670 3720387.728 420.55
   LOCATION L0000910     VOLUME   474962.382 3720368.403 420.75
   LOCATION L0000911     VOLUME   474977.094 3720349.078 421.24
   LOCATION L0000912     VOLUME   474991.806 3720329.752 421.34
   LOCATION L0000913     VOLUME   475006.518 3720310.427 421.18
   LOCATION L0000914     VOLUME   475021.230 3720291.102 421.12
   LOCATION L0000915     VOLUME   475035.942 3720271.777 421.20
   LOCATION L0000916     VOLUME   475050.654 3720252.452 421.61
   LOCATION L0000917     VOLUME   475065.366 3720233.127 421.24
   LOCATION L0000918     VOLUME   475080.078 3720213.801 420.73
   LOCATION L0000919     VOLUME   475094.790 3720194.476 420.00
   LOCATION L0000920     VOLUME   475109.502 3720175.151 420.00
   LOCATION L0000921     VOLUME   475124.214 3720155.826 420.58
   LOCATION L0000922     VOLUME   475138.926 3720136.501 421.63
   LOCATION L0000923     VOLUME   475153.638 3720117.176 421.45
   LOCATION L0000924     VOLUME   475168.351 3720097.850 421.51
   LOCATION L0000925     VOLUME   475183.063 3720078.525 422.22
   LOCATION L0000926     VOLUME   475197.775 3720059.200 423.31
   LOCATION L0000927     VOLUME   475212.487 3720039.875 424.79
   LOCATION L0000928     VOLUME   475227.199 3720020.550 424.95
   LOCATION L0000929     VOLUME   475241.911 3720001.225 425.12
   LOCATION L0000930     VOLUME   475256.623 3719981.899 424.79
   LOCATION L0000931     VOLUME   475271.335 3719962.574 424.48
   LOCATION L0000932     VOLUME   475286.047 3719943.249 424.12
   LOCATION L0000933     VOLUME   475300.759 3719923.924 423.90
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   LOCATION L0000934     VOLUME   475315.471 3719904.599 423.47
   LOCATION L0000935     VOLUME   475330.183 3719885.274 423.30
   LOCATION L0000936     VOLUME   475344.895 3719865.948 422.50
   LOCATION L0000937     VOLUME   475359.607 3719846.623 421.70
   LOCATION L0000938     VOLUME   475374.319 3719827.298 421.19
   LOCATION L0000939     VOLUME   475389.032 3719807.973 421.04
   LOCATION L0000940     VOLUME   475403.744 3719788.648 420.62
   LOCATION L0000941     VOLUME   475418.456 3719769.323 419.77
   LOCATION L0000942     VOLUME   475433.168 3719749.997 419.19
   LOCATION L0000943     VOLUME   475447.880 3719730.672 417.98
   LOCATION L0000944     VOLUME   475462.592 3719711.347 417.27
   LOCATION L0000945     VOLUME   475477.304 3719692.022 417.12
** END OF LINE VOLUME SOURCE ID = SLINE2
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0000862     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000863     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000864     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000865     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000866     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000867     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000868     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000869     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000870     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000871     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000872     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000873     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000874     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000875     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000876     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000877     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000878     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000879     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000880     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000881     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000882     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000883     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000884     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000885     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000886     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000887     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000888     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000889     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000890     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000891     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000892     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000893     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000894     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000895     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000896     0.0000154762      3.49     11.30      3.25
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   SRCPARAM L0000897     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000898     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000899     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000900     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000901     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000902     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000903     0.0000154762      3.49     11.30      3.25
** ----------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0000904     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000905     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000906     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000907     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000908     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000909     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000910     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000911     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000912     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000913     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000914     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000915     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000916     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000917     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000918     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000919     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000920     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000921     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000922     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000923     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000924     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000925     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000926     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000927     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000928     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000929     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000930     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000931     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000932     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000933     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000934     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000935     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000936     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000937     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000938     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000939     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000940     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000941     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000942     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000943     0.0000154762      3.49     11.30      3.25
   SRCPARAM L0000944     0.0000154762      3.49     11.30      3.25
```

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   SRCPARAM L0000945     0.0000154762      3.49     11.30      3.25
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED DIESELTOG.ROU
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   1 ALL 1ST DIESELTOG.AD\01H1GALL.PLT 31
   PLOTFILE   8 ALL 1ST DIESELTOG.AD\08H1GALL.PLT 32
   SUMMFILE DIESELTOG.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
```

```
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 *********************************
 *** SETUP Finishes Successfully ***
 *********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                         ***       07:49:40

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.
```

```
 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  TOGDSL

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:     84 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                 ;
Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.
```

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0000862	0	0.15476E-04	474909.7	3720511.5	420.5	3.49	11.30	3.25	YES	
L0000863	0	0.15476E-04	474924.4	3720492.1	420.1	3.49	11.30	3.25	YES	
L0000864	0	0.15476E-04	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES	
L0000865	0	0.15476E-04	474953.9	3720453.5	421.0	3.49	11.30	3.25	YES	
L0000866	0	0.15476E-04	474968.6	3720434.2	421.0	3.49	11.30	3.25	YES	
L0000867	0	0.15476E-04	474983.3	3720414.8	421.4	3.49	11.30	3.25	YES	
L0000868	0	0.15476E-04	474998.0	3720395.5	421.9	3.49	11.30	3.25	YES	
L0000869	0	0.15476E-04	475012.7	3720376.2	422.4	3.49	11.30	3.25	YES	
L0000870	0	0.15476E-04	475027.4	3720356.9	422.3	3.49	11.30	3.25	YES	
L0000871	0	0.15476E-04	475042.1	3720337.5	422.3	3.49	11.30	3.25	YES	

L0000872	0	0.15476E-04	475056.9	3720318.2	422.1	3.49	11.30	3.25 YES
L0000873	0	0.15476E-04	475071.6	3720298.9	422.2	3.49	11.30	3.25 YES
L0000874	0	0.15476E-04	475086.3	3720279.6	422.0	3.49	11.30	3.25 YES
L0000875	0	0.15476E-04	475101.0	3720260.2	422.1	3.49	11.30	3.25 YES
L0000876	0	0.15476E-04	475115.7	3720240.9	421.5	3.49	11.30	3.25 YES
L0000877	0	0.15476E-04	475130.4	3720221.6	421.3	3.49	11.30	3.25 YES
L0000878	0	0.15476E-04	475145.1	3720202.3	421.7	3.49	11.30	3.25 YES
L0000879	0	0.15476E-04	475159.8	3720182.9	422.2	3.49	11.30	3.25 YES
L0000880	0	0.15476E-04	475174.6	3720163.6	422.0	3.49	11.30	3.25 YES
L0000881	0	0.15476E-04	475189.3	3720144.3	422.6	3.49	11.30	3.25 YES
L0000882	0	0.15476E-04	475204.0	3720125.0	423.6	3.49	11.30	3.25 YES
L0000883	0	0.15476E-04	475218.7	3720105.6	424.6	3.49	11.30	3.25 YES
L0000884	0	0.15476E-04	475233.4	3720086.3	426.1	3.49	11.30	3.25 YES
L0000885	0	0.15476E-04	475248.1	3720067.0	427.3	3.49	11.30	3.25 YES
L0000886	0	0.15476E-04	475262.8	3720047.7	427.8	3.49	11.30	3.25 YES
L0000887	0	0.15476E-04	475277.5	3720028.3	427.4	3.49	11.30	3.25 YES
L0000888	0	0.15476E-04	475292.2	3720009.0	426.2	3.49	11.30	3.25 YES
L0000889	0	0.15476E-04	475307.0	3719989.7	426.3	3.49	11.30	3.25 YES
L0000890	0	0.15476E-04	475321.7	3719970.4	426.2	3.49	11.30	3.25 YES
L0000891	0	0.15476E-04	475336.4	3719951.0	425.9	3.49	11.30	3.25 YES
L0000892	0	0.15476E-04	475351.1	3719931.7	425.8	3.49	11.30	3.25 YES
L0000893	0	0.15476E-04	475365.8	3719912.4	425.7	3.49	11.30	3.25 YES
L0000894	0	0.15476E-04	475380.5	3719893.1	424.9	3.49	11.30	3.25 YES
L0000895	0	0.15476E-04	475395.2	3719873.7	424.3	3.49	11.30	3.25 YES
L0000896	0	0.15476E-04	475409.9	3719854.4	423.5	3.49	11.30	3.25 YES

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0000897	0	0.15476E-04	475424.7	3719835.1	423.1	3.49	11.30	3.25	YES	
L0000898	0	0.15476E-04	475439.4	3719815.8	422.5	3.49	11.30	3.25	YES	
L0000899	0	0.15476E-04	475454.1	3719796.4	421.8	3.49	11.30	3.25	YES	
L0000900	0	0.15476E-04	475468.8	3719777.1	421.7	3.49	11.30	3.25	YES	
L0000901	0	0.15476E-04	475483.5	3719757.8	420.9	3.49	11.30	3.25	YES	
L0000902	0	0.15476E-04	475498.2	3719738.5	420.3	3.49	11.30	3.25	YES	
L0000903	0	0.15476E-04	475512.9	3719719.1	420.2	3.49	11.30	3.25	YES	
L0000904	0	0.15476E-04	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES	
L0000905	0	0.15476E-04	474888.8	3720465.0	420.0	3.49	11.30	3.25	YES	
L0000906	0	0.15476E-04	474903.5	3720445.7	420.0	3.49	11.30	3.25	YES	
L0000907	0	0.15476E-04	474918.2	3720426.4	420.3	3.49	11.30	3.25	YES	
L0000908	0	0.15476E-04	474933.0	3720407.1	420.8	3.49	11.30	3.25	YES	
L0000909	0	0.15476E-04	474947.7	3720387.7	420.6	3.49	11.30	3.25	YES	
L0000910	0	0.15476E-04	474962.4	3720368.4	420.8	3.49	11.30	3.25	YES	
L0000911	0	0.15476E-04	474977.1	3720349.1	421.2	3.49	11.30	3.25	YES	

L0000912	0	0.15476E-04	474991.8	3720329.8	421.3	3.49	11.30	3.25 YES
L0000913	0	0.15476E-04	475006.5	3720310.4	421.2	3.49	11.30	3.25 YES
L0000914	0	0.15476E-04	475021.2	3720291.1	421.1	3.49	11.30	3.25 YES
L0000915	0	0.15476E-04	475035.9	3720271.8	421.2	3.49	11.30	3.25 YES
L0000916	0	0.15476E-04	475050.7	3720252.5	421.6	3.49	11.30	3.25 YES
L0000917	0	0.15476E-04	475065.4	3720233.1	421.2	3.49	11.30	3.25 YES
L0000918	0	0.15476E-04	475080.1	3720213.8	420.7	3.49	11.30	3.25 YES
L0000919	0	0.15476E-04	475094.8	3720194.5	420.0	3.49	11.30	3.25 YES
L0000920	0	0.15476E-04	475109.5	3720175.2	420.0	3.49	11.30	3.25 YES
L0000921	0	0.15476E-04	475124.2	3720155.8	420.6	3.49	11.30	3.25 YES
L0000922	0	0.15476E-04	475138.9	3720136.5	421.6	3.49	11.30	3.25 YES
L0000923	0	0.15476E-04	475153.6	3720117.2	421.4	3.49	11.30	3.25 YES
L0000924	0	0.15476E-04	475168.4	3720097.8	421.5	3.49	11.30	3.25 YES
L0000925	0	0.15476E-04	475183.1	3720078.5	422.2	3.49	11.30	3.25 YES
L0000926	0	0.15476E-04	475197.8	3720059.2	423.3	3.49	11.30	3.25 YES
L0000927	0	0.15476E-04	475212.5	3720039.9	424.8	3.49	11.30	3.25 YES
L0000928	0	0.15476E-04	475227.2	3720020.5	424.9	3.49	11.30	3.25 YES
L0000929	0	0.15476E-04	475241.9	3720001.2	425.1	3.49	11.30	3.25 YES
L0000930	0	0.15476E-04	475256.6	3719981.9	424.8	3.49	11.30	3.25 YES
L0000931	0	0.15476E-04	475271.3	3719962.6	424.5	3.49	11.30	3.25 YES
L0000932	0	0.15476E-04	475286.0	3719943.2	424.1	3.49	11.30	3.25 YES
L0000933	0	0.15476E-04	475300.8	3719923.9	423.9	3.49	11.30	3.25 YES
L0000934	0	0.15476E-04	475315.5	3719904.6	423.5	3.49	11.30	3.25 YES
L0000935	0	0.15476E-04	475330.2	3719885.3	423.3	3.49	11.30	3.25 YES
L0000936	0	0.15476E-04	475344.9	3719865.9	422.5	3.49	11.30	3.25 YES

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 L0000937         0   0.15476E-04  475359.6 3719846.6   421.7     3.49    11.30
3.25     YES
 L0000938         0   0.15476E-04  475374.3 3719827.3   421.2     3.49    11.30
3.25     YES
 L0000939         0   0.15476E-04  475389.0 3719808.0   421.0     3.49    11.30
3.25     YES
 L0000940         0   0.15476E-04  475403.7 3719788.6   420.6     3.49    11.30
3.25     YES
 L0000941         0   0.15476E-04  475418.5 3719769.3   419.8     3.49    11.30
3.25     YES
↑ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC              ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        07:49:40

                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 L0000942         0   0.15476E-04  475433.2 3719750.0   419.2     3.49    11.30
3.25     YES
 L0000943         0   0.15476E-04  475447.9 3719730.7   418.0     3.49    11.30
3.25     YES
 L0000944         0   0.15476E-04  475462.6 3719711.3   417.3     3.49    11.30
3.25     YES
 L0000945         0   0.15476E-04  475477.3 3719692.0   417.1     3.49    11.30
3.25     YES
↑ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC              ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        07:49:40

                                   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                             *** SOURCE IDs DEFINING SOURCE GROUPS
***
```

```
 SRCGROUP ID                                                SOURCE IDs
 -----------                                                ----------


  ALL        L0000862    , L0000863    , L0000864    , L0000865    , L0000866    ,
L0000867    , L0000868    , L0000869    ,

             L0000870    , L0000871    , L0000872    , L0000873    , L0000874    ,
L0000875    , L0000876    , L0000877    ,

             L0000878    , L0000879    , L0000880    , L0000881    , L0000882    ,
L0000883    , L0000884    , L0000885    ,

             L0000886    , L0000887    , L0000888    , L0000889    , L0000890    ,
L0000891    , L0000892    , L0000893    ,

             L0000894    , L0000895    , L0000896    , L0000897    , L0000898    ,
L0000899    , L0000900    , L0000901    ,

             L0000902    , L0000903    , L0000904    , L0000905    , L0000906    ,
L0000907    , L0000908    , L0000909    ,

             L0000910    , L0000911    , L0000912    , L0000913    , L0000914    ,
L0000915    , L0000916    , L0000917    ,

             L0000918    , L0000919    , L0000920    , L0000921    , L0000922    ,
L0000923    , L0000924    , L0000925    ,

             L0000926    , L0000927    , L0000928    , L0000929    , L0000930    ,
L0000931    , L0000932    , L0000933    ,

             L0000934    , L0000935    , L0000936    , L0000937    , L0000938    ,
L0000939    , L0000940    , L0000941    ,

             L0000942    , L0000943    , L0000944    , L0000945    ,
↟ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***       03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***       07:49:40

                                  PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                       *** SOURCE IDs DEFINED AS URBAN SOURCES
***

  URBAN ID   URBAN POP                                    SOURCE IDs
  --------   ---------                                    ----------
```

```
             2189641.   L0000862    , L0000863    , L0000864    , L0000865    ,
L0000866    , L0000867    , L0000868    ,
 L0000869    ,

             L0000870    , L0000871    , L0000872    , L0000873    , L0000874    ,
L0000875    , L0000876    , L0000877    ,

             L0000878    , L0000879    , L0000880    , L0000881    , L0000882    ,
L0000883    , L0000884    , L0000885    ,

             L0000886    , L0000887    , L0000888    , L0000889    , L0000890    ,
L0000891    , L0000892    , L0000893    ,

             L0000894    , L0000895    , L0000896    , L0000897    , L0000898    ,
L0000899    , L0000900    , L0000901    ,

             L0000902    , L0000903    , L0000904    , L0000905    , L0000906    ,
L0000907    , L0000908    , L0000909    ,

             L0000910    , L0000911    , L0000912    , L0000913    , L0000914    ,
L0000915    , L0000916    , L0000917    ,

             L0000918    , L0000919    , L0000920    , L0000921    , L0000922    ,
L0000923    , L0000924    , L0000925    ,

             L0000926    , L0000927    , L0000928    , L0000929    , L0000930    ,
L0000931    , L0000932    , L0000933    ,

             L0000934    , L0000935    , L0000936    , L0000937    , L0000938    ,
L0000939    , L0000940    , L0000941    ,

             L0000942    , L0000943    , L0000944    , L0000945    ,
↟ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                         ***        07:49:40

                                    PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                    (METERS)

     ( 475305.9, 3720344.0,     427.3,     742.0,       0.0);         ( 475307.5,
3720352.7,     428.8,     742.0,       0.0);
     ( 475308.7, 3720358.7,     430.1,     742.0,       0.0);         ( 475310.2,
3720364.6,     431.7,     742.0,       0.0);
     ( 475310.6, 3720371.0,     433.2,     742.0,       0.0);         ( 475296.4,
```

```
3720324.2,     426.2,     742.0,       0.0);
     ( 475303.9, 3720325.8,     426.6,     742.0,       0.0);         ( 475311.0,
3720326.6,     427.1,     742.0,       0.0);
     ( 475317.0, 3720327.4,     427.5,     742.0,       0.0);         ( 475299.5,
3720298.8,     426.0,     742.0,       0.0);
     ( 475307.9, 3720300.0,     426.4,     742.0,       0.0);         ( 475314.2,
3720301.2,     426.7,     742.0,       0.0);
     ( 475322.1, 3720301.2,     427.1,     742.0,       0.0);         ( 475344.7,
3720261.2,     432.2,     742.0,       0.0);
     ( 475345.5, 3720253.6,     432.5,     742.0,       0.0);         ( 475346.3,
3720248.5,     432.5,     742.0,       0.0);
     ( 475346.7, 3720241.3,     432.3,     742.0,       0.0);         ( 475303.5,
3720274.6,     426.9,     742.0,       0.0);
     ( 475311.0, 3720274.2,     427.3,     742.0,       0.0);         ( 475317.4,
3720276.2,     427.4,     742.0,       0.0);
     ( 475324.9, 3720276.6,     427.7,     742.0,       0.0);         ( 475305.5,
3720250.1,     428.3,     742.0,       0.0);
     ( 475313.4, 3720252.0,     428.9,     742.0,       0.0);         ( 475321.0,
3720251.6,     429.3,     742.0,       0.0);
     ( 475328.5, 3720252.8,     429.8,     742.0,       0.0);         ( 475339.9,
3720321.0,     430.1,     742.0,       0.0);
     ( 475347.8, 3720323.0,     431.6,     742.0,       0.0);         ( 475355.3,
3720322.6,     432.9,     742.0,       0.0);
     ( 475362.9, 3720323.8,     434.4,     742.0,       0.0);         ( 475368.9,
3720324.6,     435.6,     742.0,       0.0);
     ( 475367.4, 3720354.3,     435.4,     742.0,       0.0);         ( 475338.4,
3720350.8,     431.9,     742.0,       0.0);
     ( 475346.3, 3720352.7,     433.3,     742.0,       0.0);         ( 475353.8,
3720352.3,     433.8,     742.0,       0.0);
     ( 475361.4, 3720353.5,     434.7,     742.0,       0.0);         ( 475372.2,
3720387.2,     439.0,     742.0,       0.0);
     ( 475343.1, 3720383.7,     438.3,     742.0,       0.0);         ( 475351.1,
3720385.6,     438.0,     742.0,       0.0);
     ( 475358.6, 3720385.2,     438.3,     742.0,       0.0);         ( 475366.1,
3720386.4,     438.7,     742.0,       0.0);
     ( 475383.6, 3720372.2,     438.6,     742.0,       0.0);         ( 475391.5,
3720374.1,     438.9,     742.0,       0.0);
     ( 475399.0, 3720373.8,     439.3,     742.0,       0.0);         ( 475406.6,
3720374.9,     439.6,     742.0,       0.0);
     ( 475386.3, 3720344.8,     436.7,     742.0,       0.0);         ( 475394.2,
3720346.8,     437.9,     742.0,       0.0);
     ( 475401.7, 3720346.4,     439.4,     742.0,       0.0);         ( 475409.3,
3720347.6,     440.8,     742.0,       0.0);
     ( 475389.8, 3720319.8,     440.5,     742.0,       0.0);         ( 475397.8,
3720321.8,     441.2,     742.0,       0.0);
     ( 475405.3, 3720321.4,     442.1,     742.0,       0.0);         ( 475412.8,
3720322.6,     442.9,     742.0,       0.0);
     ( 475393.4, 3720294.1,     439.8,     742.0,       0.0);         ( 475401.3,
3720296.0,     440.6,     742.0,       0.0);
     ( 475408.9, 3720295.6,     441.1,     742.0,       0.0);         ( 475416.4,
```

3720296.8,   441.8,   742.0,   0.0);
     (475373.8, 3720263.6,   436.9,   742.0,   0.0);   (475374.6,
3720256.1,   437.0,   742.0,   0.0);
     (475375.4, 3720250.9,   436.8,   742.0,   0.0);   (475375.8,
3720243.8,   436.5,   742.0,   0.0);
     (475399.1, 3720264.8,   439.4,   742.0,   0.0);   (475399.9,
3720257.3,   439.4,   742.0,   0.0);
     (475400.7, 3720252.1,   439.1,   742.0,   0.0);   (475401.1,
3720245.0,   438.6,   742.0,   0.0);
     (475345.1, 3720307.9,   431.1,   742.0,   0.0);   (475346.3,
3720287.7,   431.4,   742.0,   0.0);
     (475369.3, 3720311.5,   436.2,   742.0,   0.0);   (475370.9,
3720292.5,   436.5,   742.0,   0.0);

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

               NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.

                                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                          (METERS/SEC)

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
                 Met Version: 16216
   Profile file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:   3171   Upper air station no.:   3190
                 Name: UNKNOWN   Name: UNKNOWN

                 Year: 2012   Year: 2012

 First 24 hours of scalar data
 YR MO DY JDY HR   H0   U*   W* DT/DZ ZICNV ZIMCH M-O LEN   Z0 BOWEN
ALBEDO REF WS   WD   HT REF TA   HT
- -
- - - - - - - - - - - - - - - - - - -
 12 01 01   1 01   -1.3 0.065 -9.000 -9.000 -999.   40.   18.2 0.23   2.69
1.00   0.40   78.   9.1 284.2   5.5
 12 01 01   1 02   -4.2 0.092 -9.000 -9.000 -999.   67.   16.0 0.23   2.69
1.00   0.90   69.   9.1 283.8   5.5
 12 01 01   1 03   -4.2 0.092 -9.000 -9.000 -999.   67.   16.0 0.23   2.69
1.00   0.90 286.   9.1 282.5   5.5
 12 01 01   1 04   -4.2 0.092 -9.000 -9.000 -999.   67.   16.0 0.23   2.69
1.00   0.90 348.   9.1 282.5   5.5
 12 01 01   1 05   -1.3 0.066 -9.000 -9.000 -999.   40.   18.2 0.23   2.69
1.00   0.40   17.   9.1 282.0   5.5
 12 01 01   1 06   -4.2 0.092 -9.000 -9.000 -999.   67.   16.0 0.23   2.69
1.00   0.90 161.   9.1 282.0   5.5
 12 01 01   1 07   -1.3 0.066 -9.000 -9.000 -999.   40.   18.2 0.23   2.69
1.00   0.40 273.   9.1 282.0   5.5
 12 01 01   1 08   -3.6 0.091 -9.000 -9.000 -999.   66.   18.3 0.23   2.69
0.54   0.90 113.   9.1 283.8   5.5
 12 01 01   1 09   39.6 0.087 0.358 0.016   40.   61.   -1.4 0.23   2.69
0.33   0.40 336.   9.1 285.9   5.5
 12 01 01   1 10 110.7 0.206 0.740 0.007 127. 225.   -6.9 0.23   2.69

```
0.25    1.30  158.    9.1  291.4    5.5
 12 01 01   1 11  161.7  0.105  1.203  0.005  374.   87.     -1.0  0.23   2.69
0.23    0.40   33.    9.1  297.0    5.5
 12 01 01   1 12  185.5  0.271  1.535  0.005  676.  339.     -9.3  0.23   2.69
0.22    1.80  313.    9.1  298.8    5.5
 12 01 01   1 13  183.9  0.219  1.828  0.005 1154.  247.     -4.9  0.23   2.69
0.22    1.30  250.    9.1  300.4    5.5
 12 01 01   1 14  156.6  0.266  1.869  0.005 1446.  330.    -10.4  0.23   2.69
0.23    1.80  217.    9.1  301.4    5.5
 12 01 01   1 15  104.7  0.256  1.677  0.005 1562.  311.    -13.8  0.23   2.69
0.27    1.80  248.    9.1  302.0    5.5
 12 01 01   1 16   32.7  0.319  1.147  0.005 1596.  433.    -85.9  0.23   2.69
0.36    2.70  235.    9.1  302.0    5.5
 12 01 01   1 17  -15.5  0.190 -9.000 -9.000 -999.  208.     39.6  0.23   2.69
0.63    1.80   46.    9.1  299.2    5.5
 12 01 01   1 18   -4.1  0.092 -9.000 -9.000 -999.   73.     16.2  0.23   2.69
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        07:49:40

                                   PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     L0000862    , L0000863
 , L0000864    , L0000865    , L0000866    ,
                L0000867    , L0000868    , L0000869    , L0000870    , L0000871
```

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 , L0000872    , L0000873    , L0000874    ,
                 L0000875    , L0000876    , L0000877    , L0000878    , L0000879
 , L0000880    , L0000881    , L0000882    ,
                 L0000883    , L0000884    , L0000885    , L0000886    , L0000887
 , L0000888    , L0000889    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                             ** CONC OF TOGDSL   IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
        475305.88   3720344.02        0.03678  (14113016)               475307.47
 3720352.74        0.03541  (14113016)
        475308.66   3720358.69        0.03441  (14113016)               475310.24
 3720364.64        0.03405  (14081619)
        475310.64   3720370.98        0.03387  (14081619)               475296.37
 3720324.20        0.04100  (14113016)
        475303.90   3720325.78        0.03939  (14113016)               475311.04
 3720326.58        0.03803  (14113016)
        475316.98   3720327.37        0.03693  (14113016)               475299.54
 3720298.82        0.04407  (14113016)
        475307.87   3720300.01        0.04215  (14113016)               475314.21
 3720301.20        0.04073  (14113016)
        475322.14   3720301.20        0.03928  (14113016)               475344.74
 3720261.16        0.04074  (13091419)
        475345.53   3720253.63        0.04134  (13091419)               475346.32
 3720248.47        0.04180  (15082920)
        475346.72   3720241.34        0.04261  (15082920)               475303.50
 3720274.64        0.04703  (14113016)
        475311.04   3720274.24        0.04532  (14113016)               475317.38
 3720276.23        0.04362  (14113016)
        475324.91   3720276.62        0.04201  (14113016)               475305.49
 3720250.06        0.05099  (14113016)
        475313.42   3720252.04        0.04851  (14113016)               475320.95
 3720251.65        0.04673  (14113016)
        475328.48   3720252.84        0.04478  (14113016)               475339.88
 3720321.02        0.03436  (14091419)
        475347.81   3720323.00        0.03453  (14091419)               475355.34
 3720322.61        0.03440  (14091419)
        475362.87   3720323.80        0.03398  (14091419)               475368.92
 3720324.59        0.03349  (14091419)
        475367.41   3720354.32        0.03151  (14081619)               475338.37
 3720350.76        0.03313  (14091419)
        475346.30   3720352.74        0.03275  (14081619)               475353.83
 3720352.35        0.03238  (14081619)
```

```
       475361.36   3720353.54        0.03191  (14081619)               475372.17
 3720387.23        0.03048  (12100118)
       475343.13   3720383.66        0.03215  (12100118)               475351.06
 3720385.64        0.03151  (12100118)
       475358.59   3720385.25        0.03119  (12100118)               475366.12
 3720386.44        0.03078  (12100118)
       475383.57   3720372.17        0.03063  (12100118)               475391.50
 3720374.15        0.03019  (12100118)
       475399.03   3720373.76        0.02989  (12100118)               475406.56
 3720374.95        0.02952  (12100118)
       475386.27   3720344.81        0.03129  (12100118)               475394.20
 3720346.79        0.03120  (12100118)
       475401.73   3720346.40        0.03110  (12100118)               475409.26
 3720347.59        0.03070  (12100118)
       475389.83   3720319.83        0.03310  (14083021)               475397.76
 3720321.81        0.03250  (14083021)
       475405.29   3720321.42        0.03201  (14083021)               475412.82
 3720322.61        0.03157  (12081622)
       475393.40   3720294.06        0.03456  (14082719)               475401.33
 3720296.04        0.03390  (15060905)
       475408.86   3720295.65        0.03344  (15060905)               475416.39
 3720296.84        0.03287  (15060905)
       475373.78   3720263.64        0.03821  (12080119)               475374.57
 3720256.11        0.03887  (12080119)
       475375.36   3720250.95        0.03923  (12080119)               475375.76
 3720243.82        0.03975  (12080119)
       475399.15   3720264.83        0.03643  (12080119)               475399.94
 3720257.30        0.03696  (12080119)
       475400.73   3720252.14        0.03730  (12080119)               475401.13
 3720245.01        0.03781  (12080119)
       475345.13   3720307.94        0.03593  (14091419)               475346.32
 3720287.72        0.03761  (14091419)
       475369.32   3720311.51        0.03424  (14091419)               475370.90
 3720292.48        0.03567  (12080119)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:49:40

                                  PAGE  11
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                              *** THE   1ST HIGHEST  8-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                 INCLUDING SOURCE(S):     L0000862    , L0000863
 , L0000864    , L0000865    , L0000866    ,
                  L0000867    , L0000868    , L0000869    , L0000870    , L0000871
 , L0000872    , L0000873    , L0000874    ,
                  L0000875    , L0000876    , L0000877    , L0000878    , L0000879
 , L0000880    , L0000881    , L0000882    ,
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L0000883 , L0000884 , L0000885 , L0000886 , L0000887
, L0000888 , L0000889 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS
***

** CONC OF TOGDSL IN MICROGRAMS/M**3
**

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
475305.88	3720344.02	0.03046	(15122224)	475307.47	3720352.74	0.03094	(15122224)
475308.66	3720358.69	0.03091	(15122224)	475310.24	3720364.64	0.03067	(15122224)
475310.64	3720370.98	0.03014	(15122224)	475296.37	3720324.20	0.03025c	(14112608)
475303.90	3720325.78	0.02924c	(14112608)	475311.04	3720326.58	0.02986	(15122224)
475316.98	3720327.37	0.03112	(15122224)	475299.54	3720298.82	0.03248c	(14112608)
475307.87	3720300.01	0.03128c	(14112608)	475314.21	3720301.20	0.03039c	(14112608)
475322.14	3720301.20	0.03091	(15122224)	475344.74	3720261.16	0.03384	(14111124)
475345.53	3720253.63	0.03441	(14111124)	475346.32	3720248.47	0.03474	(14111124)
475346.72	3720241.34	0.03530	(14111124)	475303.50	3720274.64	0.03465c	(14112608)
475311.04	3720274.24	0.03558	(15122224)	475317.38	3720276.23	0.03487	(13011024)
475324.91	3720276.62	0.03438	(15122224)	475305.49	3720250.06	0.03949	(15122224)
475313.42	3720252.04	0.03855	(15122224)	475320.95	3720251.65	0.03765	(15122224)
475328.48	3720252.84	0.03663	(15122224)	475339.88	3720321.02	0.03096	(15122224)
475347.81	3720323.00	0.03033	(15122224)	475355.34	3720322.61	0.02983	(15121108)
475362.87	3720323.80	0.02935	(15121108)	475368.92	3720324.59	0.02877	(15121108)
475367.41	3720354.32	0.02767	(15121108)	475338.37	3720350.76	0.02963	(15122224)
475346.30	3720352.74	0.02893	(15122224)	475353.83	3720352.35	0.02855	(15121108)
475361.36	3720353.54	0.02808	(15121108)	475372.17	3720387.23	0.02551	(15122424)
475343.13	3720383.66	0.02683	(15122424)	475351.06			

```
 3720385.64        0.02650  (15122424)
       475358.59   3720385.25        0.02617  (15122424)                475366.12
 3720386.44        0.02581  (15122424)
       475383.57   3720372.17        0.02557  (15122424)                475391.50
 3720374.15        0.02519  (15122424)
       475399.03   3720373.76        0.02491  (15122424)                475406.56
 3720374.95        0.02458  (15122424)
       475386.27   3720344.81        0.02693  (15121108)                475394.20
 3720346.79        0.02615  (15121108)
       475401.73   3720346.40        0.02556  (15122424)                475409.26
 3720347.59        0.02500  (15122424)
       475389.83   3720319.83        0.02656  (15122424)                475397.76
 3720321.81        0.02602  (15122424)
       475405.29   3720321.42        0.02547  (15122424)                475412.82
 3720322.61        0.02490  (15122424)
       475393.40   3720294.06        0.02749  (15122424)                475401.33
 3720296.04        0.02692  (15122424)
       475408.86   3720295.65        0.02649  (15122424)                475416.39
 3720296.84        0.02596  (15122424)
       475373.78   3720263.64        0.03124  (14111124)                475374.57
 3720256.11        0.03170  (14111124)
       475375.36   3720250.95        0.03202  (14111124)                475375.76
 3720243.82        0.03251  (14111124)
       475399.15   3720264.83        0.02883  (14111124)                475399.94
 3720257.30        0.02927  (14111124)
       475400.73   3720252.14        0.02962  (14111124)                475401.13
 3720245.01        0.03016  (14111124)
       475345.13   3720307.94        0.03148  (15122224)                475346.32
 3720287.72        0.03228  (15122224)
       475369.32   3720311.51        0.02907  (15121108)                475370.90
 3720292.48        0.02965  (15121108)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\DIESELTOG\DIESELTOG.ISC               ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:49:40

                                  PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                  ** CONC OF TOGDSL   IN MICROGRAMS/M**3
             **

                                                    DATE
                                        NETWORK
GROUP ID                           AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
```

- -

ALL HIGH 1ST HIGH VALUE IS 0.05099 ON 14113016: AT (475305.49, 3720250.06, 428.34, 742.00, 0.00) DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF TOGDSL IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE GRID-ID
ALL HIGH 1ST HIGH VALUE IS	0.03949	ON 15122224:	AT (475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** Message Summary : AERMOD Model Execution ***

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 --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of         1763 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of          884 Calm Hours Identified

 A Total of          879 Missing Hours Identified (  2.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
** Lakes Environmental AERMOD MPI
**
***************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\PM10\PM10.ADI
**
***************************************
**
**
***************************************
** AERMOD CONTROL PATHWAY
***************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\PM10\PM10.ISC
   MODELOPT DFAULT CONC
   AVERTIME 24 ANNUAL
   URBANOPT 2189641
```

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   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL PM10.ERR
CO FINISHED
**
************************************
** AERMOD SOURCE PATHWAY
************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ---------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.062785
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ---------------------------------------------------------------------
   LOCATION L0000946     VOLUME   474909.733 3720511.459 420.52
   LOCATION L0000947     VOLUME   474924.446 3720492.134 420.06
   LOCATION L0000948     VOLUME   474939.158 3720472.809 420.76
   LOCATION L0000949     VOLUME   474953.870 3720453.484 421.00
   LOCATION L0000950     VOLUME   474968.582 3720434.158 421.00
   LOCATION L0000951     VOLUME   474983.294 3720414.833 421.45
   LOCATION L0000952     VOLUME   474998.006 3720395.508 421.94
   LOCATION L0000953     VOLUME   475012.718 3720376.183 422.43
   LOCATION L0000954     VOLUME   475027.430 3720356.858 422.33
   LOCATION L0000955     VOLUME   475042.142 3720337.533 422.29
   LOCATION L0000956     VOLUME   475056.854 3720318.207 422.07
   LOCATION L0000957     VOLUME   475071.566 3720298.882 422.17
   LOCATION L0000958     VOLUME   475086.278 3720279.557 422.00
   LOCATION L0000959     VOLUME   475100.990 3720260.232 422.05
   LOCATION L0000960     VOLUME   475115.702 3720240.907 421.50
   LOCATION L0000961     VOLUME   475130.414 3720221.582 421.26
   LOCATION L0000962     VOLUME   475145.126 3720202.256 421.72
   LOCATION L0000963     VOLUME   475159.839 3720182.931 422.19
   LOCATION L0000964     VOLUME   475174.551 3720163.606 422.00
   LOCATION L0000965     VOLUME   475189.263 3720144.281 422.63
   LOCATION L0000966     VOLUME   475203.975 3720124.956 423.61
   LOCATION L0000967     VOLUME   475218.687 3720105.631 424.59
   LOCATION L0000968     VOLUME   475233.399 3720086.305 426.09
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   LOCATION L0000969     VOLUME   475248.111 3720066.980 427.28
   LOCATION L0000970     VOLUME   475262.823 3720047.655 427.77
   LOCATION L0000971     VOLUME   475277.535 3720028.330 427.37
   LOCATION L0000972     VOLUME   475292.247 3720009.005 426.19
   LOCATION L0000973     VOLUME   475306.959 3719989.680 426.27
   LOCATION L0000974     VOLUME   475321.671 3719970.354 426.21
   LOCATION L0000975     VOLUME   475336.383 3719951.029 425.87
   LOCATION L0000976     VOLUME   475351.095 3719931.704 425.76
   LOCATION L0000977     VOLUME   475365.807 3719912.379 425.66
   LOCATION L0000978     VOLUME   475380.519 3719893.054 424.87
   LOCATION L0000979     VOLUME   475395.232 3719873.729 424.30
   LOCATION L0000980     VOLUME   475409.944 3719854.403 423.49
   LOCATION L0000981     VOLUME   475424.656 3719835.078 423.13
   LOCATION L0000982     VOLUME   475439.368 3719815.753 422.54
   LOCATION L0000983     VOLUME   475454.080 3719796.428 421.82
   LOCATION L0000984     VOLUME   475468.792 3719777.103 421.67
   LOCATION L0000985     VOLUME   475483.504 3719757.778 420.86
   LOCATION L0000986     VOLUME   475498.216 3719738.452 420.26
   LOCATION L0000987     VOLUME   475512.928 3719719.127 420.21
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.062785
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0000988     VOLUME   474874.109 3720484.354 420.00
   LOCATION L0000989     VOLUME   474888.821 3720465.029 420.00
   LOCATION L0000990     VOLUME   474903.533 3720445.703 420.00
   LOCATION L0000991     VOLUME   474918.245 3720426.378 420.28
   LOCATION L0000992     VOLUME   474932.958 3720407.053 420.77
   LOCATION L0000993     VOLUME   474947.670 3720387.728 420.55
   LOCATION L0000994     VOLUME   474962.382 3720368.403 420.75
   LOCATION L0000995     VOLUME   474977.094 3720349.078 421.24
   LOCATION L0000996     VOLUME   474991.806 3720329.752 421.34
   LOCATION L0000997     VOLUME   475006.518 3720310.427 421.18
   LOCATION L0000998     VOLUME   475021.230 3720291.102 421.12
   LOCATION L0000999     VOLUME   475035.942 3720271.777 421.20
   LOCATION L0001000     VOLUME   475050.654 3720252.452 421.61
   LOCATION L0001001     VOLUME   475065.366 3720233.127 421.24
   LOCATION L0001002     VOLUME   475080.078 3720213.801 420.73
   LOCATION L0001003     VOLUME   475094.790 3720194.476 420.00
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   LOCATION L0001004     VOLUME   475109.502 3720175.151 420.00
   LOCATION L0001005     VOLUME   475124.214 3720155.826 420.58
   LOCATION L0001006     VOLUME   475138.926 3720136.501 421.63
   LOCATION L0001007     VOLUME   475153.638 3720117.176 421.45
   LOCATION L0001008     VOLUME   475168.351 3720097.850 421.51
   LOCATION L0001009     VOLUME   475183.063 3720078.525 422.22
   LOCATION L0001010     VOLUME   475197.775 3720059.200 423.31
   LOCATION L0001011     VOLUME   475212.487 3720039.875 424.79
   LOCATION L0001012     VOLUME   475227.199 3720020.550 424.95
   LOCATION L0001013     VOLUME   475241.911 3720001.225 425.12
   LOCATION L0001014     VOLUME   475256.623 3719981.899 424.79
   LOCATION L0001015     VOLUME   475271.335 3719962.574 424.48
   LOCATION L0001016     VOLUME   475286.047 3719943.249 424.12
   LOCATION L0001017     VOLUME   475300.759 3719923.924 423.90
   LOCATION L0001018     VOLUME   475315.471 3719904.599 423.47
   LOCATION L0001019     VOLUME   475330.183 3719885.274 423.30
   LOCATION L0001020     VOLUME   475344.895 3719865.948 422.50
   LOCATION L0001021     VOLUME   475359.607 3719846.623 421.70
   LOCATION L0001022     VOLUME   475374.319 3719827.298 421.19
   LOCATION L0001023     VOLUME   475389.032 3719807.973 421.04
   LOCATION L0001024     VOLUME   475403.744 3719788.648 420.62
   LOCATION L0001025     VOLUME   475418.456 3719769.323 419.77
   LOCATION L0001026     VOLUME   475433.168 3719749.997 419.19
   LOCATION L0001027     VOLUME   475447.880 3719730.672 417.98
   LOCATION L0001028     VOLUME   475462.592 3719711.347 417.27
   LOCATION L0001029     VOLUME   475477.304 3719692.022 417.12
** END OF LINE VOLUME SOURCE ID = SLINE2
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0000946     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000947     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000948     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000949     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000950     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000951     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000952     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000953     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000954     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000955     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000956     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000957     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000958     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000959     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000960     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000961     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000962     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000963     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000964     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000965     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000966     0.001494881      3.49     11.30      3.25
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   SRCPARAM L0000967     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000968     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000969     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000970     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000971     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000972     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000973     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000974     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000975     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000976     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000977     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000978     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000979     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000980     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000981     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000982     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000983     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000984     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000985     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000986     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000987     0.001494881      3.49     11.30      3.25
** ----------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0000988     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000989     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000990     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000991     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000992     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000993     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000994     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000995     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000996     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000997     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000998     0.001494881      3.49     11.30      3.25
   SRCPARAM L0000999     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001000     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001001     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001002     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001003     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001004     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001005     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001006     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001007     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001008     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001009     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001010     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001011     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001012     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001013     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001014     0.001494881      3.49     11.30      3.25
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   SRCPARAM L0001015     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001016     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001017     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001018     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001019     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001020     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001021     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001022     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001023     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001024     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001025     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001026     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001027     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001028     0.001494881      3.49     11.30      3.25
   SRCPARAM L0001029     0.001494881      3.49     11.30      3.25
** ----------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED PM10.ROU
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
```

```
   RECTABLE 24 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   24 ALL 1ST PM10.AD\24H1GALL.PLT 31
   PLOTFILE   ANNUAL ALL PM10.AD\AN00GALL.PLT 32
   SUMMFILE PM10.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 *********************************
 *** SETUP Finishes Successfully ***
 *********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM10\PM10.ISC                        ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:53:00

                                  PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
```

```
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_10

 **Model Calculates  1 Short Term Average(s) of:  24-HR
     and Calculates ANNUAL Averages

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     84 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
```

Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ; Decay
Coef. =   0.000   ; Rot. Angle =   0.0
                  Emission Units = GRAMS/SEC   ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Input Runstream File: aermod.inp

 **Output Print File: aermod.out

 **Detailed Error/Message File: PM10.ERR

 **File for Summary of Results: PM10.SUM

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE   BASE   RELEASE   INIT.
INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC)   X   Y   ELEV.   HEIGHT   SY
SZ   SOURCE SCALAR VARY
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)   BY
 -
- - - - - - - - - - - - - - - - - - - -

 L0000946   0   0.14949E-02 474909.7 3720511.5   420.5   3.49   11.30
3.25   YES
 L0000947   0   0.14949E-02 474924.4 3720492.1   420.1   3.49   11.30
3.25   YES
 L0000948   0   0.14949E-02 474939.2 3720472.8   420.8   3.49   11.30

3.25 YES
L0000949 0 0.14949E-02 474953.9 3720453.5 421.0 3.49 11.30
3.25 YES
L0000950 0 0.14949E-02 474968.6 3720434.2 421.0 3.49 11.30
3.25 YES
L0000951 0 0.14949E-02 474983.3 3720414.8 421.4 3.49 11.30
3.25 YES
L0000952 0 0.14949E-02 474998.0 3720395.5 421.9 3.49 11.30
3.25 YES
L0000953 0 0.14949E-02 475012.7 3720376.2 422.4 3.49 11.30
3.25 YES
L0000954 0 0.14949E-02 475027.4 3720356.9 422.3 3.49 11.30
3.25 YES
L0000955 0 0.14949E-02 475042.1 3720337.5 422.3 3.49 11.30
3.25 YES
L0000956 0 0.14949E-02 475056.9 3720318.2 422.1 3.49 11.30
3.25 YES
L0000957 0 0.14949E-02 475071.6 3720298.9 422.2 3.49 11.30
3.25 YES
L0000958 0 0.14949E-02 475086.3 3720279.6 422.0 3.49 11.30
3.25 YES
L0000959 0 0.14949E-02 475101.0 3720260.2 422.1 3.49 11.30
3.25 YES
L0000960 0 0.14949E-02 475115.7 3720240.9 421.5 3.49 11.30
3.25 YES
L0000961 0 0.14949E-02 475130.4 3720221.6 421.3 3.49 11.30
3.25 YES
L0000962 0 0.14949E-02 475145.1 3720202.3 421.7 3.49 11.30
3.25 YES
L0000963 0 0.14949E-02 475159.8 3720182.9 422.2 3.49 11.30
3.25 YES
L0000964 0 0.14949E-02 475174.6 3720163.6 422.0 3.49 11.30
3.25 YES
L0000965 0 0.14949E-02 475189.3 3720144.3 422.6 3.49 11.30
3.25 YES
L0000966 0 0.14949E-02 475204.0 3720125.0 423.6 3.49 11.30
3.25 YES
L0000967 0 0.14949E-02 475218.7 3720105.6 424.6 3.49 11.30
3.25 YES
L0000968 0 0.14949E-02 475233.4 3720086.3 426.1 3.49 11.30
3.25 YES
L0000969 0 0.14949E-02 475248.1 3720067.0 427.3 3.49 11.30
3.25 YES
L0000970 0 0.14949E-02 475262.8 3720047.7 427.8 3.49 11.30
3.25 YES
L0000971 0 0.14949E-02 475277.5 3720028.3 427.4 3.49 11.30
3.25 YES
L0000972 0 0.14949E-02 475292.2 3720009.0 426.2 3.49 11.30
3.25 YES
L0000973 0 0.14949E-02 475307.0 3719989.7 426.3 3.49 11.30

3.25   YES
 L0000974   0   0.14949E-02 475321.7 3719970.4   426.2   3.49   11.30
3.25   YES
 L0000975   0   0.14949E-02 475336.4 3719951.0   425.9   3.49   11.30
3.25   YES
 L0000976   0   0.14949E-02 475351.1 3719931.7   425.8   3.49   11.30
3.25   YES
 L0000977   0   0.14949E-02 475365.8 3719912.4   425.7   3.49   11.30
3.25   YES
 L0000978   0   0.14949E-02 475380.5 3719893.1   424.9   3.49   11.30
3.25   YES
 L0000979   0   0.14949E-02 475395.2 3719873.7   424.3   3.49   11.30
3.25   YES
 L0000980   0   0.14949E-02 475409.9 3719854.4   423.5   3.49   11.30
3.25   YES
 L0000981   0   0.14949E-02 475424.7 3719835.1   423.1   3.49   11.30
3.25   YES
 L0000982   0   0.14949E-02 475439.4 3719815.8   422.5   3.49   11.30
3.25   YES
 L0000983   0   0.14949E-02 475454.1 3719796.4   421.8   3.49   11.30
3.25   YES
 L0000984   0   0.14949E-02 475468.8 3719777.1   421.7   3.49   11.30
3.25   YES
 L0000985   0   0.14949E-02 475483.5 3719757.8   420.9   3.49   11.30
3.25   YES

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE   BASE   RELEASE   INIT.
INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC)   X   Y   ELEV.   HEIGHT   SY
SZ   SOURCE SCALAR VARY
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)   BY
 -
- -

 L0000986   0   0.14949E-02 475498.2 3719738.5   420.3   3.49   11.30
3.25   YES
 L0000987   0   0.14949E-02 475512.9 3719719.1   420.2   3.49   11.30
3.25   YES
 L0000988   0   0.14949E-02 474874.1 3720484.4   420.0   3.49   11.30

3.25 YES
L0000989 0 0.14949E-02 474888.8 3720465.0 420.0 3.49 11.30
3.25 YES
L0000990 0 0.14949E-02 474903.5 3720445.7 420.0 3.49 11.30
3.25 YES
L0000991 0 0.14949E-02 474918.2 3720426.4 420.3 3.49 11.30
3.25 YES
L0000992 0 0.14949E-02 474933.0 3720407.1 420.8 3.49 11.30
3.25 YES
L0000993 0 0.14949E-02 474947.7 3720387.7 420.6 3.49 11.30
3.25 YES
L0000994 0 0.14949E-02 474962.4 3720368.4 420.8 3.49 11.30
3.25 YES
L0000995 0 0.14949E-02 474977.1 3720349.1 421.2 3.49 11.30
3.25 YES
L0000996 0 0.14949E-02 474991.8 3720329.8 421.3 3.49 11.30
3.25 YES
L0000997 0 0.14949E-02 475006.5 3720310.4 421.2 3.49 11.30
3.25 YES
L0000998 0 0.14949E-02 475021.2 3720291.1 421.1 3.49 11.30
3.25 YES
L0000999 0 0.14949E-02 475035.9 3720271.8 421.2 3.49 11.30
3.25 YES
L0001000 0 0.14949E-02 475050.7 3720252.5 421.6 3.49 11.30
3.25 YES
L0001001 0 0.14949E-02 475065.4 3720233.1 421.2 3.49 11.30
3.25 YES
L0001002 0 0.14949E-02 475080.1 3720213.8 420.7 3.49 11.30
3.25 YES
L0001003 0 0.14949E-02 475094.8 3720194.5 420.0 3.49 11.30
3.25 YES
L0001004 0 0.14949E-02 475109.5 3720175.2 420.0 3.49 11.30
3.25 YES
L0001005 0 0.14949E-02 475124.2 3720155.8 420.6 3.49 11.30
3.25 YES
L0001006 0 0.14949E-02 475138.9 3720136.5 421.6 3.49 11.30
3.25 YES
L0001007 0 0.14949E-02 475153.6 3720117.2 421.4 3.49 11.30
3.25 YES
L0001008 0 0.14949E-02 475168.4 3720097.8 421.5 3.49 11.30
3.25 YES
L0001009 0 0.14949E-02 475183.1 3720078.5 422.2 3.49 11.30
3.25 YES
L0001010 0 0.14949E-02 475197.8 3720059.2 423.3 3.49 11.30
3.25 YES
L0001011 0 0.14949E-02 475212.5 3720039.9 424.8 3.49 11.30
3.25 YES
L0001012 0 0.14949E-02 475227.2 3720020.5 424.9 3.49 11.30
3.25 YES
L0001013 0 0.14949E-02 475241.9 3720001.2 425.1 3.49 11.30

3.25   YES
 L0001014   0   0.14949E-02 475256.6 3719981.9   424.8   3.49   11.30
3.25   YES
 L0001015   0   0.14949E-02 475271.3 3719962.6   424.5   3.49   11.30
3.25   YES
 L0001016   0   0.14949E-02 475286.0 3719943.2   424.1   3.49   11.30
3.25   YES
 L0001017   0   0.14949E-02 475300.8 3719923.9   423.9   3.49   11.30
3.25   YES
 L0001018   0   0.14949E-02 475315.5 3719904.6   423.5   3.49   11.30
3.25   YES
 L0001019   0   0.14949E-02 475330.2 3719885.3   423.3   3.49   11.30
3.25   YES
 L0001020   0   0.14949E-02 475344.9 3719865.9   422.5   3.49   11.30
3.25   YES
 L0001021   0   0.14949E-02 475359.6 3719846.6   421.7   3.49   11.30
3.25   YES
 L0001022   0   0.14949E-02 475374.3 3719827.3   421.2   3.49   11.30
3.25   YES
 L0001023   0   0.14949E-02 475389.0 3719808.0   421.0   3.49   11.30
3.25   YES
 L0001024   0   0.14949E-02 475403.7 3719788.6   420.6   3.49   11.30
3.25   YES
 L0001025   0   0.14949E-02 475418.5 3719769.3   419.8   3.49   11.30
3.25   YES

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE   BASE   RELEASE   INIT.
INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC)   X   Y   ELEV.   HEIGHT   SY
SZ   SOURCE SCALAR VARY
     ID   CATS.   (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)   BY
 -
- -

 L0001026   0   0.14949E-02 475433.2 3719750.0   419.2   3.49   11.30
3.25   YES
 L0001027   0   0.14949E-02 475447.9 3719730.7   418.0   3.49   11.30
3.25   YES
 L0001028   0   0.14949E-02 475462.6 3719711.3   417.3   3.49   11.30

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                      *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

  ALL   L0000946   , L0000947   , L0000948   , L0000949   , L0000950   ,
L0000951   , L0000952   , L0000953   ,

             L0000954   , L0000955   , L0000956   , L0000957   , L0000958   ,
L0000959   , L0000960   , L0000961   ,

             L0000962   , L0000963   , L0000964   , L0000965   , L0000966   ,
L0000967   , L0000968   , L0000969   ,

             L0000970   , L0000971   , L0000972   , L0000973   , L0000974   ,
L0000975   , L0000976   , L0000977   ,

             L0000978   , L0000979   , L0000980   , L0000981   , L0000982   ,
L0000983   , L0000984   , L0000985   ,

             L0000986   , L0000987   , L0000988   , L0000989   , L0000990   ,
L0000991   , L0000992   , L0000993   ,

             L0000994   , L0000995   , L0000996   , L0000997   , L0000998   ,
L0000999   , L0001000   , L0001001   ,

             L0001002   , L0001003   , L0001004   , L0001005   , L0001006   ,
L0001007   , L0001008   , L0001009   ,

             L0001010   , L0001011   , L0001012   , L0001013   , L0001014   ,
L0001015   , L0001016   , L0001017   ,

             L0001018   , L0001019   , L0001020   , L0001021   , L0001022   ,
L0001023   , L0001024   , L0001025   ,

             L0001026   , L0001027   , L0001028   , L0001029   ,

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                          *** SOURCE IDs DEFINED AS URBAN SOURCES
***

  URBAN ID   URBAN POP   SOURCE IDs
  --------   ---------   ----------

              2189641.   L0000946   , L0000947   , L0000948   , L0000949   ,
L0000950   , L0000951   , L0000952   ,
 L0000953   ,

              L0000954   , L0000955   , L0000956   , L0000957   , L0000958   ,
L0000959   , L0000960   , L0000961   ,

              L0000962   , L0000963   , L0000964   , L0000965   , L0000966   ,
L0000967   , L0000968   , L0000969   ,

              L0000970   , L0000971   , L0000972   , L0000973   , L0000974   ,
L0000975   , L0000976   , L0000977   ,

              L0000978   , L0000979   , L0000980   , L0000981   , L0000982   ,
L0000983   , L0000984   , L0000985   ,

              L0000986   , L0000987   , L0000988   , L0000989   , L0000990   ,
L0000991   , L0000992   , L0000993   ,

              L0000994   , L0000995   , L0000996   , L0000997   , L0000998   ,
L0000999   , L0001000   , L0001001   ,

              L0001002   , L0001003   , L0001004   , L0001005   , L0001006   ,
L0001007   , L0001008   , L0001009   ,

              L0001010   , L0001011   , L0001012   , L0001013   , L0001014   ,
L0001015   , L0001016   , L0001017   ,

              L0001018   , L0001019   , L0001020   , L0001021   , L0001022   ,
L0001023   , L0001024   , L0001025   ,

              L0001026   , L0001027   , L0001028   , L0001029   ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(475305.9, 3720344.0, 427.3, 742.0, 0.0); (475307.5, 3720352.7, 428.8, 742.0, 0.0);
(475308.7, 3720358.7, 430.1, 742.0, 0.0); (475310.2, 3720364.6, 431.7, 742.0, 0.0);
(475310.6, 3720371.0, 433.2, 742.0, 0.0); (475296.4, 3720324.2, 426.2, 742.0, 0.0);
(475303.9, 3720325.8, 426.6, 742.0, 0.0); (475311.0, 3720326.6, 427.1, 742.0, 0.0);
(475317.0, 3720327.4, 427.5, 742.0, 0.0); (475299.5, 3720298.8, 426.0, 742.0, 0.0);
(475307.9, 3720300.0, 426.4, 742.0, 0.0); (475314.2, 3720301.2, 426.7, 742.0, 0.0);
(475322.1, 3720301.2, 427.1, 742.0, 0.0); (475344.7, 3720261.2, 432.2, 742.0, 0.0);
(475345.5, 3720253.6, 432.5, 742.0, 0.0); (475346.3, 3720248.5, 432.5, 742.0, 0.0);
(475346.7, 3720241.3, 432.3, 742.0, 0.0); (475303.5, 3720274.6, 426.9, 742.0, 0.0);
(475311.0, 3720274.2, 427.3, 742.0, 0.0); (475317.4, 3720276.2, 427.4, 742.0, 0.0);
(475324.9, 3720276.6, 427.7, 742.0, 0.0); (475305.5, 3720250.1, 428.3, 742.0, 0.0);
(475313.4, 3720252.0, 428.9, 742.0, 0.0); (475321.0, 3720251.6, 429.3, 742.0, 0.0);
(475328.5, 3720252.8, 429.8, 742.0, 0.0); (475339.9, 3720321.0, 430.1, 742.0, 0.0);
(475347.8, 3720323.0, 431.6, 742.0, 0.0); (475355.3, 3720322.6, 432.9, 742.0, 0.0);
(475362.9, 3720323.8, 434.4, 742.0, 0.0); (475368.9, 3720324.6, 435.6, 742.0, 0.0);
(475367.4, 3720354.3, 435.4, 742.0, 0.0); (475338.4, 3720350.8, 431.9, 742.0, 0.0);
(475346.3, 3720352.7, 433.3, 742.0, 0.0); (475353.8, 3720352.3, 433.8, 742.0, 0.0);
(475361.4, 3720353.5, 434.7, 742.0, 0.0); (475372.2, 3720387.2, 439.0, 742.0, 0.0);
(475343.1, 3720383.7, 438.3, 742.0, 0.0); (475351.1, 3720385.6, 438.0, 742.0, 0.0);
(475358.6, 3720385.2, 438.3, 742.0, 0.0); (475366.1, 3720386.4, 438.7, 742.0, 0.0);

```
     ( 475383.6, 3720372.2,     438.6,     742.0,       0.0);         ( 475391.5,
3720374.1,     438.9,     742.0,       0.0);
     ( 475399.0, 3720373.8,     439.3,     742.0,       0.0);         ( 475406.6,
3720374.9,     439.6,     742.0,       0.0);
     ( 475386.3, 3720344.8,     436.7,     742.0,       0.0);         ( 475394.2,
3720346.8,     437.9,     742.0,       0.0);
     ( 475401.7, 3720346.4,     439.4,     742.0,       0.0);         ( 475409.3,
3720347.6,     440.8,     742.0,       0.0);
     ( 475389.8, 3720319.8,     440.5,     742.0,       0.0);         ( 475397.8,
3720321.8,     441.2,     742.0,       0.0);
     ( 475405.3, 3720321.4,     442.1,     742.0,       0.0);         ( 475412.8,
3720322.6,     442.9,     742.0,       0.0);
     ( 475393.4, 3720294.1,     439.8,     742.0,       0.0);         ( 475401.3,
3720296.0,     440.6,     742.0,       0.0);
     ( 475408.9, 3720295.6,     441.1,     742.0,       0.0);         ( 475416.4,
3720296.8,     441.8,     742.0,       0.0);
     ( 475373.8, 3720263.6,     436.9,     742.0,       0.0);         ( 475374.6,
3720256.1,     437.0,     742.0,       0.0);
     ( 475375.4, 3720250.9,     436.8,     742.0,       0.0);         ( 475375.8,
3720243.8,     436.5,     742.0,       0.0);
     ( 475399.1, 3720264.8,     439.4,     742.0,       0.0);         ( 475399.9,
3720257.3,     439.4,     742.0,       0.0);
     ( 475400.7, 3720252.1,     439.1,     742.0,       0.0);         ( 475401.1,
3720245.0,     438.6,     742.0,       0.0);
     ( 475345.1, 3720307.9,     431.1,     742.0,       0.0);         ( 475346.3,
3720287.7,     431.4,     742.0,       0.0);
     ( 475369.3, 3720311.5,     436.2,     742.0,       0.0);         ( 475370.9,
3720292.5,     436.5,     742.0,       0.0);
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM10\PM10.ISC                        ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:53:00

                                  PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                              (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
```

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           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                    *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                          (METERS/SEC)

                                                  1.54,   3.09,   5.14,   8.23,
10.80,
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM10\PM10.ISC                       ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        07:53:00

                                   PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
                Met Version:  16216
   Profile file:   ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:     3171                 Upper air station no.:     3190
                Name: UNKNOWN                                     Name: UNKNOWN

                Year:   2012                                      Year:   2012

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -
 12 01 01   1 01   -1.3  0.065 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40   78.    9.1  284.2    5.5
 12 01 01   1 02   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   69.    9.1  283.8    5.5
```

```
 12 01 01   1 03   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  286.    9.1  282.5    5.5
 12 01 01   1 04   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  348.    9.1  282.5    5.5
 12 01 01   1 05   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40   17.    9.1  282.0    5.5
 12 01 01   1 06   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  161.    9.1  282.0    5.5
 12 01 01   1 07   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40  273.    9.1  282.0    5.5
 12 01 01   1 08   -3.6  0.091 -9.000 -9.000 -999.   66.     18.3  0.23   2.69
0.54    0.90  113.    9.1  283.8    5.5
 12 01 01   1 09   39.6  0.087  0.358  0.016   40.   61.     -1.4  0.23   2.69
0.33    0.40  336.    9.1  285.9    5.5
 12 01 01   1 10  110.7  0.206  0.740  0.007  127.  225.     -6.9  0.23   2.69
0.25    1.30  158.    9.1  291.4    5.5
 12 01 01   1 11  161.7  0.105  1.203  0.005  374.   87.     -1.0  0.23   2.69
0.23    0.40   33.    9.1  297.0    5.5
 12 01 01   1 12  185.5  0.271  1.535  0.005  676.  339.     -9.3  0.23   2.69
0.22    1.80  313.    9.1  298.8    5.5
 12 01 01   1 13  183.9  0.219  1.828  0.005 1154.  247.     -4.9  0.23   2.69
0.22    1.30  250.    9.1  300.4    5.5
 12 01 01   1 14  156.6  0.266  1.869  0.005 1446.  330.    -10.4  0.23   2.69
0.23    1.80  217.    9.1  301.4    5.5
 12 01 01   1 15  104.7  0.256  1.677  0.005 1562.  311.    -13.8  0.23   2.69
0.27    1.80  248.    9.1  302.0    5.5
 12 01 01   1 16   32.7  0.319  1.147  0.005 1596.  433.    -85.9  0.23   2.69
0.36    2.70  235.    9.1  302.0    5.5
 12 01 01   1 17  -15.5  0.190 -9.000 -9.000 -999.  208.     39.6  0.23   2.69
0.63    1.80   46.    9.1  299.2    5.5
 12 01 01   1 18   -4.1  0.092 -9.000 -9.000 -999.   73.     16.2  0.23   2.69
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00
```

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): L0000946 , L0000947 , L0000948 , L0000949 , L0000950 ,
L0000951 , L0000952 , L0000953 , L0000954 , L0000955 , L0000956 , L0000957 , L0000958 ,
L0000959 , L0000960 , L0000961 , L0000962 , L0000963 , L0000964 , L0000965 , L0000966 ,
L0000967 , L0000968 , L0000969 , L0000970 , L0000971 , L0000972 , L0000973 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
475305.88	3720344.02	1.38119	475307.47	3720352.74	1.31967
475308.66	3720358.69	1.26693	475310.24	3720364.64	1.20173
475310.64	3720370.98	1.14445	475296.37	3720324.20	1.53905
475303.90	3720325.78	1.48394	475311.04	3720326.58	1.43667
475316.98	3720327.37	1.39635	475299.54	3720298.82	1.65828
475307.87	3720300.01	1.59309	475314.21	3720301.20	1.54433
475322.14	3720301.20	1.49367	475344.74	3720261.16	1.45769
475345.53	3720253.63	1.47974	475346.32	3720248.47	1.50172
475346.72	3720241.34	1.54144	475303.50	3720274.64	1.76695
475311.04	3720274.24	1.70641	475317.38		

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3720276.23        1.64870
         475324.91    3720276.62        1.59320                      475305.49
3720250.06        1.89454
         475313.42    3720252.04        1.80618                      475320.95
3720251.65        1.74188
         475328.48    3720252.84        1.66746                      475339.88
3720321.02        1.27702
         475347.81    3720323.00        1.20328                      475355.34
3720322.61        1.14413
         475362.87    3720323.80        1.08264                      475368.92
3720324.59        1.03406
         475367.41    3720354.32        0.96168                      475338.37
3720350.76        1.13835
         475346.30    3720352.74        1.07489                      475353.83
3720352.35        1.04070
         475361.36    3720353.54        0.99618                      475372.17
3720387.23        0.80933
         475343.13    3720383.66        0.90220                      475351.06
3720385.64        0.88183
         475358.59    3720385.25        0.85763                      475366.12
3720386.44        0.83097
         475383.57    3720372.17        0.81967                      475391.50
3720374.15        0.79252
         475399.03    3720373.76        0.77169                      475406.56
3720374.95        0.74886
         475386.27    3720344.81        0.90721                      475394.20
3720346.79        0.85925
         475401.73    3720346.40        0.81594                      475409.26
3720347.59        0.77246
         475389.83    3720319.83        0.88246                      475397.76
3720321.81        0.84425
         475405.29    3720321.42        0.80951                      475412.82
3720322.61        0.77545
         475393.40    3720294.06        0.94694                      475401.33
3720296.04        0.90294
         475408.86    3720295.65        0.87185                      475416.39
3720296.84        0.83633
         475373.78    3720263.64        1.17807                      475374.57
3720256.11        1.19851
         475375.36    3720250.95        1.21777                      475375.76
3720243.82        1.25151
         475399.15    3720264.83        1.01379                      475399.94
3720257.30        1.03323
         475400.73    3720252.14        1.05080                      475401.13
3720245.01        1.08177
         475345.13    3720307.94        1.28288                      475346.32
3720287.72        1.34933
         475369.32    3720311.51        1.05659                      475370.90
3720292.48        1.10260
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
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 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

 *** THE 1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL ***
 INCLUDING SOURCE(S): L0000946 , L0000947
 , L0000948 , L0000949 , L0000950 ,
 L0000951 , L0000952 , L0000953 , L0000954 , L0000955
 , L0000956 , L0000957 , L0000958 ,
 L0000959 , L0000960 , L0000961 , L0000962 , L0000963
 , L0000964 , L0000965 , L0000966 ,
 L0000967 , L0000968 , L0000969 , L0000970 , L0000971
 , L0000972 , L0000973 , . . . ,

 *** DISCRETE CARTESIAN RECEPTOR POINTS
***

 ** CONC OF PM_10 IN MICROGRAMS/M**3
 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
475305.88	3720344.02	2.10427m	(16031324)	475307.47	3720352.74	2.08935m	(16031324)
475308.66	3720358.69	2.05580m	(16031324)	475310.24	3720364.64	1.99282m	(16031324)
475310.64	3720370.98	1.92857m	(16031324)	475296.37	3720324.20	2.08782m	(12021024)
475303.90	3720325.78	2.06946m	(16031324)	475311.04	3720326.58	2.12404m	(16031324)
475316.98	3720327.37	2.12444m	(16031324)	475299.54	3720298.82	2.24042m	(12021024)
475307.87	3720300.01	2.16922m	(16031424)	475314.21	3720301.20	2.15976m	(16031324)
475322.14	3720301.20	2.17702m	(16031324)	475344.74	3720261.16	2.29302m	(16031324)
475345.53	3720253.63	2.32010m	(16031324)	475346.32	3720248.47	2.34331m	(16031324)
475346.72	3720241.34	2.38609m	(16031324)	475303.50	3720274.64	2.46011m	(16031324)
475311.04	3720274.24	2.47236m	(16031324)	475317.38	3720276.23	2.40084m	(16031324)
475324.91	3720276.62	2.35282m	(16031324)	475305.49	3720250.06	2.74237m	(16031324)

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       475313.42   3720252.04        2.66214m (16031324)                475320.95
 3720251.65        2.58550m (16031324)
       475328.48   3720252.84        2.51436m (16031324)                475339.88
 3720321.02        2.05967m (16031324)
       475347.81   3720323.00        1.98579m (16031324)                475355.34
 3720322.61        1.92047m (16031324)
       475362.87   3720323.80        1.84562m (16031324)                475368.92
 3720324.59        1.78132m (16031324)
       475367.41   3720354.32        1.69265  (16010624)                475338.37
 3720350.76        1.91085m (16031324)
       475346.30   3720352.74        1.83626m (16031324)                475353.83
 3720352.35        1.79318m (16031324)
       475361.36   3720353.54        1.73614m (16031324)                475372.17
 3720387.23        1.53328  (12110924)
       475343.13   3720383.66        1.64730  (16010624)                475351.06
 3720385.64        1.62164  (16010624)
       475358.59   3720385.25        1.59078  (16010624)                475366.12
 3720386.44        1.55702  (16010624)
       475383.57   3720372.17        1.54231  (12110924)                475391.50
 3720374.15        1.51403  (12110924)
       475399.03   3720373.76        1.49259  (12110924)                475406.56
 3720374.95        1.46850  (12110924)
       475386.27   3720344.81        1.63269  (16010624)                475394.20
 3720346.79        1.58283  (16010624)
       475401.73   3720346.40        1.54199  (12110924)                475409.26
 3720347.59        1.50037  (12110924)
       475389.83   3720319.83        1.61277  (12110924)                475397.76
 3720321.81        1.57427  (12110924)
       475405.29   3720321.42        1.53712  (12110924)                475412.82
 3720322.61        1.49962  (12110924)
       475393.40   3720294.06        1.68002  (16010624)                475401.33
 3720296.04        1.63248  (12110924)
       475408.86   3720295.65        1.60230  (12110924)                475416.39
 3720296.84        1.56663  (12110924)
       475373.78   3720263.64        1.94740m (16031324)                475374.57
 3720256.11        1.97064m (16031324)
       475375.36   3720250.95        1.99420m (16031324)                475375.76
 3720243.82        2.03574m (16031324)
       475399.15   3720264.83        1.75003  (16010624)                475399.94
 3720257.30        1.77002  (16010624)
       475400.73   3720252.14        1.78838  (16010624)                475401.13
 3720245.01        1.82027  (16010624)
       475345.13   3720307.94        2.07983m (16031324)                475346.32
 3720287.72        2.15912m (16031324)
       475369.32   3720311.51        1.80607m (16031324)                475370.90
 3720292.48        1.86010m (16031324)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM10\PM10.ISC                          ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                         ***       07:53:00
```

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS
AVERAGED OVER   5 YEARS ***

** CONC OF PM_10   IN MICROGRAMS/M**3
**

GROUP ID	NETWORK AVERAGE CONC			RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	1.89454	AT (	475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC	
	2ND HIGHEST VALUE IS	1.80618	AT (	475313.42, 3720252.04, 428.85, 742.00, 0.00)	DC	
	3RD HIGHEST VALUE IS	1.76695	AT (	475303.50, 3720274.64, 426.93, 742.00, 0.00)	DC	
	4TH HIGHEST VALUE IS	1.74188	AT (	475320.95, 3720251.65, 429.31, 742.00, 0.00)	DC	
	5TH HIGHEST VALUE IS	1.70641	AT (	475311.04, 3720274.24, 427.30, 742.00, 0.00)	DC	
	6TH HIGHEST VALUE IS	1.66746	AT (	475328.48, 3720252.84, 429.81, 742.00, 0.00)	DC	
	7TH HIGHEST VALUE IS	1.65828	AT (	475299.54, 3720298.82, 426.00, 742.00, 0.00)	DC	
	8TH HIGHEST VALUE IS	1.64870	AT (	475317.38, 3720276.23, 427.43, 742.00, 0.00)	DC	
	9TH HIGHEST VALUE IS	1.59320	AT (	475324.91, 3720276.62, 427.72, 742.00, 0.00)	DC	
	10TH HIGHEST VALUE IS	1.59309	AT (	475307.87, 3720300.01, 426.39, 742.00, 0.00)	DC	

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE	CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH	1ST HIGH VALUE IS	2.74237m ON 16031324:	AT (475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 1763 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 884 Calm Hours Identified

A Total of 879 Missing Hours Identified (2.00 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

```
    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************

** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\PM25\PM25.ADI
**
****************************************
**
**
****************************************
** AERMOD CONTROL PATHWAY
****************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\PM25\PM25.ISC
   MODELOPT DFAULT CONC
   AVERTIME 24
   URBANOPT 2189641
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL PM25.ERR
CO FINISHED
**
****************************************
** AERMOD SOURCE PATHWAY
****************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
```

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** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.027879
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0001030     VOLUME   474909.733 3720511.459 420.52
   LOCATION L0001031     VOLUME   474924.446 3720492.134 420.06
   LOCATION L0001032     VOLUME   474939.158 3720472.809 420.76
   LOCATION L0001033     VOLUME   474953.870 3720453.484 421.00
   LOCATION L0001034     VOLUME   474968.582 3720434.158 421.00
   LOCATION L0001035     VOLUME   474983.294 3720414.833 421.45
   LOCATION L0001036     VOLUME   474998.006 3720395.508 421.94
   LOCATION L0001037     VOLUME   475012.718 3720376.183 422.43
   LOCATION L0001038     VOLUME   475027.430 3720356.858 422.33
   LOCATION L0001039     VOLUME   475042.142 3720337.533 422.29
   LOCATION L0001040     VOLUME   475056.854 3720318.207 422.07
   LOCATION L0001041     VOLUME   475071.566 3720298.882 422.17
   LOCATION L0001042     VOLUME   475086.278 3720279.557 422.00
   LOCATION L0001043     VOLUME   475100.990 3720260.232 422.05
   LOCATION L0001044     VOLUME   475115.702 3720240.907 421.50
   LOCATION L0001045     VOLUME   475130.414 3720221.582 421.26
   LOCATION L0001046     VOLUME   475145.126 3720202.256 421.72
   LOCATION L0001047     VOLUME   475159.839 3720182.931 422.19
   LOCATION L0001048     VOLUME   475174.551 3720163.606 422.00
   LOCATION L0001049     VOLUME   475189.263 3720144.281 422.63
   LOCATION L0001050     VOLUME   475203.975 3720124.956 423.61
   LOCATION L0001051     VOLUME   475218.687 3720105.631 424.59
   LOCATION L0001052     VOLUME   475233.399 3720086.305 426.09
   LOCATION L0001053     VOLUME   475248.111 3720066.980 427.28
   LOCATION L0001054     VOLUME   475262.823 3720047.655 427.77
   LOCATION L0001055     VOLUME   475277.535 3720028.330 427.37
   LOCATION L0001056     VOLUME   475292.247 3720009.005 426.19
   LOCATION L0001057     VOLUME   475306.959 3719989.680 426.27
   LOCATION L0001058     VOLUME   475321.671 3719970.354 426.21
   LOCATION L0001059     VOLUME   475336.383 3719951.029 425.87
   LOCATION L0001060     VOLUME   475351.095 3719931.704 425.76
   LOCATION L0001061     VOLUME   475365.807 3719912.379 425.66
   LOCATION L0001062     VOLUME   475380.519 3719893.054 424.87
   LOCATION L0001063     VOLUME   475395.232 3719873.729 424.30
   LOCATION L0001064     VOLUME   475409.944 3719854.403 423.49
   LOCATION L0001065     VOLUME   475424.656 3719835.078 423.13
   LOCATION L0001066     VOLUME   475439.368 3719815.753 422.54
   LOCATION L0001067     VOLUME   475454.080 3719796.428 421.82
   LOCATION L0001068     VOLUME   475468.792 3719777.103 421.67
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   LOCATION L0001069     VOLUME   475483.504 3719757.778 420.86
   LOCATION L0001070     VOLUME   475498.216 3719738.452 420.26
   LOCATION L0001071     VOLUME   475512.928 3719719.127 420.21
** END OF LINE VOLUME SOURCE ID = SLINE1
** ------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.027879
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ------------------------------------------------------------------
   LOCATION L0001072     VOLUME   474874.109 3720484.354 420.00
   LOCATION L0001073     VOLUME   474888.821 3720465.029 420.00
   LOCATION L0001074     VOLUME   474903.533 3720445.703 420.00
   LOCATION L0001075     VOLUME   474918.245 3720426.378 420.28
   LOCATION L0001076     VOLUME   474932.958 3720407.053 420.77
   LOCATION L0001077     VOLUME   474947.670 3720387.728 420.55
   LOCATION L0001078     VOLUME   474962.382 3720368.403 420.75
   LOCATION L0001079     VOLUME   474977.094 3720349.078 421.24
   LOCATION L0001080     VOLUME   474991.806 3720329.752 421.34
   LOCATION L0001081     VOLUME   475006.518 3720310.427 421.18
   LOCATION L0001082     VOLUME   475021.230 3720291.102 421.12
   LOCATION L0001083     VOLUME   475035.942 3720271.777 421.20
   LOCATION L0001084     VOLUME   475050.654 3720252.452 421.61
   LOCATION L0001085     VOLUME   475065.366 3720233.127 421.24
   LOCATION L0001086     VOLUME   475080.078 3720213.801 420.73
   LOCATION L0001087     VOLUME   475094.790 3720194.476 420.00
   LOCATION L0001088     VOLUME   475109.502 3720175.151 420.00
   LOCATION L0001089     VOLUME   475124.214 3720155.826 420.58
   LOCATION L0001090     VOLUME   475138.926 3720136.501 421.63
   LOCATION L0001091     VOLUME   475153.638 3720117.176 421.45
   LOCATION L0001092     VOLUME   475168.351 3720097.850 421.51
   LOCATION L0001093     VOLUME   475183.063 3720078.525 422.22
   LOCATION L0001094     VOLUME   475197.775 3720059.200 423.31
   LOCATION L0001095     VOLUME   475212.487 3720039.875 424.79
   LOCATION L0001096     VOLUME   475227.199 3720020.550 424.95
   LOCATION L0001097     VOLUME   475241.911 3720001.225 425.12
   LOCATION L0001098     VOLUME   475256.623 3719981.899 424.79
   LOCATION L0001099     VOLUME   475271.335 3719962.574 424.48
   LOCATION L0001100     VOLUME   475286.047 3719943.249 424.12
   LOCATION L0001101     VOLUME   475300.759 3719923.924 423.90
   LOCATION L0001102     VOLUME   475315.471 3719904.599 423.47
   LOCATION L0001103     VOLUME   475330.183 3719885.274 423.30
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   LOCATION L0001104     VOLUME   475344.895 3719865.948 422.50
   LOCATION L0001105     VOLUME   475359.607 3719846.623 421.70
   LOCATION L0001106     VOLUME   475374.319 3719827.298 421.19
   LOCATION L0001107     VOLUME   475389.032 3719807.973 421.04
   LOCATION L0001108     VOLUME   475403.744 3719788.648 420.62
   LOCATION L0001109     VOLUME   475418.456 3719769.323 419.77
   LOCATION L0001110     VOLUME   475433.168 3719749.997 419.19
   LOCATION L0001111     VOLUME   475447.880 3719730.672 417.98
   LOCATION L0001112     VOLUME   475462.592 3719711.347 417.27
   LOCATION L0001113     VOLUME   475477.304 3719692.022 417.12
** END OF LINE VOLUME SOURCE ID = SLINE2
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0001030     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001031     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001032     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001033     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001034     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001035     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001036     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001037     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001038     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001039     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001040     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001041     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001042     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001043     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001044     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001045     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001046     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001047     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001048     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001049     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001050     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001051     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001052     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001053     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001054     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001055     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001056     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001057     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001058     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001059     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001060     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001061     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001062     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001063     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001064     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001065     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001066     0.0006637857      3.49     11.30      3.25
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   SRCPARAM L0001067     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001068     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001069     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001070     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001071     0.0006637857      3.49     11.30      3.25
** ----------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0001072     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001073     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001074     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001075     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001076     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001077     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001078     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001079     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001080     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001081     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001082     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001083     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001084     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001085     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001086     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001087     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001088     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001089     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001090     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001091     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001092     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001093     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001094     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001095     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001096     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001097     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001098     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001099     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001100     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001101     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001102     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001103     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001104     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001105     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001106     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001107     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001108     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001109     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001110     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001111     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001112     0.0006637857      3.49     11.30      3.25
   SRCPARAM L0001113     0.0006637857      3.49     11.30      3.25
** ----------------------------------------------------------------
```

```
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED PM25.ROU
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   24 ALL 1ST PM25.AD\24H1GALL.PLT 31
   SUMMFILE PM25.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)
```

```
   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 *********************************
 *** SETUP Finishes Successfully ***
 *********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM25\PM25.ISC                          ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                         ***       07:58:55

                                   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
```

```
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_2.5

 **Model Calculates  1 Short Term Average(s) of:  24-HR

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     84 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out
```

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0001030	0	0.66379E-03	474909.7	3720511.5	420.5	3.49	11.30	3.25	YES	
L0001031	0	0.66379E-03	474924.4	3720492.1	420.1	3.49	11.30	3.25	YES	
L0001032	0	0.66379E-03	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES	
L0001033	0	0.66379E-03	474953.9	3720453.5	421.0	3.49	11.30	3.25	YES	
L0001034	0	0.66379E-03	474968.6	3720434.2	421.0	3.49	11.30	3.25	YES	
L0001035	0	0.66379E-03	474983.3	3720414.8	421.4	3.49	11.30	3.25	YES	
L0001036	0	0.66379E-03	474998.0	3720395.5	421.9	3.49	11.30	3.25	YES	
L0001037	0	0.66379E-03	475012.7	3720376.2	422.4	3.49	11.30	3.25	YES	
L0001038	0	0.66379E-03	475027.4	3720356.9	422.3	3.49	11.30	3.25	YES	
L0001039	0	0.66379E-03	475042.1	3720337.5	422.3	3.49	11.30	3.25	YES	
L0001040	0	0.66379E-03	475056.9	3720318.2	422.1	3.49	11.30	3.25	YES	
L0001041	0	0.66379E-03	475071.6	3720298.9	422.2	3.49	11.30	3.25	YES	

L0001042	0	0.66379E-03	475086.3	3720279.6	422.0	3.49	11.30	3.25 YES
L0001043	0	0.66379E-03	475101.0	3720260.2	422.1	3.49	11.30	3.25 YES
L0001044	0	0.66379E-03	475115.7	3720240.9	421.5	3.49	11.30	3.25 YES
L0001045	0	0.66379E-03	475130.4	3720221.6	421.3	3.49	11.30	3.25 YES
L0001046	0	0.66379E-03	475145.1	3720202.3	421.7	3.49	11.30	3.25 YES
L0001047	0	0.66379E-03	475159.8	3720182.9	422.2	3.49	11.30	3.25 YES
L0001048	0	0.66379E-03	475174.6	3720163.6	422.0	3.49	11.30	3.25 YES
L0001049	0	0.66379E-03	475189.3	3720144.3	422.6	3.49	11.30	3.25 YES
L0001050	0	0.66379E-03	475204.0	3720125.0	423.6	3.49	11.30	3.25 YES
L0001051	0	0.66379E-03	475218.7	3720105.6	424.6	3.49	11.30	3.25 YES
L0001052	0	0.66379E-03	475233.4	3720086.3	426.1	3.49	11.30	3.25 YES
L0001053	0	0.66379E-03	475248.1	3720067.0	427.3	3.49	11.30	3.25 YES
L0001054	0	0.66379E-03	475262.8	3720047.7	427.8	3.49	11.30	3.25 YES
L0001055	0	0.66379E-03	475277.5	3720028.3	427.4	3.49	11.30	3.25 YES
L0001056	0	0.66379E-03	475292.2	3720009.0	426.2	3.49	11.30	3.25 YES
L0001057	0	0.66379E-03	475307.0	3719989.7	426.3	3.49	11.30	3.25 YES
L0001058	0	0.66379E-03	475321.7	3719970.4	426.2	3.49	11.30	3.25 YES
L0001059	0	0.66379E-03	475336.4	3719951.0	425.9	3.49	11.30	3.25 YES
L0001060	0	0.66379E-03	475351.1	3719931.7	425.8	3.49	11.30	3.25 YES
L0001061	0	0.66379E-03	475365.8	3719912.4	425.7	3.49	11.30	3.25 YES
L0001062	0	0.66379E-03	475380.5	3719893.1	424.9	3.49	11.30	3.25 YES
L0001063	0	0.66379E-03	475395.2	3719873.7	424.3	3.49	11.30	3.25 YES
L0001064	0	0.66379E-03	475409.9	3719854.4	423.5	3.49	11.30	3.25 YES
L0001065	0	0.66379E-03	475424.7	3719835.1	423.1	3.49	11.30	3.25 YES
L0001066	0	0.66379E-03	475439.4	3719815.8	422.5	3.49	11.30	3.25 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0001070	0	0.66379E-03	475498.2	3719738.5	420.3	3.49	11.30	3.25	YES	
L0001071	0	0.66379E-03	475512.9	3719719.1	420.2	3.49	11.30	3.25	YES	
L0001072	0	0.66379E-03	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES	
L0001073	0	0.66379E-03	474888.8	3720465.0	420.0	3.49	11.30	3.25	YES	
L0001074	0	0.66379E-03	474903.5	3720445.7	420.0	3.49	11.30	3.25	YES	
L0001075	0	0.66379E-03	474918.2	3720426.4	420.3	3.49	11.30	3.25	YES	
L0001076	0	0.66379E-03	474933.0	3720407.1	420.8	3.49	11.30	3.25	YES	
L0001077	0	0.66379E-03	474947.7	3720387.7	420.6	3.49	11.30	3.25	YES	
L0001078	0	0.66379E-03	474962.4	3720368.4	420.8	3.49	11.30	3.25	YES	
L0001079	0	0.66379E-03	474977.1	3720349.1	421.2	3.49	11.30	3.25	YES	
L0001080	0	0.66379E-03	474991.8	3720329.8	421.3	3.49	11.30	3.25	YES	
L0001081	0	0.66379E-03	475006.5	3720310.4	421.2	3.49	11.30	3.25	YES	

L0001082	0	0.66379E-03	475021.2	3720291.1	421.1	3.49	11.30	3.25 YES
L0001083	0	0.66379E-03	475035.9	3720271.8	421.2	3.49	11.30	3.25 YES
L0001084	0	0.66379E-03	475050.7	3720252.5	421.6	3.49	11.30	3.25 YES
L0001085	0	0.66379E-03	475065.4	3720233.1	421.2	3.49	11.30	3.25 YES
L0001086	0	0.66379E-03	475080.1	3720213.8	420.7	3.49	11.30	3.25 YES
L0001087	0	0.66379E-03	475094.8	3720194.5	420.0	3.49	11.30	3.25 YES
L0001088	0	0.66379E-03	475109.5	3720175.2	420.0	3.49	11.30	3.25 YES
L0001089	0	0.66379E-03	475124.2	3720155.8	420.6	3.49	11.30	3.25 YES
L0001090	0	0.66379E-03	475138.9	3720136.5	421.6	3.49	11.30	3.25 YES
L0001091	0	0.66379E-03	475153.6	3720117.2	421.4	3.49	11.30	3.25 YES
L0001092	0	0.66379E-03	475168.4	3720097.8	421.5	3.49	11.30	3.25 YES
L0001093	0	0.66379E-03	475183.1	3720078.5	422.2	3.49	11.30	3.25 YES
L0001094	0	0.66379E-03	475197.8	3720059.2	423.3	3.49	11.30	3.25 YES
L0001095	0	0.66379E-03	475212.5	3720039.9	424.8	3.49	11.30	3.25 YES
L0001096	0	0.66379E-03	475227.2	3720020.5	424.9	3.49	11.30	3.25 YES
L0001097	0	0.66379E-03	475241.9	3720001.2	425.1	3.49	11.30	3.25 YES
L0001098	0	0.66379E-03	475256.6	3719981.9	424.8	3.49	11.30	3.25 YES
L0001099	0	0.66379E-03	475271.3	3719962.6	424.5	3.49	11.30	3.25 YES
L0001100	0	0.66379E-03	475286.0	3719943.2	424.1	3.49	11.30	3.25 YES
L0001101	0	0.66379E-03	475300.8	3719923.9	423.9	3.49	11.30	3.25 YES
L0001102	0	0.66379E-03	475315.5	3719904.6	423.5	3.49	11.30	3.25 YES
L0001103	0	0.66379E-03	475330.2	3719885.3	423.3	3.49	11.30	3.25 YES
L0001104	0	0.66379E-03	475344.9	3719865.9	422.5	3.49	11.30	3.25 YES
L0001105	0	0.66379E-03	475359.6	3719846.6	421.7	3.49	11.30	3.25 YES
L0001106	0	0.66379E-03	475374.3	3719827.3	421.2	3.49	11.30	3.25 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE BY	EMISSION RATE SCALAR VARY
L0001110	0	0.66379E-03	475433.2	3719750.0	419.2	3.49	11.30	3.25	YES	
L0001111	0	0.66379E-03	475447.9	3719730.7	418.0	3.49	11.30	3.25	YES	
L0001112	0	0.66379E-03	475462.6	3719711.3	417.3	3.49	11.30	3.25	YES	
L0001113	0	0.66379E-03	475477.3	3719692.0	417.1	3.49	11.30	3.25	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

```
  ALL        L0001030    , L0001031    , L0001032    , L0001033    , L0001034    ,
L0001035    , L0001036    , L0001037    ,

             L0001038    , L0001039    , L0001040    , L0001041    , L0001042    ,
L0001043    , L0001044    , L0001045    ,

             L0001046    , L0001047    , L0001048    , L0001049    , L0001050    ,
L0001051    , L0001052    , L0001053    ,

             L0001054    , L0001055    , L0001056    , L0001057    , L0001058    ,
L0001059    , L0001060    , L0001061    ,

             L0001062    , L0001063    , L0001064    , L0001065    , L0001066    ,
L0001067    , L0001068    , L0001069    ,

             L0001070    , L0001071    , L0001072    , L0001073    , L0001074    ,
L0001075    , L0001076    , L0001077    ,

             L0001078    , L0001079    , L0001080    , L0001081    , L0001082    ,
L0001083    , L0001084    , L0001085    ,

             L0001086    , L0001087    , L0001088    , L0001089    , L0001090    ,
L0001091    , L0001092    , L0001093    ,

             L0001094    , L0001095    , L0001096    , L0001097    , L0001098    ,
L0001099    , L0001100    , L0001101    ,

             L0001102    , L0001103    , L0001104    , L0001105    , L0001106    ,
L0001107    , L0001108    , L0001109    ,

             L0001110    , L0001111    , L0001112    , L0001113    ,
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                          *** SOURCE IDs DEFINED AS URBAN SOURCES
***

  URBAN ID   URBAN POP                                    SOURCE IDs
  --------   ---------                                    ----------


              2189641.   L0001030    , L0001031    , L0001032    , L0001033    ,
L0001034    , L0001035    , L0001036    ,
 L0001037    ,
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             L0001038    , L0001039    , L0001040    , L0001041    , L0001042    ,
L0001043    , L0001044    , L0001045    ,

             L0001046    , L0001047    , L0001048    , L0001049    , L0001050    ,
L0001051    , L0001052    , L0001053    ,

             L0001054    , L0001055    , L0001056    , L0001057    , L0001058    ,
L0001059    , L0001060    , L0001061    ,

             L0001062    , L0001063    , L0001064    , L0001065    , L0001066    ,
L0001067    , L0001068    , L0001069    ,

             L0001070    , L0001071    , L0001072    , L0001073    , L0001074    ,
L0001075    , L0001076    , L0001077    ,

             L0001078    , L0001079    , L0001080    , L0001081    , L0001082    ,
L0001083    , L0001084    , L0001085    ,

             L0001086    , L0001087    , L0001088    , L0001089    , L0001090    ,
L0001091    , L0001092    , L0001093    ,

             L0001094    , L0001095    , L0001096    , L0001097    , L0001098    ,
L0001099    , L0001100    , L0001101    ,

             L0001102    , L0001103    , L0001104    , L0001105    , L0001106    ,
L0001107    , L0001108    , L0001109    ,

             L0001110    , L0001111    , L0001112    , L0001113    ,
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 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                        *** DISCRETE CARTESIAN RECEPTORS ***
                                      (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                  (METERS)

```
     ( 475305.9, 3720344.0,     427.3,     742.0,       0.0);         ( 475307.5,
3720352.7,     428.8,     742.0,       0.0);
     ( 475308.7, 3720358.7,     430.1,     742.0,       0.0);         ( 475310.2,
3720364.6,     431.7,     742.0,       0.0);
     ( 475310.6, 3720371.0,     433.2,     742.0,       0.0);         ( 475296.4,
3720324.2,     426.2,     742.0,       0.0);
     ( 475303.9, 3720325.8,     426.6,     742.0,       0.0);         ( 475311.0,
3720326.6,     427.1,     742.0,       0.0);
     ( 475317.0, 3720327.4,     427.5,     742.0,       0.0);         ( 475299.5,
```

```
3720298.8,     426.0,     742.0,       0.0);
     ( 475307.9, 3720300.0,     426.4,     742.0,       0.0);         ( 475314.2,
3720301.2,     426.7,     742.0,       0.0);
     ( 475322.1, 3720301.2,     427.1,     742.0,       0.0);         ( 475344.7,
3720261.2,     432.2,     742.0,       0.0);
     ( 475345.5, 3720253.6,     432.5,     742.0,       0.0);         ( 475346.3,
3720248.5,     432.5,     742.0,       0.0);
     ( 475346.7, 3720241.3,     432.3,     742.0,       0.0);         ( 475303.5,
3720274.6,     426.9,     742.0,       0.0);
     ( 475311.0, 3720274.2,     427.3,     742.0,       0.0);         ( 475317.4,
3720276.2,     427.4,     742.0,       0.0);
     ( 475324.9, 3720276.6,     427.7,     742.0,       0.0);         ( 475305.5,
3720250.1,     428.3,     742.0,       0.0);
     ( 475313.4, 3720252.0,     428.9,     742.0,       0.0);         ( 475321.0,
3720251.6,     429.3,     742.0,       0.0);
     ( 475328.5, 3720252.8,     429.8,     742.0,       0.0);         ( 475339.9,
3720321.0,     430.1,     742.0,       0.0);
     ( 475347.8, 3720323.0,     431.6,     742.0,       0.0);         ( 475355.3,
3720322.6,     432.9,     742.0,       0.0);
     ( 475362.9, 3720323.8,     434.4,     742.0,       0.0);         ( 475368.9,
3720324.6,     435.6,     742.0,       0.0);
     ( 475367.4, 3720354.3,     435.4,     742.0,       0.0);         ( 475338.4,
3720350.8,     431.9,     742.0,       0.0);
     ( 475346.3, 3720352.7,     433.3,     742.0,       0.0);         ( 475353.8,
3720352.3,     433.8,     742.0,       0.0);
     ( 475361.4, 3720353.5,     434.7,     742.0,       0.0);         ( 475372.2,
3720387.2,     439.0,     742.0,       0.0);
     ( 475343.1, 3720383.7,     438.3,     742.0,       0.0);         ( 475351.1,
3720385.6,     438.0,     742.0,       0.0);
     ( 475358.6, 3720385.2,     438.3,     742.0,       0.0);         ( 475366.1,
3720386.4,     438.7,     742.0,       0.0);
     ( 475383.6, 3720372.2,     438.6,     742.0,       0.0);         ( 475391.5,
3720374.1,     438.9,     742.0,       0.0);
     ( 475399.0, 3720373.8,     439.3,     742.0,       0.0);         ( 475406.6,
3720374.9,     439.6,     742.0,       0.0);
     ( 475386.3, 3720344.8,     436.7,     742.0,       0.0);         ( 475394.2,
3720346.8,     437.9,     742.0,       0.0);
     ( 475401.7, 3720346.4,     439.4,     742.0,       0.0);         ( 475409.3,
3720347.6,     440.8,     742.0,       0.0);
     ( 475389.8, 3720319.8,     440.5,     742.0,       0.0);         ( 475397.8,
3720321.8,     441.2,     742.0,       0.0);
     ( 475405.3, 3720321.4,     442.1,     742.0,       0.0);         ( 475412.8,
3720322.6,     442.9,     742.0,       0.0);
     ( 475393.4, 3720294.1,     439.8,     742.0,       0.0);         ( 475401.3,
3720296.0,     440.6,     742.0,       0.0);
     ( 475408.9, 3720295.6,     441.1,     742.0,       0.0);         ( 475416.4,
3720296.8,     441.8,     742.0,       0.0);
     ( 475373.8, 3720263.6,     436.9,     742.0,       0.0);         ( 475374.6,
3720256.1,     437.0,     742.0,       0.0);
     ( 475375.4, 3720250.9,     436.8,     742.0,       0.0);         ( 475375.8,
```

                                          *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

               NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.

                                      *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                          (METERS/SEC)

                                                   1.54,   3.09,   5.14,   8.23,
10.80,

```
 *** AERMET - VERSION  16216 ***   ***
                       ***       07:58:55

                                 PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                  *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL
DATA ***

   Surface file:   ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
                  Met Version:  16216
   Profile file:   ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

   Surface format: FREE

   Profile format: FREE

   Surface station no.:     3171                  Upper air station no.:     3190
                  Name: UNKNOWN                                Name: UNKNOWN

                  Year:   2012                                 Year:   2012

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN
ALBEDO  REF WS   WD     HT  REF TA     HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - -
 12 01 01   1 01   -1.3  0.065 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40   78.    9.1  284.2    5.5
 12 01 01   1 02   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   69.    9.1  283.8    5.5
 12 01 01   1 03   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  286.    9.1  282.5    5.5
 12 01 01   1 04   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  348.    9.1  282.5    5.5
 12 01 01   1 05   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40   17.    9.1  282.0    5.5
 12 01 01   1 06   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  161.    9.1  282.0    5.5
 12 01 01   1 07   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40  273.    9.1  282.0    5.5
 12 01 01   1 08   -3.6  0.091 -9.000 -9.000 -999.   66.     18.3  0.23   2.69
0.54    0.90  113.    9.1  283.8    5.5
 12 01 01   1 09   39.6  0.087  0.358  0.016   40.   61.     -1.4  0.23   2.69
0.33    0.40  336.    9.1  285.9    5.5
 12 01 01   1 10  110.7  0.206  0.740  0.007  127.  225.     -6.9  0.23   2.69
0.25    1.30  158.    9.1  291.4    5.5
 12 01 01   1 11  161.7  0.105  1.203  0.005  374.   87.     -1.0  0.23   2.69
0.23    0.40   33.    9.1  297.0    5.5
 12 01 01   1 12  185.5  0.271  1.535  0.005  676.  339.     -9.3  0.23   2.69
```

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0.22    1.80  313.    9.1  298.8    5.5
 12 01 01   1 13  183.9  0.219  1.828  0.005 1154.  247.     -4.9  0.23   2.69
0.22    1.30  250.    9.1  300.4    5.5
 12 01 01   1 14  156.6  0.266  1.869  0.005 1446.  330.    -10.4  0.23   2.69
0.23    1.80  217.    9.1  301.4    5.5
 12 01 01   1 15  104.7  0.256  1.677  0.005 1562.  311.    -13.8  0.23   2.69
0.27    1.80  248.    9.1  302.0    5.5
 12 01 01   1 16   32.7  0.319  1.147  0.005 1596.  433.    -85.9  0.23   2.69
0.36    2.70  235.    9.1  302.0    5.5
 12 01 01   1 17  -15.5  0.190 -9.000 -9.000 -999.  208.     39.6  0.23   2.69
0.63    1.80   46.    9.1  299.2    5.5
 12 01 01   1 18   -4.1  0.092 -9.000 -9.000 -999.   73.     16.2  0.23   2.69
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↟ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM25\PM25.ISC                        ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:58:55

                                  PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                             *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                INCLUDING SOURCE(S):     L0001030    , L0001031
 , L0001032    , L0001033    , L0001034    ,
                 L0001035    , L0001036    , L0001037    , L0001038    , L0001039
 , L0001040    , L0001041    , L0001042    ,
                 L0001043    , L0001044    , L0001045    , L0001046    , L0001047
 , L0001048    , L0001049    , L0001050    ,
                 L0001051    , L0001052    , L0001053    , L0001054    , L0001055
```

, L0001056   , L0001057   , . . .   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5   IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
475305.88	3720344.02	0.93438m	(16031324)	475307.47	3720352.74	0.92775m	(16031324)
475308.66	3720358.69	0.91286m	(16031324)	475310.24	3720364.64	0.88489m	(16031324)
475310.64	3720370.98	0.85636m	(16031324)	475296.37	3720324.20	0.92707m	(12021024)
475303.90	3720325.78	0.91892m	(16031324)	475311.04	3720326.58	0.94315m	(16031324)
475316.98	3720327.37	0.94333m	(16031324)	475299.54	3720298.82	0.99483m	(12021024)
475307.87	3720300.01	0.96322m	(16031424)	475314.21	3720301.20	0.95902m	(16031324)
475322.14	3720301.20	0.96668m	(16031324)	475344.74	3720261.16	1.01819m	(16031324)
475345.53	3720253.63	1.03022m	(16031324)	475346.32	3720248.47	1.04052m	(16031324)
475346.72	3720241.34	1.05952m	(16031324)	475303.50	3720274.64	1.09239m	(16031324)
475311.04	3720274.24	1.09782m	(16031324)	475317.38	3720276.23	1.06606m	(16031324)
475324.91	3720276.62	1.04474m	(16031324)	475305.49	3720250.06	1.21772m	(16031324)
475313.42	3720252.04	1.18210m	(16031324)	475320.95	3720251.65	1.14806m	(16031324)
475328.48	3720252.84	1.11648m	(16031324)	475339.88	3720321.02	0.91457m	(16031324)
475347.81	3720323.00	0.88177m	(16031324)	475355.34	3720322.61	0.85277m	(16031324)
475362.87	3720323.80	0.81953m	(16031324)	475368.92	3720324.59	0.79097m	(16031324)
475367.41	3720354.32	0.75160	(16010624)	475338.37	3720350.76	0.84849m	(16031324)
475346.30	3720352.74	0.81537m	(16031324)	475353.83	3720352.35	0.79624m	(16031324)
475361.36	3720353.54	0.77092m	(16031324)	475372.17	3720387.23	0.68084	(12110924)
475343.13	3720383.66	0.73147	(16010624)	475351.06	3720385.64	0.72007	(16010624)

```
       475358.59   3720385.25        0.70637  (16010624)               475366.12
 3720386.44        0.69138  (16010624)
       475383.57   3720372.17        0.68485  (12110924)               475391.50
 3720374.15        0.67229  (12110924)
       475399.03   3720373.76        0.66277  (12110924)               475406.56
 3720374.95        0.65207  (12110924)
       475386.27   3720344.81        0.72498  (16010624)               475394.20
 3720346.79        0.70284  (16010624)
       475401.73   3720346.40        0.68470  (12110924)               475409.26
 3720347.59        0.66622  (12110924)
       475389.83   3720319.83        0.71613  (12110924)               475397.76
 3720321.81        0.69904  (12110924)
       475405.29   3720321.42        0.68254  (12110924)               475412.82
 3720322.61        0.66589  (12110924)
       475393.40   3720294.06        0.74599  (16010624)               475401.33
 3720296.04        0.72489  (12110924)
       475408.86   3720295.65        0.71148  (12110924)               475416.39
 3720296.84        0.69565  (12110924)
       475373.78   3720263.64        0.86472m (16031324)               475374.57
 3720256.11        0.87504m (16031324)
       475375.36   3720250.95        0.88550m (16031324)               475375.76
 3720243.82        0.90395m (16031324)
       475399.15   3720264.83        0.77708  (16010624)               475399.94
 3720257.30        0.78596  (16010624)
       475400.73   3720252.14        0.79411  (16010624)               475401.13
 3720245.01        0.80827  (16010624)
       475345.13   3720307.94        0.92353m (16031324)               475346.32
 3720287.72        0.95873m (16031324)
       475369.32   3720311.51        0.80197m (16031324)               475370.90
 3720292.48        0.82596m (16031324)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM25\PM25.ISC                        ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:58:55

                                  PAGE  11
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 24-HR
RESULTS ***


                                   ** CONC OF PM_2.5   IN MICROGRAMS/M**3
             **

                                                      DATE
                                          NETWORK
GROUP ID                           AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

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- - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       1.21772m ON 16031324: AT (  475305.49,
3720250.06,   428.34,   742.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↟ *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777
HRA\PM25\PM25.ISC                        ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                       ***        07:58:55

                                  PAGE  12
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of         1763 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of          884 Calm Hours Identified

 A Total of          879 Missing Hours Identified (  2.00 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ************************************
    *** AERMOD Finishes Successfully ***
    ************************************

** Lakes Environmental AERMOD MPI
**
****************************************
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**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ADI
**
**************************************
**
**
**************************************
** AERMOD CONTROL PATHWAY
**************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   URBANOPT 2189641
   POLLUTID CO
   RUNORNOT RUN
   ERRORFIL CO.ERR
CO FINISHED
**
**************************************
** AERMOD SOURCE PATHWAY
**************************************
**
**
SO STARTING
** SOURCE LOCATION **
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.45401
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ------------------------------------------------------------------
   LOCATION L0001114     VOLUME   474909.733 3720511.459 420.52
   LOCATION L0001115     VOLUME   474924.446 3720492.134 420.06
   LOCATION L0001116     VOLUME   474939.158 3720472.809 420.76
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   LOCATION L0001117     VOLUME   474953.870 3720453.484 421.00
   LOCATION L0001118     VOLUME   474968.582 3720434.158 421.00
   LOCATION L0001119     VOLUME   474983.294 3720414.833 421.45
   LOCATION L0001120     VOLUME   474998.006 3720395.508 421.94
   LOCATION L0001121     VOLUME   475012.718 3720376.183 422.43
   LOCATION L0001122     VOLUME   475027.430 3720356.858 422.33
   LOCATION L0001123     VOLUME   475042.142 3720337.533 422.29
   LOCATION L0001124     VOLUME   475056.854 3720318.207 422.07
   LOCATION L0001125     VOLUME   475071.566 3720298.882 422.17
   LOCATION L0001126     VOLUME   475086.278 3720279.557 422.00
   LOCATION L0001127     VOLUME   475100.990 3720260.232 422.05
   LOCATION L0001128     VOLUME   475115.702 3720240.907 421.50
   LOCATION L0001129     VOLUME   475130.414 3720221.582 421.26
   LOCATION L0001130     VOLUME   475145.126 3720202.256 421.72
   LOCATION L0001131     VOLUME   475159.839 3720182.931 422.19
   LOCATION L0001132     VOLUME   475174.551 3720163.606 422.00
   LOCATION L0001133     VOLUME   475189.263 3720144.281 422.63
   LOCATION L0001134     VOLUME   475203.975 3720124.956 423.61
   LOCATION L0001135     VOLUME   475218.687 3720105.631 424.59
   LOCATION L0001136     VOLUME   475233.399 3720086.305 426.09
   LOCATION L0001137     VOLUME   475248.111 3720066.980 427.28
   LOCATION L0001138     VOLUME   475262.823 3720047.655 427.77
   LOCATION L0001139     VOLUME   475277.535 3720028.330 427.37
   LOCATION L0001140     VOLUME   475292.247 3720009.005 426.19
   LOCATION L0001141     VOLUME   475306.959 3719989.680 426.27
   LOCATION L0001142     VOLUME   475321.671 3719970.354 426.21
   LOCATION L0001143     VOLUME   475336.383 3719951.029 425.87
   LOCATION L0001144     VOLUME   475351.095 3719931.704 425.76
   LOCATION L0001145     VOLUME   475365.807 3719912.379 425.66
   LOCATION L0001146     VOLUME   475380.519 3719893.054 424.87
   LOCATION L0001147     VOLUME   475395.232 3719873.729 424.30
   LOCATION L0001148     VOLUME   475409.944 3719854.403 423.49
   LOCATION L0001149     VOLUME   475424.656 3719835.078 423.13
   LOCATION L0001150     VOLUME   475439.368 3719815.753 422.54
   LOCATION L0001151     VOLUME   475454.080 3719796.428 421.82
   LOCATION L0001152     VOLUME   475468.792 3719777.103 421.67
   LOCATION L0001153     VOLUME   475483.504 3719757.778 420.86
   LOCATION L0001154     VOLUME   475498.216 3719738.452 420.26
   LOCATION L0001155     VOLUME   475512.928 3719719.127 420.21
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.45401
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
```

```
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0001156     VOLUME   474874.109 3720484.354 420.00
   LOCATION L0001157     VOLUME   474888.821 3720465.029 420.00
   LOCATION L0001158     VOLUME   474903.533 3720445.703 420.00
   LOCATION L0001159     VOLUME   474918.245 3720426.378 420.28
   LOCATION L0001160     VOLUME   474932.958 3720407.053 420.77
   LOCATION L0001161     VOLUME   474947.670 3720387.728 420.55
   LOCATION L0001162     VOLUME   474962.382 3720368.403 420.75
   LOCATION L0001163     VOLUME   474977.094 3720349.078 421.24
   LOCATION L0001164     VOLUME   474991.806 3720329.752 421.34
   LOCATION L0001165     VOLUME   475006.518 3720310.427 421.18
   LOCATION L0001166     VOLUME   475021.230 3720291.102 421.12
   LOCATION L0001167     VOLUME   475035.942 3720271.777 421.20
   LOCATION L0001168     VOLUME   475050.654 3720252.452 421.61
   LOCATION L0001169     VOLUME   475065.366 3720233.127 421.24
   LOCATION L0001170     VOLUME   475080.078 3720213.801 420.73
   LOCATION L0001171     VOLUME   475094.790 3720194.476 420.00
   LOCATION L0001172     VOLUME   475109.502 3720175.151 420.00
   LOCATION L0001173     VOLUME   475124.214 3720155.826 420.58
   LOCATION L0001174     VOLUME   475138.926 3720136.501 421.63
   LOCATION L0001175     VOLUME   475153.638 3720117.176 421.45
   LOCATION L0001176     VOLUME   475168.351 3720097.850 421.51
   LOCATION L0001177     VOLUME   475183.063 3720078.525 422.22
   LOCATION L0001178     VOLUME   475197.775 3720059.200 423.31
   LOCATION L0001179     VOLUME   475212.487 3720039.875 424.79
   LOCATION L0001180     VOLUME   475227.199 3720020.550 424.95
   LOCATION L0001181     VOLUME   475241.911 3720001.225 425.12
   LOCATION L0001182     VOLUME   475256.623 3719981.899 424.79
   LOCATION L0001183     VOLUME   475271.335 3719962.574 424.48
   LOCATION L0001184     VOLUME   475286.047 3719943.249 424.12
   LOCATION L0001185     VOLUME   475300.759 3719923.924 423.90
   LOCATION L0001186     VOLUME   475315.471 3719904.599 423.47
   LOCATION L0001187     VOLUME   475330.183 3719885.274 423.30
   LOCATION L0001188     VOLUME   475344.895 3719865.948 422.50
   LOCATION L0001189     VOLUME   475359.607 3719846.623 421.70
   LOCATION L0001190     VOLUME   475374.319 3719827.298 421.19
   LOCATION L0001191     VOLUME   475389.032 3719807.973 421.04
   LOCATION L0001192     VOLUME   475403.744 3719788.648 420.62
   LOCATION L0001193     VOLUME   475418.456 3719769.323 419.77
   LOCATION L0001194     VOLUME   475433.168 3719749.997 419.19
   LOCATION L0001195     VOLUME   475447.880 3719730.672 417.98
   LOCATION L0001196     VOLUME   475462.592 3719711.347 417.27
   LOCATION L0001197     VOLUME   475477.304 3719692.022 417.12
** END OF LINE VOLUME SOURCE ID = SLINE2
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0001114     0.0108097619      3.49     11.30      3.25
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   SRCPARAM L0001115     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001116     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001117     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001118     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001119     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001120     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001121     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001122     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001123     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001124     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001125     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001126     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001127     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001128     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001129     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001130     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001131     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001132     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001133     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001134     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001135     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001136     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001137     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001138     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001139     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001140     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001141     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001142     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001143     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001144     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001145     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001146     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001147     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001148     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001149     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001150     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001151     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001152     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001153     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001154     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001155     0.0108097619      3.49     11.30      3.25
** ------------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0001156     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001157     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001158     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001159     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001160     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001161     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001162     0.0108097619      3.49     11.30      3.25
```

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   SRCPARAM L0001163     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001164     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001165     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001166     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001167     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001168     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001169     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001170     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001171     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001172     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001173     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001174     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001175     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001176     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001177     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001178     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001179     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001180     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001181     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001182     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001183     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001184     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001185     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001186     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001187     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001188     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001189     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001190     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001191     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001192     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001193     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001194     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001195     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001196     0.0108097619      3.49     11.30      3.25
   SRCPARAM L0001197     0.0108097619      3.49     11.30      3.25
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED CO.ROU
RE FINISHED
**
**************************************
```

```
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   1 ALL 1ST CO.AD\01H1GALL.PLT 31
   PLOTFILE   8 ALL 1ST CO.AD\08H1GALL.PLT 32
   SUMMFILE CO.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 *********************************
 *** SETUP Finishes Successfully ***
```

```
 **********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
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 *** AERMET - VERSION  16216 ***   ***
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  CO

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
```

```
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:     84 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing
Hours
                                                                 b for Both Calm
and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay
Coef. =    0.000     ;  Rot. Angle =     0.0
                  Emission Units = GRAMS/SEC                                ;
Emission Rate Unit Factor =   0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


 **Detailed Error/Message File:   CO.ERR

 **File for Summary of Results:   CO.SUM

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
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```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE VARY BY
L0001114	0	0.10810E-01	474909.7	3720511.5	420.5	3.49	11.30	3.25	YES
L0001115	0	0.10810E-01	474924.4	3720492.1	420.1	3.49	11.30	3.25	YES
L0001116	0	0.10810E-01	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES
L0001117	0	0.10810E-01	474953.9	3720453.5	421.0	3.49	11.30	3.25	YES
L0001118	0	0.10810E-01	474968.6	3720434.2	421.0	3.49	11.30	3.25	YES
L0001119	0	0.10810E-01	474983.3	3720414.8	421.4	3.49	11.30	3.25	YES
L0001120	0	0.10810E-01	474998.0	3720395.5	421.9	3.49	11.30	3.25	YES
L0001121	0	0.10810E-01	475012.7	3720376.2	422.4	3.49	11.30	3.25	YES
L0001122	0	0.10810E-01	475027.4	3720356.9	422.3	3.49	11.30	3.25	YES
L0001123	0	0.10810E-01	475042.1	3720337.5	422.3	3.49	11.30	3.25	YES
L0001124	0	0.10810E-01	475056.9	3720318.2	422.1	3.49	11.30	3.25	YES
L0001125	0	0.10810E-01	475071.6	3720298.9	422.2	3.49	11.30	3.25	YES
L0001126	0	0.10810E-01	475086.3	3720279.6	422.0	3.49	11.30	3.25	YES
L0001127	0	0.10810E-01	475101.0	3720260.2	422.1	3.49	11.30	3.25	YES
L0001128	0	0.10810E-01	475115.7	3720240.9	421.5	3.49	11.30	3.25	YES
L0001129	0	0.10810E-01	475130.4	3720221.6	421.3	3.49	11.30	3.25	YES
L0001130	0	0.10810E-01	475145.1	3720202.3	421.7	3.49	11.30	3.25	YES
L0001131	0	0.10810E-01	475159.8	3720182.9	422.2	3.49	11.30	3.25	YES

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 L0001132         0   0.10810E-01  475174.6 3720163.6   422.0     3.49    11.30
3.25     YES
 L0001133         0   0.10810E-01  475189.3 3720144.3   422.6     3.49    11.30
3.25     YES
 L0001134         0   0.10810E-01  475204.0 3720125.0   423.6     3.49    11.30
3.25     YES
 L0001135         0   0.10810E-01  475218.7 3720105.6   424.6     3.49    11.30
3.25     YES
 L0001136         0   0.10810E-01  475233.4 3720086.3   426.1     3.49    11.30
3.25     YES
 L0001137         0   0.10810E-01  475248.1 3720067.0   427.3     3.49    11.30
3.25     YES
 L0001138         0   0.10810E-01  475262.8 3720047.7   427.8     3.49    11.30
3.25     YES
 L0001139         0   0.10810E-01  475277.5 3720028.3   427.4     3.49    11.30
3.25     YES
 L0001140         0   0.10810E-01  475292.2 3720009.0   426.2     3.49    11.30
3.25     YES
 L0001141         0   0.10810E-01  475307.0 3719989.7   426.3     3.49    11.30
3.25     YES
 L0001142         0   0.10810E-01  475321.7 3719970.4   426.2     3.49    11.30
3.25     YES
 L0001143         0   0.10810E-01  475336.4 3719951.0   425.9     3.49    11.30
3.25     YES
 L0001144         0   0.10810E-01  475351.1 3719931.7   425.8     3.49    11.30
3.25     YES
 L0001145         0   0.10810E-01  475365.8 3719912.4   425.7     3.49    11.30
3.25     YES
 L0001146         0   0.10810E-01  475380.5 3719893.1   424.9     3.49    11.30
3.25     YES
 L0001147         0   0.10810E-01  475395.2 3719873.7   424.3     3.49    11.30
3.25     YES
 L0001148         0   0.10810E-01  475409.9 3719854.4   423.5     3.49    11.30
3.25     YES
 L0001149         0   0.10810E-01  475424.7 3719835.1   423.1     3.49    11.30
3.25     YES
 L0001150         0   0.10810E-01  475439.4 3719815.8   422.5     3.49    11.30
3.25     YES
 L0001151         0   0.10810E-01  475454.1 3719796.4   421.8     3.49    11.30
3.25     YES
 L0001152         0   0.10810E-01  475468.8 3719777.1   421.7     3.49    11.30
3.25     YES
 L0001153         0   0.10810E-01  475483.5 3719757.8   420.9     3.49    11.30
3.25     YES
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER EMISSION RATE PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE VARY BY
L0001154	0	0.10810E-01	475498.2	3719738.5	420.3	3.49	11.30	3.25	YES
L0001155	0	0.10810E-01	475512.9	3719719.1	420.2	3.49	11.30	3.25	YES
L0001156	0	0.10810E-01	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES
L0001157	0	0.10810E-01	474888.8	3720465.0	420.0	3.49	11.30	3.25	YES
L0001158	0	0.10810E-01	474903.5	3720445.7	420.0	3.49	11.30	3.25	YES
L0001159	0	0.10810E-01	474918.2	3720426.4	420.3	3.49	11.30	3.25	YES
L0001160	0	0.10810E-01	474933.0	3720407.1	420.8	3.49	11.30	3.25	YES
L0001161	0	0.10810E-01	474947.7	3720387.7	420.6	3.49	11.30	3.25	YES
L0001162	0	0.10810E-01	474962.4	3720368.4	420.8	3.49	11.30	3.25	YES
L0001163	0	0.10810E-01	474977.1	3720349.1	421.2	3.49	11.30	3.25	YES
L0001164	0	0.10810E-01	474991.8	3720329.8	421.3	3.49	11.30	3.25	YES
L0001165	0	0.10810E-01	475006.5	3720310.4	421.2	3.49	11.30	3.25	YES
L0001166	0	0.10810E-01	475021.2	3720291.1	421.1	3.49	11.30	3.25	YES
L0001167	0	0.10810E-01	475035.9	3720271.8	421.2	3.49	11.30	3.25	YES
L0001168	0	0.10810E-01	475050.7	3720252.5	421.6	3.49	11.30	3.25	YES
L0001169	0	0.10810E-01	475065.4	3720233.1	421.2	3.49	11.30	3.25	YES
L0001170	0	0.10810E-01	475080.1	3720213.8	420.7	3.49	11.30	3.25	YES
L0001171	0	0.10810E-01	475094.8	3720194.5	420.0	3.49	11.30	3.25	YES

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 L0001172         0   0.10810E-01  475109.5 3720175.2   420.0     3.49    11.30
3.25     YES
 L0001173         0   0.10810E-01  475124.2 3720155.8   420.6     3.49    11.30
3.25     YES
 L0001174         0   0.10810E-01  475138.9 3720136.5   421.6     3.49    11.30
3.25     YES
 L0001175         0   0.10810E-01  475153.6 3720117.2   421.4     3.49    11.30
3.25     YES
 L0001176         0   0.10810E-01  475168.4 3720097.8   421.5     3.49    11.30
3.25     YES
 L0001177         0   0.10810E-01  475183.1 3720078.5   422.2     3.49    11.30
3.25     YES
 L0001178         0   0.10810E-01  475197.8 3720059.2   423.3     3.49    11.30
3.25     YES
 L0001179         0   0.10810E-01  475212.5 3720039.9   424.8     3.49    11.30
3.25     YES
 L0001180         0   0.10810E-01  475227.2 3720020.5   424.9     3.49    11.30
3.25     YES
 L0001181         0   0.10810E-01  475241.9 3720001.2   425.1     3.49    11.30
3.25     YES
 L0001182         0   0.10810E-01  475256.6 3719981.9   424.8     3.49    11.30
3.25     YES
 L0001183         0   0.10810E-01  475271.3 3719962.6   424.5     3.49    11.30
3.25     YES
 L0001184         0   0.10810E-01  475286.0 3719943.2   424.1     3.49    11.30
3.25     YES
 L0001185         0   0.10810E-01  475300.8 3719923.9   423.9     3.49    11.30
3.25     YES
 L0001186         0   0.10810E-01  475315.5 3719904.6   423.5     3.49    11.30
3.25     YES
 L0001187         0   0.10810E-01  475330.2 3719885.3   423.3     3.49    11.30
3.25     YES
 L0001188         0   0.10810E-01  475344.9 3719865.9   422.5     3.49    11.30
3.25     YES
 L0001189         0   0.10810E-01  475359.6 3719846.6   421.7     3.49    11.30
3.25     YES
 L0001190         0   0.10810E-01  475374.3 3719827.3   421.2     3.49    11.30
3.25     YES
 L0001191         0   0.10810E-01  475389.0 3719808.0   421.0     3.49    11.30
3.25     YES
 L0001192         0   0.10810E-01  475403.7 3719788.6   420.6     3.49    11.30
3.25     YES
 L0001193         0   0.10810E-01  475418.5 3719769.3   419.8     3.49    11.30
3.25     YES
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
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*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0001194	0	0.10810E-01	475433.2	3719750.0	419.2	3.49	11.30	3.25	YES	
L0001195	0	0.10810E-01	475447.9	3719730.7	418.0	3.49	11.30	3.25	YES	
L0001196	0	0.10810E-01	475462.6	3719711.3	417.3	3.49	11.30	3.25	YES	
L0001197	0	0.10810E-01	475477.3	3719692.0	417.1	3.49	11.30	3.25	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	L0001114 , L0001115 , L0001116 , L0001117 , L0001118 , L0001119 , L0001120 , L0001121 ,
	L0001122 , L0001123 , L0001124 , L0001125 , L0001126 , L0001127 , L0001128 , L0001129 ,
	L0001130 , L0001131 , L0001132 , L0001133 , L0001134 , L0001135 , L0001136 , L0001137 ,
	L0001138 , L0001139 , L0001140 , L0001141 , L0001142 , L0001143 , L0001144 , L0001145 ,

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	2189641.	L0001114 , L0001115 , L0001116 , L0001117 , L0001118 , L0001119 , L0001120 , L0001121 ,

L0001122 , L0001123 , L0001124 , L0001125 , L0001126 ,
L0001127 , L0001128 , L0001129 ,

L0001130 , L0001131 , L0001132 , L0001133 , L0001134 ,
L0001135 , L0001136 , L0001137 ,

L0001138 , L0001139 , L0001140 , L0001141 , L0001142 ,
L0001143 , L0001144 , L0001145 ,

L0001146 , L0001147 , L0001148 , L0001149 , L0001150 ,
L0001151 , L0001152 , L0001153 ,

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             L0001154    , L0001155    , L0001156    , L0001157    , L0001158    ,
L0001159    , L0001160    , L0001161    ,

             L0001162    , L0001163    , L0001164    , L0001165    , L0001166    ,
L0001167    , L0001168    , L0001169    ,

             L0001170    , L0001171    , L0001172    , L0001173    , L0001174    ,
L0001175    , L0001176    , L0001177    ,

             L0001178    , L0001179    , L0001180    , L0001181    , L0001182    ,
L0001183    , L0001184    , L0001185    ,

             L0001186    , L0001187    , L0001188    , L0001189    , L0001190    ,
L0001191    , L0001192    , L0001193    ,

             L0001194    , L0001195    , L0001196    , L0001197    ,
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                                          *** DISCRETE CARTESIAN RECEPTORS ***
                                        (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                    (METERS)

     ( 475305.9, 3720344.0,     427.3,     742.0,       0.0);         ( 475307.5,
3720352.7,     428.8,     742.0,       0.0);
     ( 475308.7, 3720358.7,     430.1,     742.0,       0.0);         ( 475310.2,
3720364.6,     431.7,     742.0,       0.0);
     ( 475310.6, 3720371.0,     433.2,     742.0,       0.0);         ( 475296.4,
3720324.2,     426.2,     742.0,       0.0);
     ( 475303.9, 3720325.8,     426.6,     742.0,       0.0);         ( 475311.0,
3720326.6,     427.1,     742.0,       0.0);
     ( 475317.0, 3720327.4,     427.5,     742.0,       0.0);         ( 475299.5,
3720298.8,     426.0,     742.0,       0.0);
     ( 475307.9, 3720300.0,     426.4,     742.0,       0.0);         ( 475314.2,
3720301.2,     426.7,     742.0,       0.0);
     ( 475322.1, 3720301.2,     427.1,     742.0,       0.0);         ( 475344.7,
3720261.2,     432.2,     742.0,       0.0);
     ( 475345.5, 3720253.6,     432.5,     742.0,       0.0);         ( 475346.3,
3720248.5,     432.5,     742.0,       0.0);
     ( 475346.7, 3720241.3,     432.3,     742.0,       0.0);         ( 475303.5,
3720274.6,     426.9,     742.0,       0.0);
     ( 475311.0, 3720274.2,     427.3,     742.0,       0.0);         ( 475317.4,
3720276.2,     427.4,     742.0,       0.0);
     ( 475324.9, 3720276.6,     427.7,     742.0,       0.0);         ( 475305.5,
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3720250.1,     428.3,     742.0,       0.0);
     ( 475313.4, 3720252.0,     428.9,     742.0,       0.0);         ( 475321.0,
3720251.6,     429.3,     742.0,       0.0);
     ( 475328.5, 3720252.8,     429.8,     742.0,       0.0);         ( 475339.9,
3720321.0,     430.1,     742.0,       0.0);
     ( 475347.8, 3720323.0,     431.6,     742.0,       0.0);         ( 475355.3,
3720322.6,     432.9,     742.0,       0.0);
     ( 475362.9, 3720323.8,     434.4,     742.0,       0.0);         ( 475368.9,
3720324.6,     435.6,     742.0,       0.0);
     ( 475367.4, 3720354.3,     435.4,     742.0,       0.0);         ( 475338.4,
3720350.8,     431.9,     742.0,       0.0);
     ( 475346.3, 3720352.7,     433.3,     742.0,       0.0);         ( 475353.8,
3720352.3,     433.8,     742.0,       0.0);
     ( 475361.4, 3720353.5,     434.7,     742.0,       0.0);         ( 475372.2,
3720387.2,     439.0,     742.0,       0.0);
     ( 475343.1, 3720383.7,     438.3,     742.0,       0.0);         ( 475351.1,
3720385.6,     438.0,     742.0,       0.0);
     ( 475358.6, 3720385.2,     438.3,     742.0,       0.0);         ( 475366.1,
3720386.4,     438.7,     742.0,       0.0);
     ( 475383.6, 3720372.2,     438.6,     742.0,       0.0);         ( 475391.5,
3720374.1,     438.9,     742.0,       0.0);
     ( 475399.0, 3720373.8,     439.3,     742.0,       0.0);         ( 475406.6,
3720374.9,     439.6,     742.0,       0.0);
     ( 475386.3, 3720344.8,     436.7,     742.0,       0.0);         ( 475394.2,
3720346.8,     437.9,     742.0,       0.0);
     ( 475401.7, 3720346.4,     439.4,     742.0,       0.0);         ( 475409.3,
3720347.6,     440.8,     742.0,       0.0);
     ( 475389.8, 3720319.8,     440.5,     742.0,       0.0);         ( 475397.8,
3720321.8,     441.2,     742.0,       0.0);
     ( 475405.3, 3720321.4,     442.1,     742.0,       0.0);         ( 475412.8,
3720322.6,     442.9,     742.0,       0.0);
     ( 475393.4, 3720294.1,     439.8,     742.0,       0.0);         ( 475401.3,
3720296.0,     440.6,     742.0,       0.0);
     ( 475408.9, 3720295.6,     441.1,     742.0,       0.0);         ( 475416.4,
3720296.8,     441.8,     742.0,       0.0);
     ( 475373.8, 3720263.6,     436.9,     742.0,       0.0);         ( 475374.6,
3720256.1,     437.0,     742.0,       0.0);
     ( 475375.4, 3720250.9,     436.8,     742.0,       0.0);         ( 475375.8,
3720243.8,     436.5,     742.0,       0.0);
     ( 475399.1, 3720264.8,     439.4,     742.0,       0.0);         ( 475399.9,
3720257.3,     439.4,     742.0,       0.0);
     ( 475400.7, 3720252.1,     439.1,     742.0,       0.0);         ( 475401.1,
3720245.0,     438.6,     742.0,       0.0);
     ( 475345.1, 3720307.9,     431.1,     742.0,       0.0);         ( 475346.3,
3720287.7,     431.4,     742.0,       0.0);
     ( 475369.3, 3720311.5,     436.2,     742.0,       0.0);         ( 475370.9,
3720292.5,     436.5,     742.0,       0.0);
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
                           ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
```

*** 08:11:04

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

↑ *** AERMOD - VERSION 19191 *** *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC *** 03/04/21

*** AERMET - VERSION 16216 *** *** *** 08:11:04

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*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
Met Version: 16216
Profile file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3171 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN

Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.3	0.065	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	78.	9.1	284.2	5.5
12	01	01	1	02	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	69.	9.1	283.8	5.5
12	01	01	1	03	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	286.	9.1	282.5	5.5
12	01	01	1	04	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	348.	9.1	282.5	5.5
12	01	01	1	05	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	17.	9.1	282.0	5.5
12	01	01	1	06	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	161.	9.1	282.0	5.5
12	01	01	1	07	-1.3	0.066	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	273.	9.1	282.0	5.5
12	01	01	1	08	-3.6	0.091	-9.000	-9.000	-999.	66.	18.3	0.23	2.69	0.54	0.90	113.	9.1	283.8	5.5
12	01	01	1	09	39.6	0.087	0.358	0.016	40.	61.	-1.4	0.23	2.69	0.33	0.40	336.	9.1	285.9	5.5
12	01	01	1	10	110.7	0.206	0.740	0.007	127.	225.	-6.9	0.23	2.69	0.25	1.30	158.	9.1	291.4	5.5
12	01	01	1	11	161.7	0.105	1.203	0.005	374.	87.	-1.0	0.23	2.69	0.23	0.40	33.	9.1	297.0	5.5
12	01	01	1	12	185.5	0.271	1.535	0.005	676.	339.	-9.3	0.23	2.69	0.22	1.80	313.	9.1	298.8	5.5
12	01	01	1	13	183.9	0.219	1.828	0.005	1154.	247.	-4.9	0.23	2.69	0.22	1.30	250.	9.1	300.4	5.5
12	01	01	1	14	156.6	0.266	1.869	0.005	1446.	330.	-10.4	0.23	2.69	0.23	1.80	217.	9.1	301.4	5.5
12	01	01	1	15	104.7	0.256	1.677	0.005	1562.	311.	-13.8	0.23	2.69	0.27	1.80	248.	9.1	302.0	5.5
12	01	01	1	16	32.7	0.319	1.147	0.005	1596.	433.	-85.9	0.23	2.69	0.36	2.70	235.	9.1	302.0	5.5
12	01	01	1	17	-15.5	0.190	-9.000	-9.000	-999.	208.	39.6	0.23	2.69	0.63	1.80	46.	9.1	299.2	5.5
12	01	01	1	18	-4.1	0.092	-9.000	-9.000	-999.	73.	16.2	0.23	2.69						

```
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\CO\CO.ISC
                          ***       03/04/21
 *** AERMET - VERSION  16216 ***   ***
                         ***       08:11:04

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                               *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     L0001114    , L0001115
 , L0001116    , L0001117    , L0001118    ,
                 L0001119    , L0001120    , L0001121    , L0001122    , L0001123
 , L0001124    , L0001125    , L0001126    ,
                 L0001127    , L0001128    , L0001129    , L0001130    , L0001131
 , L0001132    , L0001133    , L0001134    ,
                 L0001135    , L0001136    , L0001137    , L0001138    , L0001139
 , L0001140    , L0001141    ,  . . .      ,

                                                *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                          ** CONC OF CO       IN MICROGRAMS/M**3
                    **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)
Y-COORD (M)        CONC     (YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

475305.88 3720344.02 25.69175 (14113016) 475307.47
3720352.74 24.73245 (14113016)
475308.66 3720358.69 24.03757 (14113016) 475310.24
3720364.64 23.78227 (14081619)
475310.64 3720370.98 23.65986 (14081619) 475296.37
3720324.20 28.64048 (14113016)
475303.90 3720325.78 27.51050 (14113016) 475311.04
3720326.58 26.56070 (14113016)
475316.98 3720327.37 25.79699 (14113016) 475299.54
3720298.82 30.78167 (14113016)
475307.87 3720300.01 29.43922 (14113016) 475314.21
3720301.20 28.45191 (14113016)
475322.14 3720301.20 27.43388 (14113016) 475344.74
3720261.16 28.45863 (13091419)
475345.53 3720253.63 28.87374 (13091419) 475346.32
3720248.47 29.19535 (15082920)
475346.72 3720241.34 29.76186 (15082920) 475303.50
3720274.64 32.85215 (14113016)
475311.04 3720274.24 31.65601 (14113016) 475317.38
3720276.23 30.47058 (14113016)
475324.91 3720276.62 29.34526 (14113016) 475305.49
3720250.06 35.61203 (14113016)
475313.42 3720252.04 33.88639 (14113016) 475320.95
3720251.65 32.64071 (14113016)
475328.48 3720252.84 31.28000 (14113016) 475339.88
3720321.02 23.99618 (14091419)
475347.81 3720323.00 24.11823 (14091419) 475355.34
3720322.61 24.03067 (14091419)
475362.87 3720323.80 23.73579 (14091419) 475368.92
3720324.59 23.39374 (14091419)
475367.41 3720354.32 22.01074 (14081619) 475338.37
3720350.76 23.14288 (14091419)
475346.30 3720352.74 22.87386 (14081619) 475353.83
3720352.35 22.61341 (14081619)
475361.36 3720353.54 22.29161 (14081619) 475372.17
3720387.23 21.29218 (12100118)
475343.13 3720383.66 22.45378 (12100118) 475351.06
3720385.64 22.00722 (12100118)
475358.59 3720385.25 21.78320 (12100118) 475366.12
3720386.44 21.49987 (12100118)
475383.57 3720372.17 21.39460 (12100118) 475391.50
3720374.15 21.08397 (12100118)
475399.03 3720373.76 20.87786 (12100118) 475406.56
3720374.95 20.62120 (12100118)
475386.27 3720344.81 21.85484 (12100118) 475394.20
3720346.79 21.79210 (12100118)
475401.73 3720346.40 21.72022 (12100118) 475409.26
3720347.59 21.44620 (12100118)
475389.83 3720319.83 23.11780 (14083021) 475397.76
3720321.81 22.70350 (14083021)

```
3720364.64       21.42190  (15122224)
       475310.64   3720370.98       21.04919  (15122224)                475296.37
3720324.20       21.12986c (14112608)
       475303.90   3720325.78       20.42532c (14112608)                475311.04
3720326.58       20.85966  (15122224)
       475316.98   3720327.37       21.73809  (15122224)                475299.54
3720298.82       22.68615c (14112608)
       475307.87   3720300.01       21.85025c (14112608)                475314.21
3720301.20       21.22882c (14112608)
       475322.14   3720301.20       21.59138  (15122224)                475344.74
3720261.16       23.63953  (14111124)
       475345.53   3720253.63       24.03152  (14111124)                475346.32
3720248.47       24.26481  (14111124)
       475346.72   3720241.34       24.65530  (14111124)                475303.50
3720274.64       24.19969c (14112608)
       475311.04   3720274.24       24.85253  (15122224)                475317.38
3720276.23       24.35469  (13011024)
       475324.91   3720276.62       24.01185  (15122224)                475305.49
3720250.06       27.58057  (15122224)
       475313.42   3720252.04       26.92923  (15122224)                475320.95
3720251.65       26.30057  (15122224)
       475328.48   3720252.84       25.58634  (15122224)                475339.88
3720321.02       21.62262  (15122224)
       475347.81   3720323.00       21.18421  (15122224)                475355.34
3720322.61       20.83366  (15121108)
       475362.87   3720323.80       20.49929  (15121108)                475368.92
3720324.59       20.09589  (15121108)
       475367.41   3720354.32       19.32498  (15121108)                475338.37
3720350.76       20.69401  (15122224)
       475346.30   3720352.74       20.20385  (15122224)                475353.83
3720352.35       19.93993  (15121108)
       475361.36   3720353.54       19.61530  (15121108)                475372.17
3720387.23       17.82091  (15122424)
       475343.13   3720383.66       18.74087  (15122424)                475351.06
3720385.64       18.50942  (15122424)
       475358.59   3720385.25       18.27970  (15122424)                475366.12
3720386.44       18.02553  (15122424)
       475383.57   3720372.17       17.85703  (15122424)                475391.50
3720374.15       17.59750  (15122424)
       475399.03   3720373.76       17.39760  (15122424)                475406.56
3720374.95       17.17196  (15122424)
       475386.27   3720344.81       18.81075  (15121108)                475394.20
3720346.79       18.26189  (15121108)
       475401.73   3720346.40       17.85521  (15122424)                475409.26
3720347.59       17.46293  (15122424)
       475389.83   3720319.83       18.55267  (15122424)                475397.76
3720321.81       18.17631  (15122424)
       475405.29   3720321.42       17.79308  (15122424)                475412.82
3720322.61       17.39290  (15122424)
       475393.40   3720294.06       19.20184  (15122424)                475401.33
```

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 1-HR
RESULTS ***

                                     ** CONC OF CO   IN MICROGRAMS/M**3
                **

                                                          DATE
                                          NETWORK
GROUP ID   AVERAGE CONC   (YYMMDDHH)   RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE GRID-ID
- -
- -

ALL   HIGH   1ST HIGH VALUE IS   35.61203 ON 14113016: AT (475305.49,
3720250.06,   428.34,   742.00,   0.00) DC

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CO   IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE	CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	27.58057	ON 15122224:	AT (475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC	

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   2 Warning Message(s)
 A Total of   1763 Informational Message(s)

 A Total of   43848 Hours Were Processed

 A Total of   884 Calm Hours Identified

 A Total of   879 Missing Hours Identified (2.00 Percent)

    ******** FATAL ERROR MESSAGES ********
               *** NONE ***

```
    ********   WARNING MESSAGES   ********
 ME W186     264       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     264       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************


** Lakes Environmental AERMOD MPI
**
****************************************
**
** AERMOD INPUT PRODUCED BY:
** AERMOD VIEW VER. 9.9.0
** LAKES ENVIRONMENTAL SOFTWARE INC.
** DATE: 3/4/2021
** FILE: C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ADI
**
****************************************
**
**
****************************************
** AERMOD CONTROL PATHWAY
****************************************
**
**
CO STARTING
   TITLEONE C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ISC
   MODELOPT DFAULT CONC ARM2
   AVERTIME 1
   URBANOPT 2189641
   POLLUTID NO2 H1H
   RUNORNOT RUN
** NO2 CONVERSION OPTIONS
   ARMRATIO 0.500 0.900
   ERRORFIL NO2.ERR
CO FINISHED
**
****************************************
** AERMOD SOURCE PATHWAY
****************************************
**
**
SO STARTING
** SOURCE LOCATION **
```

```
** SOURCE ID - TYPE - X COORD. - Y COORD. **
** ----------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE1
** DESCRSRC I-15 NB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.07184
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474902.377, 3720521.122, 420.88, 3.49, 11.30
** 475520.230, 3719709.536, 419.77, 3.49, 11.30
** ----------------------------------------------------------------
   LOCATION L0001198     VOLUME   474909.733 3720511.459 420.87
   LOCATION L0001199     VOLUME   474924.446 3720492.134 420.84
   LOCATION L0001200     VOLUME   474939.158 3720472.809 420.81
   LOCATION L0001201     VOLUME   474953.870 3720453.484 420.79
   LOCATION L0001202     VOLUME   474968.582 3720434.158 420.76
   LOCATION L0001203     VOLUME   474983.294 3720414.833 420.73
   LOCATION L0001204     VOLUME   474998.006 3720395.508 420.71
   LOCATION L0001205     VOLUME   475012.718 3720376.183 420.68
   LOCATION L0001206     VOLUME   475027.430 3720356.858 420.66
   LOCATION L0001207     VOLUME   475042.142 3720337.533 420.63
   LOCATION L0001208     VOLUME   475056.854 3720318.207 420.60
   LOCATION L0001209     VOLUME   475071.566 3720298.882 420.58
   LOCATION L0001210     VOLUME   475086.278 3720279.557 420.55
   LOCATION L0001211     VOLUME   475100.990 3720260.232 420.52
   LOCATION L0001212     VOLUME   475115.702 3720240.907 420.50
   LOCATION L0001213     VOLUME   475130.414 3720221.582 420.47
   LOCATION L0001214     VOLUME   475145.126 3720202.256 420.44
   LOCATION L0001215     VOLUME   475159.839 3720182.931 420.42
   LOCATION L0001216     VOLUME   475174.551 3720163.606 420.39
   LOCATION L0001217     VOLUME   475189.263 3720144.281 420.36
   LOCATION L0001218     VOLUME   475203.975 3720124.956 420.34
   LOCATION L0001219     VOLUME   475218.687 3720105.631 420.31
   LOCATION L0001220     VOLUME   475233.399 3720086.305 420.29
   LOCATION L0001221     VOLUME   475248.111 3720066.980 420.26
   LOCATION L0001222     VOLUME   475262.823 3720047.655 420.23
   LOCATION L0001223     VOLUME   475277.535 3720028.330 420.21
   LOCATION L0001224     VOLUME   475292.247 3720009.005 420.18
   LOCATION L0001225     VOLUME   475306.959 3719989.680 420.15
   LOCATION L0001226     VOLUME   475321.671 3719970.354 420.13
   LOCATION L0001227     VOLUME   475336.383 3719951.029 420.10
   LOCATION L0001228     VOLUME   475351.095 3719931.704 420.07
   LOCATION L0001229     VOLUME   475365.807 3719912.379 420.05
   LOCATION L0001230     VOLUME   475380.519 3719893.054 420.02
   LOCATION L0001231     VOLUME   475395.232 3719873.729 419.99
   LOCATION L0001232     VOLUME   475409.944 3719854.403 419.97
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   LOCATION L0001233     VOLUME   475424.656 3719835.078 419.94
   LOCATION L0001234     VOLUME   475439.368 3719815.753 419.92
   LOCATION L0001235     VOLUME   475454.080 3719796.428 419.89
   LOCATION L0001236     VOLUME   475468.792 3719777.103 419.86
   LOCATION L0001237     VOLUME   475483.504 3719757.778 419.84
   LOCATION L0001238     VOLUME   475498.216 3719738.452 419.81
   LOCATION L0001239     VOLUME   475512.928 3719719.127 419.78
** END OF LINE VOLUME SOURCE ID = SLINE1
** ----------------------------------------------------------------------
** LINE SOURCE REPRESENTED BY ADJACENT VOLUME SOURCES
** LINE VOLUME SOURCE ID = SLINE2
** DESCRSRC I-15 SB
** PREFIX
** LENGTH OF SIDE = 24.29
** CONFIGURATION = ADJACENT
** EMISSION RATE = 0.07184
** VERTICAL DIMENSION = 6.99
** SZINIT = 3.25
** NODES = 2
** 474866.753, 3720494.016, 420.00, 3.49, 11.30
** 475484.605, 3719682.431, 416.97, 3.49, 11.30
** ----------------------------------------------------------------------
   LOCATION L0001240     VOLUME   474874.109 3720484.354 419.96
   LOCATION L0001241     VOLUME   474888.821 3720465.029 419.89
   LOCATION L0001242     VOLUME   474903.533 3720445.703 419.82
   LOCATION L0001243     VOLUME   474918.245 3720426.378 419.75
   LOCATION L0001244     VOLUME   474932.958 3720407.053 419.68
   LOCATION L0001245     VOLUME   474947.670 3720387.728 419.60
   LOCATION L0001246     VOLUME   474962.382 3720368.403 419.53
   LOCATION L0001247     VOLUME   474977.094 3720349.078 419.46
   LOCATION L0001248     VOLUME   474991.806 3720329.752 419.39
   LOCATION L0001249     VOLUME   475006.518 3720310.427 419.31
   LOCATION L0001250     VOLUME   475021.230 3720291.102 419.24
   LOCATION L0001251     VOLUME   475035.942 3720271.777 419.17
   LOCATION L0001252     VOLUME   475050.654 3720252.452 419.10
   LOCATION L0001253     VOLUME   475065.366 3720233.127 419.03
   LOCATION L0001254     VOLUME   475080.078 3720213.801 418.95
   LOCATION L0001255     VOLUME   475094.790 3720194.476 418.88
   LOCATION L0001256     VOLUME   475109.502 3720175.151 418.81
   LOCATION L0001257     VOLUME   475124.214 3720155.826 418.74
   LOCATION L0001258     VOLUME   475138.926 3720136.501 418.67
   LOCATION L0001259     VOLUME   475153.638 3720117.176 418.59
   LOCATION L0001260     VOLUME   475168.351 3720097.850 418.52
   LOCATION L0001261     VOLUME   475183.063 3720078.525 418.45
   LOCATION L0001262     VOLUME   475197.775 3720059.200 418.38
   LOCATION L0001263     VOLUME   475212.487 3720039.875 418.30
   LOCATION L0001264     VOLUME   475227.199 3720020.550 418.23
   LOCATION L0001265     VOLUME   475241.911 3720001.225 418.16
   LOCATION L0001266     VOLUME   475256.623 3719981.899 418.09
   LOCATION L0001267     VOLUME   475271.335 3719962.574 418.02
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   LOCATION L0001268     VOLUME   475286.047 3719943.249 417.94
   LOCATION L0001269     VOLUME   475300.759 3719923.924 417.87
   LOCATION L0001270     VOLUME   475315.471 3719904.599 417.80
   LOCATION L0001271     VOLUME   475330.183 3719885.274 417.73
   LOCATION L0001272     VOLUME   475344.895 3719865.948 417.66
   LOCATION L0001273     VOLUME   475359.607 3719846.623 417.58
   LOCATION L0001274     VOLUME   475374.319 3719827.298 417.51
   LOCATION L0001275     VOLUME   475389.032 3719807.973 417.44
   LOCATION L0001276     VOLUME   475403.744 3719788.648 417.37
   LOCATION L0001277     VOLUME   475418.456 3719769.323 417.29
   LOCATION L0001278     VOLUME   475433.168 3719749.997 417.22
   LOCATION L0001279     VOLUME   475447.880 3719730.672 417.15
   LOCATION L0001280     VOLUME   475462.592 3719711.347 417.08
   LOCATION L0001281     VOLUME   475477.304 3719692.022 417.01
** END OF LINE VOLUME SOURCE ID = SLINE2
** SOURCE PARAMETERS **
** LINE VOLUME SOURCE ID = SLINE1
   SRCPARAM L0001198     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001199     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001200     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001201     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001202     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001203     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001204     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001205     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001206     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001207     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001208     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001209     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001210     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001211     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001212     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001213     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001214     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001215     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001216     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001217     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001218     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001219     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001220     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001221     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001222     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001223     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001224     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001225     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001226     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001227     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001228     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001229     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001230     0.0017104762      3.49     11.30      3.25
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   SRCPARAM L0001231     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001232     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001233     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001234     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001235     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001236     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001237     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001238     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001239     0.0017104762      3.49     11.30      3.25
** ----------------------------------------------------------------
** LINE VOLUME SOURCE ID = SLINE2
   SRCPARAM L0001240     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001241     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001242     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001243     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001244     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001245     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001246     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001247     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001248     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001249     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001250     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001251     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001252     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001253     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001254     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001255     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001256     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001257     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001258     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001259     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001260     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001261     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001262     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001263     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001264     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001265     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001266     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001267     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001268     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001269     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001270     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001271     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001272     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001273     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001274     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001275     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001276     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001277     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001278     0.0017104762      3.49     11.30      3.25
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   SRCPARAM L0001279     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001280     0.0017104762      3.49     11.30      3.25
   SRCPARAM L0001281     0.0017104762      3.49     11.30      3.25
** ----------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD RECEPTOR PATHWAY
**************************************
**
**
RE STARTING
   INCLUDED NO2.ROU
RE FINISHED
**
**************************************
** AERMOD METEOROLOGY PATHWAY
**************************************
**
**
ME STARTING
   SURFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
   PROFFILE ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL
   SURFDATA 3171 2012
   UAIRDATA 3190 2012
   SITEDATA 99999 2012
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD OUTPUT PATHWAY
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** AUTO-GENERATED PLOTFILES
   PLOTFILE   1 ALL 1ST NO2.AD\01H1GALL.PLT 31
   SUMMFILE NO2.SUM
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
```

```
 A Total of            3 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W276      23       POLLID: Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled
   NO2 H1H
 ME W186     266       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
      0.50
 ME W187     266       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ISC
                           ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                           ***       08:24:48

                                     PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  ARM2  URBAN  ADJ_U*

                                              ***     MODEL SETUP OPTIONS SUMMARY
  ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for    84 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2189641.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
```

```
         5. No Exponential Decay.
         6. Ambient Ratio Method Ver 2 (ARM2) Used for NO2 Conversion
               with a Minimum NO2/NOx Ratio of  0.500
                and a Maximum NO2/NOx Ratio of  0.900
         7. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         ADJ_U*   - Use ADJ_U* option for SBL in AERMET
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  NO2

 **NOTE: Special processing requirements applicable for the 1-hour NO2 NAAQS have
been disabled!!!
         User has specified H1H on the POLLUTID keyword.
         High ranked 1-hour values are NOT averaged across the number of years
modeled, and
         complete years of data are NOT required.

 **Model Calculates  1 Short Term Average(s) of:   1-HR

 **This Run Includes:     84 Source(s);       1 Source Group(s); and      68
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:     84 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE
Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
```

m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 406.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ;
Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**Detailed Error/Message File: NO2.ERR

**File for Summary of Results: NO2.SUM

*** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0001198	0	0.17105E-02	474909.7	3720511.5	420.9	3.49	11.30	3.25	YES	
L0001199	0	0.17105E-02	474924.4	3720492.1	420.8	3.49	11.30	3.25	YES	
L0001200	0	0.17105E-02	474939.2	3720472.8	420.8	3.49	11.30	3.25	YES	
L0001201	0	0.17105E-02	474953.9	3720453.5	420.8	3.49	11.30	3.25	YES	

L0001202	0	0.17105E-02	474968.6	3720434.2	420.8	3.49	11.30	3.25 YES
L0001203	0	0.17105E-02	474983.3	3720414.8	420.7	3.49	11.30	3.25 YES
L0001204	0	0.17105E-02	474998.0	3720395.5	420.7	3.49	11.30	3.25 YES
L0001205	0	0.17105E-02	475012.7	3720376.2	420.7	3.49	11.30	3.25 YES
L0001206	0	0.17105E-02	475027.4	3720356.9	420.7	3.49	11.30	3.25 YES
L0001207	0	0.17105E-02	475042.1	3720337.5	420.6	3.49	11.30	3.25 YES
L0001208	0	0.17105E-02	475056.9	3720318.2	420.6	3.49	11.30	3.25 YES
L0001209	0	0.17105E-02	475071.6	3720298.9	420.6	3.49	11.30	3.25 YES
L0001210	0	0.17105E-02	475086.3	3720279.6	420.6	3.49	11.30	3.25 YES
L0001211	0	0.17105E-02	475101.0	3720260.2	420.5	3.49	11.30	3.25 YES
L0001212	0	0.17105E-02	475115.7	3720240.9	420.5	3.49	11.30	3.25 YES
L0001213	0	0.17105E-02	475130.4	3720221.6	420.5	3.49	11.30	3.25 YES
L0001214	0	0.17105E-02	475145.1	3720202.3	420.4	3.49	11.30	3.25 YES
L0001215	0	0.17105E-02	475159.8	3720182.9	420.4	3.49	11.30	3.25 YES
L0001216	0	0.17105E-02	475174.6	3720163.6	420.4	3.49	11.30	3.25 YES
L0001217	0	0.17105E-02	475189.3	3720144.3	420.4	3.49	11.30	3.25 YES
L0001218	0	0.17105E-02	475204.0	3720125.0	420.3	3.49	11.30	3.25 YES
L0001219	0	0.17105E-02	475218.7	3720105.6	420.3	3.49	11.30	3.25 YES
L0001220	0	0.17105E-02	475233.4	3720086.3	420.3	3.49	11.30	3.25 YES
L0001221	0	0.17105E-02	475248.1	3720067.0	420.3	3.49	11.30	3.25 YES
L0001222	0	0.17105E-02	475262.8	3720047.7	420.2	3.49	11.30	3.25 YES
L0001223	0	0.17105E-02	475277.5	3720028.3	420.2	3.49	11.30	3.25 YES
L0001224	0	0.17105E-02	475292.2	3720009.0	420.2	3.49	11.30	3.25 YES
L0001225	0	0.17105E-02	475307.0	3719989.7	420.2	3.49	11.30	3.25 YES
L0001226	0	0.17105E-02	475321.7	3719970.4	420.1	3.49	11.30	3.25 YES

*** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0001227	0	0.17105E-02	475336.4	3719951.0	420.1	3.49	11.30	3.25	YES	
L0001228	0	0.17105E-02	475351.1	3719931.7	420.1	3.49	11.30	3.25	YES	
L0001229	0	0.17105E-02	475365.8	3719912.4	420.1	3.49	11.30	3.25	YES	
L0001230	0	0.17105E-02	475380.5	3719893.1	420.0	3.49	11.30	3.25	YES	
L0001231	0	0.17105E-02	475395.2	3719873.7	420.0	3.49	11.30	3.25	YES	
L0001232	0	0.17105E-02	475409.9	3719854.4	420.0	3.49	11.30	3.25	YES	
L0001233	0	0.17105E-02	475424.7	3719835.1	419.9	3.49	11.30	3.25	YES	
L0001234	0	0.17105E-02	475439.4	3719815.8	419.9	3.49	11.30	3.25	YES	
L0001235	0	0.17105E-02	475454.1	3719796.4	419.9	3.49	11.30	3.25	YES	
L0001236	0	0.17105E-02	475468.8	3719777.1	419.9	3.49	11.30	3.25	YES	
L0001237	0	0.17105E-02	475483.5	3719757.8	419.8	3.49	11.30	3.25	YES	
L0001238	0	0.17105E-02	475498.2	3719738.5	419.8	3.49	11.30	3.25	YES	
L0001239	0	0.17105E-02	475512.9	3719719.1	419.8	3.49	11.30	3.25	YES	
L0001240	0	0.17105E-02	474874.1	3720484.4	420.0	3.49	11.30	3.25	YES	
L0001241	0	0.17105E-02	474888.8	3720465.0	419.9	3.49	11.30	3.25	YES	

L0001242	0	0.17105E-02	474903.5	3720445.7	419.8	3.49	11.30	3.25 YES
L0001243	0	0.17105E-02	474918.2	3720426.4	419.8	3.49	11.30	3.25 YES
L0001244	0	0.17105E-02	474933.0	3720407.1	419.7	3.49	11.30	3.25 YES
L0001245	0	0.17105E-02	474947.7	3720387.7	419.6	3.49	11.30	3.25 YES
L0001246	0	0.17105E-02	474962.4	3720368.4	419.5	3.49	11.30	3.25 YES
L0001247	0	0.17105E-02	474977.1	3720349.1	419.5	3.49	11.30	3.25 YES
L0001248	0	0.17105E-02	474991.8	3720329.8	419.4	3.49	11.30	3.25 YES
L0001249	0	0.17105E-02	475006.5	3720310.4	419.3	3.49	11.30	3.25 YES
L0001250	0	0.17105E-02	475021.2	3720291.1	419.2	3.49	11.30	3.25 YES
L0001251	0	0.17105E-02	475035.9	3720271.8	419.2	3.49	11.30	3.25 YES
L0001252	0	0.17105E-02	475050.7	3720252.5	419.1	3.49	11.30	3.25 YES
L0001253	0	0.17105E-02	475065.4	3720233.1	419.0	3.49	11.30	3.25 YES
L0001254	0	0.17105E-02	475080.1	3720213.8	418.9	3.49	11.30	3.25 YES
L0001255	0	0.17105E-02	475094.8	3720194.5	418.9	3.49	11.30	3.25 YES
L0001256	0	0.17105E-02	475109.5	3720175.2	418.8	3.49	11.30	3.25 YES
L0001257	0	0.17105E-02	475124.2	3720155.8	418.7	3.49	11.30	3.25 YES
L0001258	0	0.17105E-02	475138.9	3720136.5	418.7	3.49	11.30	3.25 YES
L0001259	0	0.17105E-02	475153.6	3720117.2	418.6	3.49	11.30	3.25 YES
L0001260	0	0.17105E-02	475168.4	3720097.8	418.5	3.49	11.30	3.25 YES
L0001261	0	0.17105E-02	475183.1	3720078.5	418.4	3.49	11.30	3.25 YES
L0001262	0	0.17105E-02	475197.8	3720059.2	418.4	3.49	11.30	3.25 YES
L0001263	0	0.17105E-02	475212.5	3720039.9	418.3	3.49	11.30	3.25 YES
L0001264	0	0.17105E-02	475227.2	3720020.5	418.2	3.49	11.30	3.25 YES
L0001265	0	0.17105E-02	475241.9	3720001.2	418.2	3.49	11.30	3.25 YES
L0001266	0	0.17105E-02	475256.6	3719981.9	418.1	3.49	11.30	3.25 YES

```
 L0001267         0   0.17105E-02  475271.3 3719962.6   418.0     3.49    11.30
3.25     YES
 L0001268         0   0.17105E-02  475286.0 3719943.2   417.9     3.49    11.30
3.25     YES
 L0001269         0   0.17105E-02  475300.8 3719923.9   417.9     3.49    11.30
3.25     YES
 L0001270         0   0.17105E-02  475315.5 3719904.6   417.8     3.49    11.30
3.25     YES
 L0001271         0   0.17105E-02  475330.2 3719885.3   417.7     3.49    11.30
3.25     YES
 L0001272         0   0.17105E-02  475344.9 3719865.9   417.7     3.49    11.30
3.25     YES
 L0001273         0   0.17105E-02  475359.6 3719846.6   417.6     3.49    11.30
3.25     YES
 L0001274         0   0.17105E-02  475374.3 3719827.3   417.5     3.49    11.30
3.25     YES
 L0001275         0   0.17105E-02  475389.0 3719808.0   417.4     3.49    11.30
3.25     YES
 L0001276         0   0.17105E-02  475403.7 3719788.6   417.4     3.49    11.30
3.25     YES
 L0001277         0   0.17105E-02  475418.5 3719769.3   417.3     3.49    11.30
3.25     YES
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ISC
                         ***        03/04/21
 *** AERMET - VERSION  16216 ***   ***
                        ***        08:24:48

                                   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  ARM2  URBAN  ADJ_U*


                                                  *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY
SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)             BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - -

 L0001278         0   0.17105E-02  475433.2 3719750.0   417.2     3.49    11.30
3.25     YES
 L0001279         0   0.17105E-02  475447.9 3719730.7   417.2     3.49    11.30
3.25     YES
 L0001280         0   0.17105E-02  475462.6 3719711.3   417.1     3.49    11.30
3.25     YES
 L0001281         0   0.17105E-02  475477.3 3719692.0   417.0     3.49    11.30
3.25     YES
```

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

                                          *** SOURCE IDs DEFINING SOURCE GROUPS
***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

  ALL   L0001198   , L0001199   , L0001200   , L0001201   , L0001202   ,
L0001203   , L0001204   , L0001205   ,

             L0001206   , L0001207   , L0001208   , L0001209   , L0001210   ,
L0001211   , L0001212   , L0001213   ,

             L0001214   , L0001215   , L0001216   , L0001217   , L0001218   ,
L0001219   , L0001220   , L0001221   ,

             L0001222   , L0001223   , L0001224   , L0001225   , L0001226   ,
L0001227   , L0001228   , L0001229   ,

             L0001230   , L0001231   , L0001232   , L0001233   , L0001234   ,
L0001235   , L0001236   , L0001237   ,

             L0001238   , L0001239   , L0001240   , L0001241   , L0001242   ,
L0001243   , L0001244   , L0001245   ,

             L0001246   , L0001247   , L0001248   , L0001249   , L0001250   ,
L0001251   , L0001252   , L0001253   ,

             L0001254   , L0001255   , L0001256   , L0001257   , L0001258   ,
L0001259   , L0001260   , L0001261   ,

             L0001262   , L0001263   , L0001264   , L0001265   , L0001266   ,
L0001267   , L0001268   , L0001269   ,

             L0001270   , L0001271   , L0001272   , L0001273   , L0001274   ,
L0001275   , L0001276   , L0001277   ,

             L0001278   , L0001279   , L0001280   , L0001281   ,

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

                                        *** SOURCE IDs DEFINED AS URBAN SOURCES
***

  URBAN ID   URBAN POP   SOURCE IDs
  --------   ---------   ----------

              2189641.   L0001198   , L0001199   , L0001200   , L0001201   ,
L0001202   , L0001203   , L0001204   ,
 L0001205   ,

             L0001206   , L0001207   , L0001208   , L0001209   , L0001210   ,
L0001211   , L0001212   , L0001213   ,

             L0001214   , L0001215   , L0001216   , L0001217   , L0001218   ,
L0001219   , L0001220   , L0001221   ,

             L0001222   , L0001223   , L0001224   , L0001225   , L0001226   ,
L0001227   , L0001228   , L0001229   ,

             L0001230   , L0001231   , L0001232   , L0001233   , L0001234   ,
L0001235   , L0001236   , L0001237   ,

             L0001238   , L0001239   , L0001240   , L0001241   , L0001242   ,
L0001243   , L0001244   , L0001245   ,

             L0001246   , L0001247   , L0001248   , L0001249   , L0001250   ,
L0001251   , L0001252   , L0001253   ,

             L0001254   , L0001255   , L0001256   , L0001257   , L0001258   ,
L0001259   , L0001260   , L0001261   ,

             L0001262   , L0001263   , L0001264   , L0001265   , L0001266   ,
L0001267   , L0001268   , L0001269   ,

             L0001270   , L0001271   , L0001272   , L0001273   , L0001274   ,
L0001275   , L0001276   , L0001277   ,

             L0001278   , L0001279   , L0001280   , L0001281   ,

*** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(475305.9, 3720344.0, 427.3, 742.0, 0.0); (475307.5, 3720352.7, 428.8, 742.0, 0.0);
(475308.7, 3720358.7, 430.1, 742.0, 0.0); (475310.2, 3720364.6, 431.7, 742.0, 0.0);
(475310.6, 3720371.0, 433.2, 742.0, 0.0); (475296.4, 3720324.2, 426.2, 742.0, 0.0);
(475303.9, 3720325.8, 426.6, 742.0, 0.0); (475311.0, 3720326.6, 427.1, 742.0, 0.0);
(475317.0, 3720327.4, 427.5, 742.0, 0.0); (475299.5, 3720298.8, 426.0, 742.0, 0.0);
(475307.9, 3720300.0, 426.4, 742.0, 0.0); (475314.2, 3720301.2, 426.7, 742.0, 0.0);
(475322.1, 3720301.2, 427.1, 742.0, 0.0); (475344.7, 3720261.2, 432.2, 742.0, 0.0);
(475345.5, 3720253.6, 432.5, 742.0, 0.0); (475346.3, 3720248.5, 432.5, 742.0, 0.0);
(475346.7, 3720241.3, 432.3, 742.0, 0.0); (475303.5, 3720274.6, 426.9, 742.0, 0.0);
(475311.0, 3720274.2, 427.3, 742.0, 0.0); (475317.4, 3720276.2, 427.4, 742.0, 0.0);
(475324.9, 3720276.6, 427.7, 742.0, 0.0); (475305.5, 3720250.1, 428.3, 742.0, 0.0);
(475313.4, 3720252.0, 428.9, 742.0, 0.0); (475321.0, 3720251.6, 429.3, 742.0, 0.0);
(475328.5, 3720252.8, 429.8, 742.0, 0.0); (475339.9, 3720321.0, 430.1, 742.0, 0.0);
(475347.8, 3720323.0, 431.6, 742.0, 0.0); (475355.3, 3720322.6, 432.9, 742.0, 0.0);
(475362.9, 3720323.8, 434.4, 742.0, 0.0); (475368.9, 3720324.6, 435.6, 742.0, 0.0);
(475367.4, 3720354.3, 435.4, 742.0, 0.0); (475338.4, 3720350.8, 431.9, 742.0, 0.0);
(475346.3, 3720352.7, 433.3, 742.0, 0.0); (475353.8, 3720352.3, 433.8, 742.0, 0.0);
(475361.4, 3720353.5, 434.7, 742.0, 0.0); (475372.2, 3720387.2, 439.0, 742.0, 0.0);
(475343.1, 3720383.7, 438.3, 742.0, 0.0); (475351.1, 3720385.6, 438.0, 742.0, 0.0);
(475358.6, 3720385.2, 438.3, 742.0, 0.0); (475366.1, 3720386.4, 438.7, 742.0, 0.0);
(475383.6, 3720372.2, 438.6, 742.0, 0.0); (475391.5, 3720374.1, 438.9, 742.0, 0.0);
(475399.0, 3720373.8, 439.3, 742.0, 0.0); (475406.6,

3720374.9,   439.6,   742.0,   0.0);
     (475386.3, 3720344.8,   436.7,   742.0,   0.0);   (475394.2,
3720346.8,   437.9,   742.0,   0.0);
     (475401.7, 3720346.4,   439.4,   742.0,   0.0);   (475409.3,
3720347.6,   440.8,   742.0,   0.0);
     (475389.8, 3720319.8,   440.5,   742.0,   0.0);   (475397.8,
3720321.8,   441.2,   742.0,   0.0);
     (475405.3, 3720321.4,   442.1,   742.0,   0.0);   (475412.8,
3720322.6,   442.9,   742.0,   0.0);
     (475393.4, 3720294.1,   439.8,   742.0,   0.0);   (475401.3,
3720296.0,   440.6,   742.0,   0.0);
     (475408.9, 3720295.6,   441.1,   742.0,   0.0);   (475416.4,
3720296.8,   441.8,   742.0,   0.0);
     (475373.8, 3720263.6,   436.9,   742.0,   0.0);   (475374.6,
3720256.1,   437.0,   742.0,   0.0);
     (475375.4, 3720250.9,   436.8,   742.0,   0.0);   (475375.8,
3720243.8,   436.5,   742.0,   0.0);
     (475399.1, 3720264.8,   439.4,   742.0,   0.0);   (475399.9,
3720257.3,   439.4,   742.0,   0.0);
     (475400.7, 3720252.1,   439.1,   742.0,   0.0);   (475401.1,
3720245.0,   438.6,   742.0,   0.0);
     (475345.1, 3720307.9,   431.1,   742.0,   0.0);   (475346.3,
3720287.7,   431.4,   742.0,   0.0);
     (475369.3, 3720311.5,   436.2,   742.0,   0.0);   (475370.9,
3720292.5,   436.5,   742.0,   0.0);

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

                                              *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                                  (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1
1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1

1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

*** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.SFC
Met Version: 16216
Profile file: ..\LAKEELSINOREADJU\ELSI_V9_ADJU\ELSI_V9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.:   3171 Upper air station no.:   3190
Name: UNKNOWN Name: UNKNOWN

Year: 2012 Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-1.3	0.065	-9.000	-9.000	-999.	40.	18.2	0.23	2.69	1.00	0.40	78.	9.1	284.2	5.5
12	01	01	1	02	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	69.	9.1	283.8	5.5
12	01	01	1	03	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69	1.00	0.90	286.	9.1	282.5	5.5
12	01	01	1	04	-4.2	0.092	-9.000	-9.000	-999.	67.	16.0	0.23	2.69						

```
1.00    0.90  348.    9.1  282.5    5.5
 12 01 01   1 05   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40   17.    9.1  282.0    5.5
 12 01 01   1 06   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90  161.    9.1  282.0    5.5
 12 01 01   1 07   -1.3  0.066 -9.000 -9.000 -999.   40.     18.2  0.23   2.69
1.00    0.40  273.    9.1  282.0    5.5
 12 01 01   1 08   -3.6  0.091 -9.000 -9.000 -999.   66.     18.3  0.23   2.69
0.54    0.90  113.    9.1  283.8    5.5
 12 01 01   1 09   39.6  0.087  0.358  0.016   40.   61.     -1.4  0.23   2.69
0.33    0.40  336.    9.1  285.9    5.5
 12 01 01   1 10  110.7  0.206  0.740  0.007  127.  225.     -6.9  0.23   2.69
0.25    1.30  158.    9.1  291.4    5.5
 12 01 01   1 11  161.7  0.105  1.203  0.005  374.   87.     -1.0  0.23   2.69
0.23    0.40   33.    9.1  297.0    5.5
 12 01 01   1 12  185.5  0.271  1.535  0.005  676.  339.     -9.3  0.23   2.69
0.22    1.80  313.    9.1  298.8    5.5
 12 01 01   1 13  183.9  0.219  1.828  0.005 1154.  247.     -4.9  0.23   2.69
0.22    1.30  250.    9.1  300.4    5.5
 12 01 01   1 14  156.6  0.266  1.869  0.005 1446.  330.    -10.4  0.23   2.69
0.23    1.80  217.    9.1  301.4    5.5
 12 01 01   1 15  104.7  0.256  1.677  0.005 1562.  311.    -13.8  0.23   2.69
0.27    1.80  248.    9.1  302.0    5.5
 12 01 01   1 16   32.7  0.319  1.147  0.005 1596.  433.    -85.9  0.23   2.69
0.36    2.70  235.    9.1  302.0    5.5
 12 01 01   1 17  -15.5  0.190 -9.000 -9.000 -999.  208.     39.6  0.23   2.69
0.63    1.80   46.    9.1  299.2    5.5
 12 01 01   1 18   -4.1  0.092 -9.000 -9.000 -999.   73.     16.2  0.23   2.69
1.00    0.90  107.    9.1  294.9    5.5
 12 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   2.69
1.00  999.00  999.   -9.0  292.5    5.5
 12 01 01   1 20   -4.2  0.092 -9.000 -9.000 -999.   67.     16.1  0.23   2.69
1.00    0.90  323.    9.1  290.4    5.5
 12 01 01   1 21   -8.8  0.133 -9.000 -9.000 -999.  116.     23.2  0.23   2.69
1.00    1.30   34.    9.1  287.5    5.5
 12 01 01   1 22   -1.3  0.065 -9.000 -9.000 -999.   41.     18.1  0.23   2.69
1.00    0.40  359.    9.1  286.4    5.5
 12 01 01   1 23   -1.3  0.065 -9.000 -9.000 -999.   40.     18.1  0.23   2.69
1.00    0.40  351.    9.1  285.4    5.5
 12 01 01   1 24   -4.2  0.092 -9.000 -9.000 -999.   67.     16.0  0.23   2.69
1.00    0.90   11.    9.1  284.9    5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 12 01 01 01    9.1 1   78.    0.40  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ISC
```

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

                                *** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL   ***
                                   INCLUDING SOURCE(S):   L0001198   , L0001199
 , L0001200   , L0001201   , L0001202   ,
                 L0001203   , L0001204   , L0001205   , L0001206   , L0001207
 , L0001208   , L0001209   , L0001210   ,
                 L0001211   , L0001212   , L0001213   , L0001214   , L0001215
 , L0001216   , L0001217   , L0001218   ,
                 L0001219   , L0001220   , L0001221   , L0001222   , L0001223
 , L0001224   , L0001225   , . . .   ,

                                              *** DISCRETE CARTESIAN RECEPTOR POINTS
***

                                           ** CONC OF NO2   IN MICROGRAMS/M**3
                    **

      X-COORD (M) Y-COORD (M)   CONC   (YYMMDDHH)   X-COORD (M)
Y-COORD (M)   CONC   (YYMMDDHH)
 -
- -
        475305.88   3720344.02   3.63140 (14113016)   475307.47
 3720352.74   3.60531 (14051620)
        475308.66   3720358.69   3.66551 (14051620)   475310.24
 3720364.64   3.69075 (14051620)
        475310.64   3720370.98   3.67816 (13081920)   475296.37
 3720324.20   4.06176 (14113016)
        475303.90   3720325.78   3.90078 (14113016)   475311.04
 3720326.58   3.76265 (14113016)
        475316.98   3720327.37   3.65206 (14113016)   475299.54
 3720298.82   4.38125 (14113016)
        475307.87   3720300.01   4.18789 (14113016)   475314.21
 3720301.20   4.04528 (14113016)
        475322.14   3720301.20   3.89718 (14113016)   475344.74
 3720261.16   4.06106 (14051620)
        475345.53   3720253.63   4.10754 (14051620)   475346.32
 3720248.47   4.13737 (14051620)
        475346.72   3720241.34   4.18855 (14051620)   475303.50
 3720274.64   4.67139 (14113016)
        475311.04   3720274.24   4.49819 (14113016)   475317.38
 3720276.23   4.32954 (14113016)
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 3720250.06   5.03579 (14113016)

```
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3720251.65        4.59403  (14113016)
       475328.48   3720252.84        4.39422  (14113016)               475339.88
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       475367.41   3720354.32        3.32272  (12081622)               475338.37
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3720386.44        3.29026  (12081420)
       475383.57   3720372.17        3.22141  (12081622)               475391.50
3720374.15        3.16842  (12081221)
       475399.03   3720373.76        3.12773  (12081221)               475406.56
3720374.95        3.08047  (12081221)
       475386.27   3720344.81        3.28112  (12081221)               475394.20
3720346.79        3.24943  (12081221)
       475401.73   3720346.40        3.21469  (12081221)               475409.26
3720347.59        3.15536  (12081221)
       475389.83   3720319.83        3.39811  (12081622)               475397.76
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       475405.29   3720321.42        3.24365  (12081221)               475412.82
3720322.61        3.17046  (12081221)
       475393.40   3720294.06        3.49069  (12081622)               475401.33
3720296.04        3.40250  (12081221)
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 *** AERMOD - VERSION  19191 ***   *** C:\LAKES\AERMOD VIEW\13777 HRA\NO2\NO2.ISC
                          ***        03/04/21
*** AERMET - VERSION  16216 ***   ***
                         ***       08:24:48
```

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF NO2   IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE	NETWORK CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	5.03579	ON 14113016:	AT (475305.49, 3720250.06, 428.34, 742.00, 0.00)	DC	

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV ARM2 URBAN ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   3 Warning Message(s)
 A Total of   1763 Informational Message(s)

 A Total of   43848 Hours Were Processed

 A Total of   884 Calm Hours Identified

 A Total of   879 Missing Hours Identified (2.00 Percent)

    ******** FATAL ERROR MESSAGES ********

```
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
CO W276      23       POLLID: Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled
  NO2 H1H
ME W186     266       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
ME W187     266       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


   ***********************************
   *** AERMOD Finishes Successfully ***
   ***********************************
```

APPENDIX 5.1:

RISK CALCULATION WORKSHEETS

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Table A1
Quantification of Carcinogenic Risks and Noncarcinogenic Hazards
30 Year Exposure Scenario / Maximum Residential Receptor

Source	Concentration		Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards / Toxicological Endpoints*								
					URF	CPF	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
	(ug/m3)	(mg/m3)			(ug/m3)	(mg/kg/day)		(ug/m3)	(mg/kg/day)								
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
Freeway	0.04677	4.7E-05	4.67E-01	Benzene	2.9E-05	1.0E-01	2.6E-07	3.0E+00	8.6E-04			7.0E-03					
			3.28E-01	Formaldehyde	6.0E-06	2.1E-02	3.8E-08	9.0E+00	2.6E-03	1.6E-03							
			1.06E-01	1,3-Butadiene	1.7E-04	6.0E-01	3.5E-07	2.0E+00	5.7E-04							2.4E-03	
			7.40E-02	Acetaldehyde	2.7E-06	1.0E-02	4.1E-09	1.4E+02	4.0E-02	2.4E-05							
			2.50E-02	Acrolein				3.5E-01	1.0E-04	3.2E-03							
	0.00939	9.4E-06	1.00E+00	Diesel Particulates	3.0E-04	1.1E+00	1.2E-06	5.0E+00	1.4E-03	1.8E-03							
Total							1.81E-06			6.7E-03	0.0E+00	7.0E-03	0.0E+00	0.0E+00	0.0E+00	2.4E-03	0.0E+00

* Key to Toxocological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g., teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Note: Exposure factors used to calculate contaminant intake

exposure frequency (days/year)	350
exposure duration (years)	30
inhalation rate (m3/day)	20
average body weight (kg)	70
averaging time$_{(cancer)}$ (days)	25550
averaging time$_{(noncancer)}$ (days)	10950

Table A2
Quantification of Noncarcinogenic Acute Hazards
1-Hour Exposure Scenario / Maximum Exposed Receptor

Source	Concentration (ug/m3)	Weight Fraction	Contaminant	Noncarcinogenic Hazards / Toxicological Endpoints*								
				REL (ug/m3)	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Freeway	0.12158	4.67E-01	Benzene	2.7E+01			2.1E-03	2.1E-03			2.1E-03	
TOG		3.28E-01	Formaldehyde	5.5E+01								7.3E-04
		1.06E-01	1,3-Butadiene	6.6E+02							2.0E-05	
		7.40E-02	Acetaldehyde	4.7E+02	1.9E-05							1.9E-05
		2.50E-02	Acrolein	2.5E+00	1.2E-03							1.2E-03
Freeway	0.05099	8.20E-02	Benzene	2.7E+01			1.5E-04	1.5E-04			1.5E-04	
Diesel/TOG		6.07E-01	Formaldehyde	5.5E+01								5.6E-04
		8.00E-03	1,3-Butadiene	6.6E+02							6.2E-07	
		3.03E-01	Acetaldehyde	4.7E+02	3.3E-05							3.3E-05
Total					1.3E-03	0.0E+00	2.3E-03	2.3E-03	0.0E+00	0.0E+00	2.3E-03	2.6E-03

* Key to Toxocological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g., teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

Table A3
Quantification of Noncarcinogenic Acute Hazards
8-Hour Exposure Scenario / Maximum Exposed Receptor

Source	Concentration (ug/m3)	Weight Fraction	Contaminant	Noncarcinogenic Hazards / Toxicological Endpoints*								
				REL (ug/m3)	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Freeway	0.09416	3.28E-01	Formaldehyde	9.0E+00	3.4E-03							
TOG		1.06E-01	1,3-Butadiene	9.0E+00							1.1E-03	
		7.40E-02	Acetaldehyde	3.0E+02	2.3E-05							
		2.50E-02	Acrolein	7.0E-01	3.4E-03							
Freeway	0.03949	6.07E-01	Formaldehyde	9.0E+00	2.7E-03							
Diesel/TOG		8.00E-03	1,3-Butadiene	9.0E+00							3.5E-05	
		3.03E-01	Acetaldehyde	3.0E+02	4.0E-05							
Total					9.5E-03	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.1E-03	0.0E+00

* Key to Toxocological Endpoints

RESP	Respiratory System
CNS/PNS	Central/Peripheral Nervous System
CV/BL	Cardiovascular/Blood System
IMMUN	Immune System
KIDN	Kidney
GI/LV	Gastrointestinal System/Liver
REPRO	Reproductive System (e.g., teratogenic and developmental effects)
EYES	Eye irritation and/or other effects

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1451 RESEARCH PARK DRIVE, SUITE 100
RIVERSIDE, CALIFORNIA 92507-2154

August 2, 2016

Erik Lunde
Monte Vista Ranch, LLC
1200 Quail Street, Suite 220
Newport Beach, CA 92660

DEPARTMENT OF THE ARMY NATIONWIDE PERMIT VERIFICATION

Dear Mr. Lunde:

I am responding to your request (SPL-2006-00378-PJB) for a Department of the Army permit for your proposed project, Monte Vista Ranch (project). The proposed project is located northeast of Interstate 15 along Monte Vista Drive in the Wildomar area of unincorporated western Riverside County, California (North Latitude 33.621833, West Latitude-117.262058) (Figures 1 and 2).

The proposed project is a residential and commercial development that would include 70 single-family residential units and a 7.4-acre commercial office site, with associated infrastructure on approximately 39.5 acres (Figure 4). The proposed project would permanently fill 0.024 acre (294 linear feet) of waters of the United States (U.S.) and temporarily impact 0.135 acre (894 linear feet). The applicant has agreed to have Native American Monitors on the proposed project site during grading and construction.

Because this project would result in a discharge of dredged and/or fill material into waters of the United States a Department of the Army permit is required pursuant to Section 404 of the Clean Water Act (33 USC 1344; 33 CFR parts 323 and 330).

I have determined construction of your proposed project, if constructed as described in your application, would comply with Nationwide Permit (NWP) NWP 29, *Residential Developments*. Specifically, and as shown in the enclosed figure(s), you are authorized to:

1. Discharge permanent clean fill material onto 0.024 acre (293 linear feet) of non-wetland waters of the U.S. (ephemeral stream) as depicted on Figure 4.
2. Discharge temporary fill material onto 0.135 acre (894 linear feet) of non-wetland waters of the U.S. (concrete ditch) as depicted on Figure 4.

For this NWP verification letter to be valid, you must comply with all of the terms and conditions in Enclosure 1. Furthermore, you must comply with the non-discretionary Special Conditions listed below:

Pre-construction:

1. Prior to initiating construction in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a complete set of final detailed grading/construction plans showing all work and structures in waters of the U.S. All plans shall be in compliance with the Final Map and Drawing Standards for the South Pacific Division Regulatory Program dated February 10, 2016 (http://www.spd.usace.army.mil/Missions/Regulatory/PublicNoticesandReferences/tabid/10390/Article/651327/updated-map-and-drawing-standards.aspx). All plan sheets shall be signed, dated, and submitted on paper no larger than 11x 17 inches. No work in waters of the U.S. is authorized until the Permittee receives, in writing (by letter or e-mail), Corps Regulatory Division approval of the final detailed grading/construction plans. The Permittee shall ensure that the project is built in accordance with the Corps-approved plans.

Construction:

2. Adverse impacts to waters of the U.S. beyond the Corps-approved construction footprint are not authorized. Such impacts could result in permit suspension and revocation, administrative, civil or criminal penalties, and/or substantial, additional, compensatory mitigation requirements.

Mitigation:

3. Prior to initiating construction in waters of the U.S., and to mitigate for impacts to 0.024 acre(s) of non-wetland waters of the U.S., the Permittee shall provide documentation verifying purchase of 0.024 credits for the re-establishment/establishment of waters of the U.S. from the San Luis Rey Mitigation Bank or other Corps-approved mitigation bank or in-lieu fee program (ILFP), and 0.072 preservation credits from the Barry Jones Mitigation Bank or other Corps-approved mitigation bank or in-lieu fee program (ILFP). The Permittee shall not initiate work in waters of the U.S. prior to receiving written confirmation (by letter or e-mail) from the Corps Regulatory Division as to compliance with this special condition. The permittee retains responsibility for providing the compensatory mitigation until the number and resource type of credits described above have been secured from a sponsor and the district engineer has received documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation. This documentation may consist of a letter or form signed by the sponsor, with the permit number and a statement indicating the number and resource type of credits that have been secured from the sponsor.

Endangered Species Act:

4. This Corps permit does not authorize you to take any threatened or endangered species, in particular the Coastal California gnatcatcher (*Polioptila californica californica*) and Stephens' kangaroo rat (*Dipodomys stephensi*) or adversely modify its designated critical habitat. In order to legally take a listed species, you must have separate authorization under

the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). Pursuant to the U.S. Fish and Wildlife Service (USFWS) correspondence dated February 6, 2006 (Biological Opinion 1-6-06-F-4735.1), including the required avoidance and minimization measures, the Corps Regulatory Division has determined and the USFWS has concurred that your activity is not likely to adversely affect the above species. Your authorization under this Corps permit is conditional upon your compliance with all of the required avoidance and minimization measures, which are incorporated by reference in this permit. Failure to comply with the required avoidance and minimization measures would constitute non-compliance with your Corps permit. The FWS is the appropriate authority to determine compliance with the terms and conditions of its BO and with the ESA.

Cultural Resources:

5. Pursuant to 36 C.F.R. section 800.13, in the event of any discoveries during construction of either human remains, archeological deposits, or any other type of historic property, the Permittee shall notify the Corps' Archeology Staff within 24 hours (Danielle Storey at 213-452-3855 or Meg McDonald at 213-452-3849) or Corps Regulatory Staff (Peggy Bartels at 951-276-6624). The Permittee shall immediately suspend all work in any area(s) where potential cultural resources are discovered. The Permittee shall not resume construction in the area surrounding the potential cultural resources until the Corps Regulatory Division re-authorizes project construction, per 36 C.F.R. section 800.13.

Regional Water Quality Control Board:

6. This permit is contingent upon the issuance of a section 401 Water Quality Certification (WQC R9-2015-0094). The Permittee shall abide by the terms and conditions of the Clean Water Act section 401 WQC. The Permittee shall submit the section 401 WQC to the Corps Regulatory Division (preferably via email) within two weeks of receipt from the issuing state agency. The Permittee shall not proceed with construction until receiving an e-mail or other written notification from Corps Regulatory Division acknowledging the Clean Water Act 401 WQC has been received, reviewed, and determined to be acceptable. If the RWQCB fails to act on a valid request for certification within 60 days after receipt of a complete application, please notify the Corps so we may consider whether a waiver of water quality certification has been obtained.

Post-construction:

7. Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a post-project implementation memorandum including the following information:
   A) Date(s) work within waters of the U.S. was initiated and completed;
   B) Summary of compliance status with each special condition of this permit (including any noncompliance that previously occurred or is currently occurring and corrective actions taken or proposed to achieve compliance);

C) Color photographs (including map of photopoints) taken at the project site before and after construction for those aspects directly associated with permanent impacts to waters of the U.S. such that the extent of authorized fills can be verified;
D) One copy of "as built" drawings for the entire project. Electronic submittal (Adobe PDF format) is preferred. All sheets must be signed, dated, and to-scale. If submitting paper copies, sheets must be no larger than 11 x 17 inches; and
E) Signed Certification of Compliance (attached as part of this permit package).

This verification is valid through March 18, 2017. If on March 18, 2017 you have commenced or are under contract to commence the permitted activity you will have an additional twelve (12) months to complete the activity under the present NWP terms and conditions. However, if I discover noncompliance or unauthorized activities associated with the permitted activity I may request the use of discretionary authority in accordance with procedures in 33 CFR § 330.4(e) and 33 CFR § 330.5(c) or (d) to modify, suspend, or revoke this specific verification at an earlier date. Additionally, at the national level the Chief of Engineers, any time prior to March 18, 2017, may choose to modify, suspend, or revoke the nationwide use of a NWP after following procedures set forth in 33 CFR § 330.5. It is incumbent upon you to comply with all of the terms and conditions of this NWP verification and to remain informed of any change to the NWPs.

A NWP does not grant any property rights or exclusive privileges. Additionally, it does not authorize any injury to the property, rights of others, nor does it authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

Thank you for participating in the regulatory program. If you have any questions, please contact Peggy Bartels at 951-276-6624 or via e-mail at Peggy.J.Bartels@usace.army.mil. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

Sincerely,

James E. Mace
Senior Project Manager
Orange and Riverside Counties Section
South Coast Branch
Regulatory Division

Enclosures

LOS ANGELES DISTRICT
U.S. ARMY CORPS OF ENGINEERS

CERTIFICATE OF COMPLIANCE WITH DEPARTMENT OF THE ARMY NATIONWIDE PERMIT

Permit Number: *SPL-2006-00378-PJB*

Name of Permittee: *Erik Lunde, Monte Vista Ranch, LLC*

Date of Issuance: *August 2, 2016*

Upon completion of the activity authorized by this permit and the mitigation required by this permit, sign this certificate, and return it by **ONE** of the following methods;

1) Email a digital scan of the signed certificate to Peggy.J.Bartels@usace.army.mil

OR

2) Mail the signed certificate to

U.S. Army Corps of Engineers
ATTN: Regulatory Division SPL-2006-00378-PJB

I hereby certify that the authorized work and any required compensatory mitigation has been completed in accordance with the NWP authorization, including all general, regional, or activity-specific conditions. Furthermore, if credits from a mitigation bank or in-lieu fee program were used to satisfy compensatory mitigation requirements I have attached the documentation required by 33 CFR 332.3(l)(3) to confirm that the appropriate number and resource type of credits have been secured.

_____ _____

Signature of Permittee Date

Appendix 5

Updated Cultural Resources Records Search

UPDATED CULTURAL RESOURCES RECORDS SEARCH FOR THE 39.5-ACRE MONTE VISTA PROJECT (TENTATIVE TRACT 32024) LOCATED ADJACENT TO MONTE VISTA DRIVE, WILDOMAR, RIVERSIDE COUNTY

by:

Robert S. White
Laura S. White, M.A.

John Minch and Associates, Inc.
26623 Sierra Vista
Mission Viejo, CA 92692

TEL (949) 367-1000
FAX (949) 367-0117

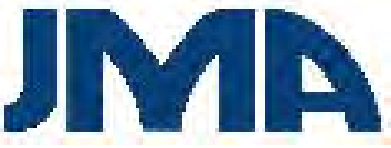
for:

Monte Vista Ranch, LLC
515 Avocado Avenue
Corona Del Mar, CA 92675

Contact:

Mr. Erik Lunde

April 19, 2013



I. INTRODUCTION

The following report was written for Monte Vista Ranch, LLC by John Minch and Associates, Inc. (JMA). It describes the results of an updated cultural resources records search conducted for the 39.5 acre Monte Vista Project identified as Tentative Tract 32024. The property is located immediately east of Monte Vista Drive and south of Bundy Canyon Road in the City of Wildomar, Riverside County. Presently, it is desired to develop the property with residential development. Legally, the project area is situated in the North 1/2 of the South 1/2 of the Northeast 1/4 of Section 26, Township 6 South, Range 4, West, San Bernardino Base Meridian as shown on a portion of the USGS *Wildomar* 7.5' Topographic Quadrangle (Figure 1).

II. RECORDS SEARCH

On April 8, 2013, an in-person records search for the project was conducted at the Eastern Information Center (EIC) located at the University of California, Riverside by JMA archaeologist, Laura S. White, M.A. The EIC is one of eleven independent regional information centers under contract with the state Office of Historic Preservation (OHP) to manage and maintain the Historical Resources Inventory (HRI) database of the California Historical Resources Information System (CHRIS). The updated search entailed a review of all previously recorded prehistoric and historic archaeological sites located on or within a one-mile radius of the property. Additionally, the National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Historical Landmarks (CHL), California Points of Historical Interest (CPHI), and the California Directory of Properties (DOP, aka the HRI) were reviewed for the purpose of identifying historic properties.

A. Previously Recorded Archaeological Sites Located Within the Study Area

The results of the search indicated that no prehistoric or historic archaeological sites have been previously recorded within the boundaries of the study area.

B. Archaeological Sites Located Within a One-Mile Radius of the Study Area

Outside the study area, six archaeological sites have been recorded within a one-mile radius. Three of the sites are strictly historic in nature (RIV-4722, 7869H and 7870H) while two are purely prehistoric (RIV-7867 and 7868). The remaining prehistoric site (RIV-7866) also has a historic component. Each site is listed and briefly characterized in Table 1.

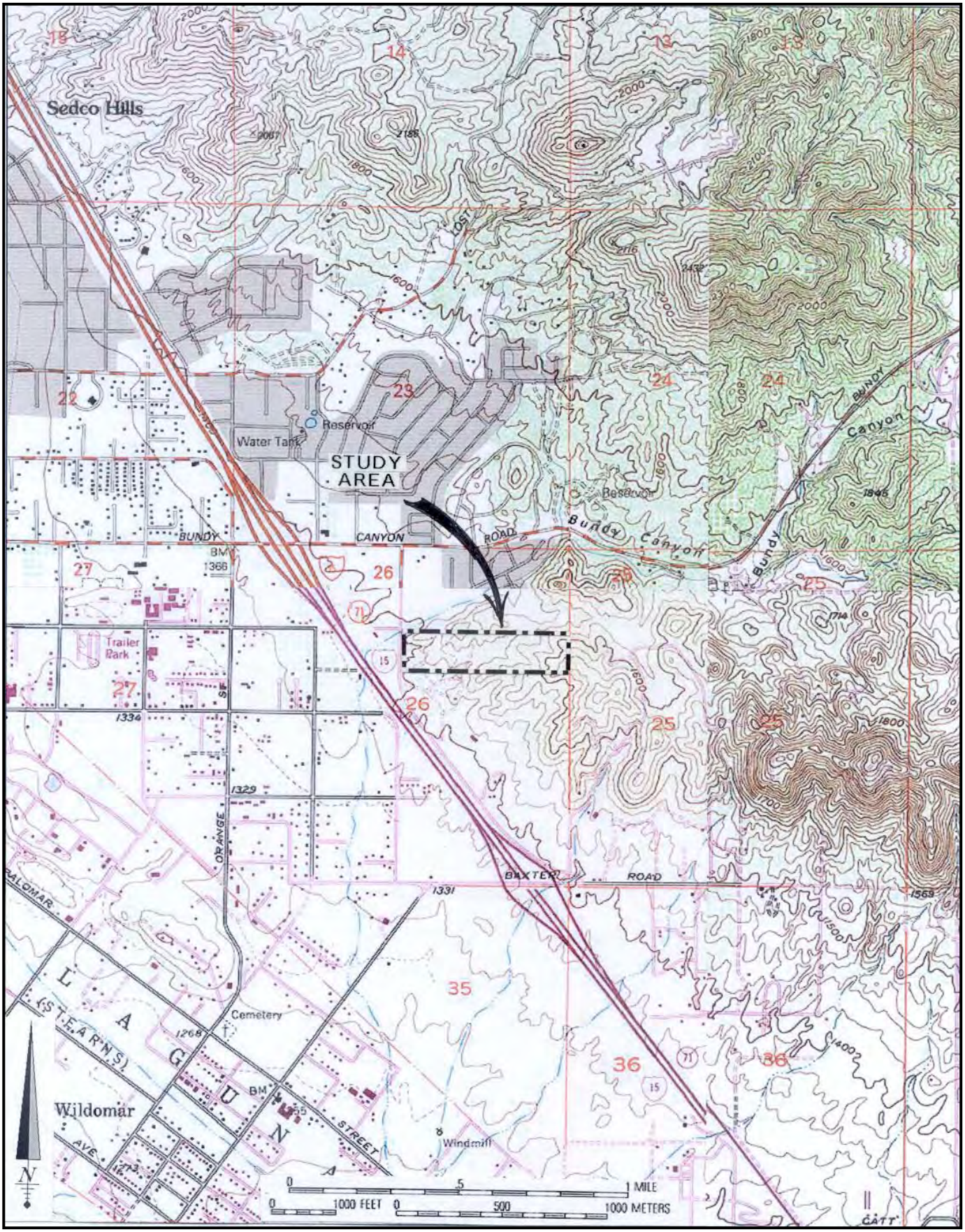


Figure 1. Study area plotted on a portion of the *Wildomar* 7.5' USGS Topographic Quadrangle (1988).

Table 1. Archaeological Sites Located Within a One-Mile Radius of the Study Area.

Primary # 33-/ Site Number	Site Description
33-004722/RIV-4722	Part of a 4" gate valve welded to a 3" pipe. The gate valve has a date "1929" on it. The valve is believed to be from a water system dating to the 1930s or 1940s (Love 1992).
33-14778/RIV-7866/H	Site contains both prehistoric and historic components. The prehistoric component consists of an artifact scatter of more than 100 items scattered over the surface. Artifacts observed included chipped stone debitage, mano and metate fragments, a hammerstone, cores, a biface knife fragment and quartz Cottonwood Triangular point. The historic component includes an earthen reservoir, one concrete-lined reservoir that is filled with sediments, a well head on a concrete foundation, several water pipes, and landscaped plants and trees (Smallwood 2005a). The site was subsequently tested in 2006 by CRM Tech and found to be insignificant (Smallwood 2006a).
33-14779/RIV-7867	Site consists of at least 10 pieces of chipped stone debitage (clear and milky quartz, metavolcanic, and quartzite) and a slab metate fragment. Scatter measures approx. 40m (E-W) x 30m (N-S; Smallwood and Ballester 2005a). In 2006, CRM Tech conducted a test program at RIV-7867. The site was found to be insignificant (Smallwood 2006b).
33-14780/RIV-7868	Site includes at least 10 pieces of chipped stone debitage (clear and milky quartz, metavolcanic, and quartzite) scattered over an area measuring 35m (E-W) x 25m (N-S; Smallwood and Ballester 2005b). The site was tested by CRM Tech in 2006 and found to be insignificant (Smallwood 2006c).
33-14781/RIV-7869H	Site consists of concrete and stone structural footings, an asphalt driveway, tile floor, rock and mortar chimney, and landscape trees. Historic maps indicated a building (residence) at the same location in the 1940s-1950s (Smallwood 2005b).
33-14782/RIV-7870H	Site described as a stacked rock wall constructed within a drainage to form a shallow reservoir for catching seasonal rain water. Rocks were dry-stacked without use of mortar (Smallwood 2005c).

C. Heritage Properties

No National Register of Historic Places (NRHP), California Register of Historical Resources (CRHR), California Historical Landmarks (CHL), or California Points of Historical Interest (CPHI) listed properties have been recorded within the study area. Furthermore, no such resources have been recorded within a one-mile radius. However, the Office of Historic Preservation's Directory of Properties does list one building in Wildomar (originally said to be in Lake Elsinore) that has been previously evaluated for historical significance in conjunction with a federal project. Primary # 33-7182 includes a 1925 Craftsman Bungalow with Classical Revival elements located at 34670 Orange Street. It was evaluated in 1982 by Pat Meredith of the Riverside County Historical Commission and assigned a National Register (NR) status code of 3S "Appears eligible for NR as an individual property through survey evaluation."

Recently, five other buildings (not listed on the Directory of Properties) have also been recorded/evaluated for historical significance in association with CEQA projects. All lie within a

one-mile radius of the study area. None of the buildings were found eligible for the NRHP or the CRHR (see Table 2).

Table 2. Recently Recorded/Evaluated Buildings/Structures located within a One-Mile Radius of the Study area.

Primary # 33-	Building Description
33-12289	Circa 1950 vernacular residential structure (house) located at 34635 S. Cherry Street in Wildomar. Two associated ancillary buildings include smaller residential building and detached garage (Shepard 2002).
33-13170	Small vernacular residence constructed in 1938 and located at 22241 Bundy Canyon Road in Wildomar. Ancillary building included detached garage (Van Horn 2003). Building assigned a NR status code of 6Z "Found ineligible for NR, CR or Local designation through survey evaluation."
33-15994	Vernacular side-gabled, wood-framed, single-family residence and detached garage built in 1934. Building located at 22181 Bundy Canyon Road.in Wildomar (Urbas 2005). Building assigned a NR status code of 6Z "Found ineligible for NR, CR or Local designation through survey evaluation."
33-17106	Single story Ranch style residence built in 1950. Residence carries the address of 33890 Cherry Street in Wildomar (Smith and Harper 2007). Building determined not eligible for listing in the California or National registers.
33-17309	Single story Ranch style commercial building that most likely represents a converted residence that dates to the 1940s (Tang and Jacquemain 2006). Building assigned a NR status code of 6Z "Found ineligible for NR, CR or Local designation through survey evaluation."

D. Previous Surveys Conducted Within the Study Area

1. White and White 2004

The records search indicated that the entire 39.5-acre study area has been previously surveyed for cultural resources. In 2004, Robert S. White and Laura S. White, M.A. of John Minch and Associates (JMA) conducted a cultural resources study of the property designated Tentative Tract 32024. Surface visibility throughout the property was regarded as good, varying from 70-100% depending on the density of low-lying vegetation. Survey methods varied according to the terrain. Where feasible, the pedestrian survey consisted of walking parallel transects spaced at 10-15 meter intervals. Meandering transects were utilized where rugged or irregular terrain rendered parallel transects impractical.

Despite a thorough investigation of the property, no cultural resources of any kind were located within the study area. Therefore, since a thorough investigation failed to reveal the presence of any cultural resources within the study area, no further work in conjunction with cultural resources was recommended (ibid:7).

E. Surveys Conducted Within a One-mile Radius of the Study Area

Outside the study area, thirty cultural resources investigations have been conducted within a one-mile radius. These studies cover approximately 50% of the surrounding land situated within a mile. They largely include survey reports for both small (less than 40 acres) and large (40 acres or more) acreage projects, linear alignments (e.g. roads and utilities), and cellular phone sites. The largest survey conducted in the region included a 384-acre Built Environment Historic Resources Study for the Bundy-Canyon-Scott Road Improvement Project (Smith and Harper 2007).

III. CONCLUSIONS

Although no new investigations have taken place within the study area, the results of the updated records revealed that a considerable amount of new survey has taken place in the surrounding area since the 2004 investigation by JMA (White and White 2004). The number of cultural resources surveys conducted in the area has doubled increasing the percentage of land systematically surveyed as well as the number of prehistoric and historic sites discovered. In addition, a number of the prehistoric sites (RIV-7866, 7867, and 7868) have been evaluated for significance.

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1992 Archaeological site record form for RIV-4722 on file with the Eastern Information Center at the University of California at Riverside.

MEREDITH, PAT
1982 Historic Resources Inventory form for 33-7182 on file with the Eastern Information Center at the University of California at Riverside.

SHEPARD, RICHARD

2002 Primary Record for 33-12289 on file with the Eastern Information Center at the University of California at Riverside.

SMALLWOOD, JOSH

2006a Updated Archaeological site record for Primary # 33-14778/RIV-7866/H on file with the Eastern Information Center at the University of California at Riverside.

2006b Updated Archaeological site record for Primary # 33-14779/RIV-7867 on file with the Eastern Information Center at the University of California at Riverside.

2006c Updated Archaeological site record for Primary # 33-14780/RIV-7868 on file with the Eastern Information Center at the University of California at Riverside.

2005a Archaeological site record form for Primary # 33-14778/RIV-7866/H on file with the Eastern Information Center at the University of California at Riverside.

2005b Archaeological site record form for Primary # 33-14781/RIV-7869H on file with the Eastern Information Center at the University of California at Riverside.

2005c Archaeological site record form for Primary # 33-14782/RIV-7870H on file with the Eastern Information Center at the University of California at Riverside.

SMALLWOOD, JOSH and DANIEL BALLESTER

2005a Updated Archaeological site record form for Primary # 33-14779/RIV-7867/H on file with the Eastern Information Center at the University of California at Riverside.

2005b Updated Archaeological site record form for Primary # 33-14780/RIV-7868 on file with the Eastern Information Center at the University of California at Riverside.

SMITH, FRANCESCA and CAPRICE D. HARPER

2007 Primary Record for 33-17106 on file with the Eastern Information Center at the University of California at Riverside.

TANG, BAI "TOM" and TERRI JACQUEMAIN

2006 Primary Record for 33-17309 on file with the Eastern Information Center at the University of California at Riverside.

URBAS, ANDREA

2005 Primary Record for 33-15994 on file with the Eastern Information Center at the University of California at Riverside.

VAN HORN, DAVID M.

2003 Primary Record for 33-13170 on file with the Eastern Information Center at the University of California at Riverside.

WHITE, ROBERT S. and LAURA S. WHITE

2004 A Cultural Resources Assessment of a 39.5-Acre Parcel as Shown on TTM 32024, Located Adjacent to Monte Vista Drive, Wildomar, Riverside County. John Minch & Associates, Inc. Unpublished report (RI-5578) on file with the Eastern Information Center, University of California at Riverside.

Appendix 6

Updated Geotechnical Report

UPDATED GEOTECHNICAL EVALUATION

FOR

PROPOSED MULTI-FAMILY RESIDENTIAL DEVELOPMENT
TENTATIVE TRACT NO. 38155
EAST OF MONTE VISTA DRIVE AND ABOUT ¼-MILE SOUTH OF BUNDY CANYON ROAD
CITY OF WILDOMAR, RIVERSIDE COUNTY, CALIFORNIA

PREPARED FOR

MONTE VISTA RANCH II, LLC
1200 QUAIL STREET, SUITE 220
NEWPORT BEACH, CALIFORNIA 92660

PREPARED BY

GEOTEK, INC.
1548 NORTH MAPLE STREET
CORONA, CALIFORNIA 92878

PROJECT NO. 2778-CR **JUNE 23, 2021**

GEOTEK

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June 23, 2021
Project No. 2778-CR

Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220
Newport Beach, California 92660

Attention: Mr. Erik W. Lunde

Subject: Updated Geotechnical Evaluation
Proposed Multi-family Residential Development
Tentative Tract Map No. 38155
East of Monte Vista Drive and about ¼-Mile South of Bundy Canyon Road
City of Wildomar, Riverside County, California

Dear Mr. Lunde:

We are pleased to provide the results of our updated geotechnical evaluation for the subject project located east of Monte Vista Drive and about ¼-mile south of Bundy Canyon Road in the city of Wildomar, Riverside County, California. This report presents the results of our evaluation and discussion of our findings.

In our opinion, site development appears feasible from a geotechnical viewpoint. Site development and grading plans should be reviewed by this firm as they become available, as it will be necessary to provide appropriate recommendations for intended specific site development as those plans become refined.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to call our office.

Respectfully submitted,
GeoTek, Inc.





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Distribution: (1) Addressee via email

G:\Projects\2751 to 2800\2778CR Monte Vista Ranch II, LLC Tract No. 38155 Wildomar\2778CR Updated Geotechnical Report TTM 38155 Wildomar.doc

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Appendix A – Logs of Excavations, Seismic Lines, and Laboratory Test Results by AKA (2004)
Appendix B – Exploratory Boring Logs by GeoTek
Appendix C – Results of Laboratory Testing by GeoTek
Appendix D – Slope Stability Analysis by AKA (2004)
Appendix E – General Grading Guidelines

1. PURPOSE AND SCOPE OF SERVICES

The purpose of this study was to evaluate the general geotechnical conditions on the site and provide updated geotechnical recommendations as deemed appropriate for the currently planned site development. Services provided for this study included the following:

- Research and review of available geologic and geotechnical data, and general information pertinent to the site,
- Review various past soil reports available for the site and Tract 32024 which is located directly east of the project,
- Perform a reconnaissance of the site to assess current site conditions,
- Site exploration consisting of the excavation and sampling of three exploratory borings observed and logged by a geologist from our firm,
- Laboratory testing on select samples collected during the field investigation,
- Review and evaluation of site seismicity, and
- Compilation of this geotechnical evaluation report which presents our findings and a general summary of pertinent geotechnical conditions relevant for site development.

The intent of this report is to aid in the evaluation of the site for future development from a geotechnical perspective. The professional opinions and geotechnical information contained in this report will likely need to be updated based on our review of final site development plans. These should be provided to GeoTek for review when available.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

The subject site is an irregular-shaped property consisting of 6.5 acres located east of Monte Vista Drive and about ¼-mile south of Bundy Canyon Road in the city of Wildomar, Riverside County, California. The property is identified as Riverside County Assessor's Parcel Number (APN) 367-502-002. The site was previously graded as Lot 71 of Tract 32024 which is adjacent to the east of the subject site. Excess fill from the grading of the remaining portions of Tract 32024 were stockpiled on the subject lot without compaction effort and without conducting

remedial removals prior to fill placement. According to the *Site Plan and Conceptual Grading for TTM 38155* (K&A Engineering, 2021), a small fill pad at an approximate elevation of 1490 feet above mean sea level (amsl) was built on the central portion of Lot 71. The fill pad is bounded by fill and cut slopes with up to 3:1 (h:v) gradients and heights up to 93 feet. Uncompacted fill up to 70 feet may have placed onsite. At the time of our site visit, earthmoving equipment was working on the top of the pad removing fill. A bedrock cut slope about 30 feet tall at 2:1 (h:v) is present near the northeastern region of the site. A sewer easement and a paved access road are situated near the south half portion of the western property line. A concrete-lined channel is adjacent to and west of the west property line.

The subject site is bounded by vacant land to the north; Summer Sage Way followed by vacant land to the south; a detention basin and Tract 32024 to the east; a sewer easement, an access road, a concrete-lined channel, and Monte Vista Drive to the west.

The approximate location of the site is noted on the attached Figure 1, Site Location Map.

2.2 PROPOSED DEVELOPMENT

It is our understanding that the site development will consist of a condominium complex with 12 buildings, a pool, picnic/bbq area, parking/drive areas, underground utilities, landscaping and hardscaping. We anticipate that the multi-family structures will be two stories in height.

The referenced *Site Plan* (K&A, 2021) shows that the elevations of the future building pads will range from 1428 to 1438 feet amsl. The construction of the pads will require the removal of all previously placed undocumented fill until undisturbed natural and competent materials are exposed. Subsequently, the grading is anticipated to include cuts up to 50 feet and fills up to 30 feet from original site grades in order to reach design grades. Fill slopes ranging from up to 34 feet in height at maximum gradients of 2:1 (h:v) are planned to be constructed along the northwest, west, and south sides of the site. A cut slope up to a height of 31 feet at 2:1 (h:v) maximum inclination is proposed to be built along the northeast region where there is a bedrock knoll.

As site development planning progresses and plans become available, the plans should be provided to GeoTek for review and comment. Additional engineering analyses may be necessary in order to provide specific earthwork recommendations and geotechnical design parameters for actual site development.

Figure 2a shows the planned configuration of the condominium complex, and Figure 2b shows the current site conditions with the undocumented fill. Both Figures 2a & b, Exploration Location Maps, display the approximate locations of site excavations and geologic units.

3. REVIEW OF PREVIOUS REPORTS

On September 3, 2004, Albus-Keefe & Associates, Inc. (AKA) issued a *Geotechnical Feasibility Investigation* for Tentative Tract 32024 also known as Monte Vista Ranch Property. The 6.5-acre project site is located within the western-most region of the 39.5-acre property investigated by AKA. AKA's evaluation included the excavation of seven exploratory trenches up to 15 feet below grade and one hollow-stem exploratory boring to a depth of about 35.5 feet within the project site. The explorations encountered alluvial materials within the bottom of southwest trending canyons and that crossed the center portion of the site and granitic bedrock below the alluvium and exposed at the ground surface within bedrock knolls at the north and south ends of Lot 71.

The referenced investigation also included the excavation of a 135-feet long, 6.5-foot deep fault trench across a photo lineament identified by AKA through evaluation of aerial photographs. AKA stated that no evidence of faulting was encountered within or immediately adjacent to the site.

A seismic refraction line was performed within the northeastern area of Lot 71 to assess rock rippability. AKA stated that excavations within bedrock would encounter relatively hard materials that would need moderate to heavy ripping with a single shank Caterpillar D-9R and possibly localized blasting.

Groundwater was not encountered in the exploratory excavations performed by AKA to a maximum depth of 35.5 feet. However, the study noted that Lot 71 lies within a County of Riverside liquefaction zone. The remedial grading was anticipated to remove all loose alluvial materials prone to liquefaction under elevated groundwater conditions. AKA noted that additional measures should be taken to provide required stability in the event that removals were precluded by property line constrains.

Slope stability analyses were performed by AKA to evaluate the gross stability of cut and fill slopes up to heights of 70 feet and gradients of 2:1 (h:v). Slopes were anticipated to be grossly stable under static and pseudostatic conditions.

AKA stated that all trench backfill, topsoil, alluvium/colluvium, and weathered bedrock were unsuitable for support of proposed structural fills and site development and should be overexcavated and recompacted per industry standards. Additionally, canyon subdrains were recommended by AKA within all significant drainage courses following remedial removals.

Estimates for shrinkage and bulking conditions were presented by AKA. The topsoil, colluvium and alluvium were estimated to have a shrinkage factor of 10 to 20 percent and the granitic bedrock to have a bulking factor of 3 to 10 percent.

AKA reported an expansion index or less than 20 and concluded the on-site materials have a "very low" expansion potential. Additionally, the soluble sulfate content of the onsite soils was noted to be less that 0.10 percent with "negligible" sulfate exposure. Additional testing for soluble sulfate content was recommended by AKA subsequent to rough grading. R-value tests conducted by AKA indicated a value of about 50 or better.

Appendix A includes logs of excavations and laboratory test results reported by AKA. The locations of the excavations are shown on Figures 2a &b, Exploration Location Maps.

AKA submitted a *Response to the County of Riverside Planning Department and Department of Building and Safety* on June 10, 2005. AKA reiterated that complete removal and replacement of alluvial soils should mitigate the liquefaction potential in Lot 71. However, if complete alluvial removals were prevented by existing features or property lines, additional measures such as structural setbacks or geogrid-reinforced slopes were recommended to provide stability to the planned buildings. AKA also stated that while the onsite granitic bedrock was massive and locally jointed, the joint orientations were at generally high angles and were not anticipated to adversely impact the stability of the proposed cut slopes. In addition, AKA stated that their 2004 report included slope stability calculations for fill slopes up to 70 feet in height at 2:1 (h:v) inclinations. Given that the shear strength of the granitic rock is higher than the strength of the fill and due to the lack of unfavorable rock structure, the proposed cut slopes were also expected to be grossly stable.

On February 24, 2016, AKA issued an *Updated 40-Scale Rough Grading Plan Review* for the project. AKA updated their design recommendations based on the 2013 California Building Code. AKA also noted the grading plans were similar in nature to the plans used for their 2004 report with the exception of the area of Lot 71. The revised grading plan was updated to show a smaller pad with 3:1 (h:v) graded slopes with a maximum height of 93 feet descending on all sides of the pad. AKA stated that this area was planned to be used to temporarily balance the site during site construction and had no specified future use. Additionally, these slopes were evaluated for slope stability under static and pseudostatic conditions and were anticipated to be grossly stable.

GeoTek issued on October 25, 2018 an *Updated Geotechnical Report* for Tract No. 32024. This report relied on the subsurface investigation and laboratory test data collected by AKA (2004) and provided recommendations for the development of Lots 1-70. The project site (Lot 71) was not included.

On June 14, 2019, GeoTek completed a *Report of Geotechnical Testing and Observation Services During Earthwork Construction of Lots 1 through 70 of Tract 32024*. However, it also included very limited grading in the southeast corner of the project site and adjacent stretch of Summer Sage Way to the south.

4. FIELD EXPLORATION AND LABORATORY TESTING

4.1 FIELD EXPLORATION

To supplement the information obtained by AKA (2004), particularly in the area of deep alluvium near the center portion of the western property line, GeoTek excavated three exploratory borings with a track-mounted hollow-stem auger drill. The exploratory borings were drilled to depths ranging from approximately 19 feet to 40.5 feet below the existing grade and were logged by a geologist from our firm. Samples of on-site soils encountered in the excavations were returned to the laboratory for testing and evaluation.

Logs of the recent borings are presented in Appendix B and their approximate locations are shown on the Figures 2a&b, Exploration Location Map.

4.2 LABORATORY TESTING

Laboratory testing was performed on selected soil samples obtained during our field exploration. The purpose of the laboratory testing was to confirm the field classification of the soils encountered and to evaluate the physical properties of the soils for use in engineering design and analysis. The results of the laboratory testing are provided within Appendix C.

5. GEOLOGIC AND SOILS CONDITIONS

5.1 REGIONAL SETTING

The subject property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. It extends from the point of contact with the Transverse Ranges geomorphic province, southerly to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded

on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Several major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zone trend northwest-southeast and are mostly found near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province, and the San Jacinto fault borders the province adjacent the Colorado Desert province.

More specific to the subject property, the site is located in an area geologically mapped to be alluvium and granitic bedrock (Morton, D.M. and Miller, F.K., 2006). No active faults are shown in the immediate site vicinity on the maps reviewed for the site and site area.

5.2 EARTH MATERIALS

A brief description of the materials encountered on the site is presented in the following sections. Based on our field observations and past soil data from AKA (2004), the site underlain by undocumented fill, alluvium, and granitic bedrock.

5.2.1 Undocumented Fill

Excess fill from the grading of the remaining portions of Tract 32024 to the east were stockpiled on the subject lot without compaction effort and without conducting remedial removals prior to fill placement. Uncompacted fill up to 70 feet may have been placed onsite. The undocumented fill was encountered in all our exploratory borings to depths ranging from 2 feet to 5 feet below existing ground surface. The fill was generally comprised of silty sand and sandy silt and was brown in color, slightly moist to moist, and loose to medium dense. At the time of our investigation, the fill was being excavated and disposed of off-site.

5.2.2 Alluvium

Alluvial deposits are present below portions of the undocumented fill and within the bottoms of the canyons and drainage swales at the site. AKA (2004) mapped a relatively large southwest trending alluvial filled canyon within the center portion of the site and smaller drainages near the center and eastern portions of the south property line. Site explorations indicate that the alluvial deposits generally consist of fine to coarse silty sand, clayey sand, and sandy silt with occasional gravelly layers. The thickness of the alluvial deposits at the AKA exploration locations ranged from about 5 to 31 feet. Alluvium was encountered in all of our exploratory borings, which were excavated near the mouth of the larger canyon and extended to depths ranging from about 13 to 34 feet. The alluvium encountered in our borings was generally various shades of brown, red and locally greenish gray in color, slightly moist to moist and loose to dense/very stiff. Tests performed on various alluvial samples show a slight

potential for collapse (1 to 2 percent). In addition, based on our in-place density and compaction test data, the alluvial soils near the western property line and at about 15 feet from the original ground surface are estimated to have a relative compaction of 85 percent or better (ASTM D 1557). The alluvial deposits near the smaller drainages in the vicinity of the southern property line are anticipated to be minimal to moderate (5-10 feet) in depth.

5.2.3 Granitic Bedrock

Granitic bedrock underlies portions of the property and is present at-grade within the hillside portions in the north and south regions of the site. The granitic bedrock was observed to be medium to coarse grained, hard and slightly weathered.

5.3 SURFACE WATER AND GROUNDWATER

5.3.1 Surface Water

Surface water was not noted by our firm or by AKA during their site investigation. If encountered during earthwork construction, surface water on this site is the result of precipitation or possibly some minor surface run-off from immediately surrounding properties. Overall site area drainage is generally in a southwesterly direction, as directed by site topography. Provisions for surface drainage will need to be accounted for by the project civil engineer.

5.3.2 Groundwater

Groundwater was not encountered in any of the AKA exploratory excavations on the adjacent property or the subject site to the maximum depth explored of 35.5 feet below grade. Additionally, groundwater was not encountered during our field exploration to a depth of about 40.5 feet. It is estimated that the depth to groundwater is greater than 50 feet, if present.

The depth to groundwater is expected to vary seasonally dependent upon rainfall, landscape irrigation and other factors. However, groundwater is not expected to impact the planned development.

5.4 FAULTING AND SEISMICITY

The geologic structure of the entire southern California area is dominated mainly by northwest-trending faults associated with the San Andreas system. The site is in a seismically active region. No active or potentially active fault is known to exist at this site nor is the site situated within a State of California designated *"Alquist-Priolo"* Earthquake Fault Zone (Bryant

and Hart, 2007; CGS, 1986). The nearest known active fault is the Wildomar Fault, located about 1.1 miles to the southwest of the site. AKA excavated a fault trench (FT-1) on the southern portion of the subject site. Some jointing was observed in the fault trench, however AKA concluded that no active fault splays were present in trench FT-1.

The County of Riverside has designated the site as "not in a fault zone" and "an unnamed fault in Elsinore fault zone" is located on the site. The western portion of the site is situated within a "moderate" liquefaction hazard zone as designated by the County of Riverside.

5.4.1 Seismic Design Parameters

The site is located at approximately 33.6223° Latitude and -117.2656° Longitude. Site spectral accelerations (S_a and S_1), for 0.2 and 1.0 second periods for a Class "D" site, was determined from the USGS Website, Earthquake Hazards Program, Interpolated Probabilistic Ground Motion for the Conterminous 48 States by Latitude/Longitude. A Site Class D is deemed appropriate based on anticipated thickness of engineered fill and recompacted alluvium. The results are presented in the following table.

SITE SEISMIC PARAMETERS	
Mapped 0.2 sec Period Spectral Acceleration, S_S	1.665g
Mapped 1.0 sec Period Spectral Acceleration, S_1	0.616g
Site Coefficient for Site Class "D", F_a	1.0
Site Coefficient for Site Class "D", F_v	1.7
Maximum Considered Earthquake Spectral Response Acceleration for 0.2 Second, S_{MS}	1.665g
Maximum Considered Earthquake Spectral Response Acceleration for 1.0 Second, S_{M1}	1.047g
5% Damped Design Spectral Response Acceleration Parameter at 0.2 Second, S_{DS}	1.11g
5% Damped Design Spectral Response Acceleration Parameter at 1 second, S_{D1}	0.698g
PGA_M	0.793g
Seismic Design Category	D

Final selection of the appropriate seismic design coefficients should be made by the project structural engineer based upon the local practices and ordinances, expected building response and desired level of conservatism.

5.4.2 Surface Fault Rupture

The site is in a seismically active region; however, no active or potentially active fault is known to exist at this site nor is the site situated within an *"Alquist-Priolo"* Earthquake Fault Zone (Bryant and Hart, 2007). AKA (2004) reports that based on their review and field explorations (see FT-1 in Appendix A), which included trenching across a geomorphic lineament and a

previously reported fault trace, no evidence of faulting was encountered within or immediately adjacent to the site. No faults are identified on geologic maps readily available and reviewed by this firm for the immediate study area. Therefore, the potential for surface rupture at the site is considered to be very low.

5.4.3 Liquefaction and Seismically Induced Settlement

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake-induced ground motion, create excess pore pressures in relatively cohesionless and some low-plastic soils. These soils may thereby acquire a high degree of mobility, which can lead to lateral movement, sliding and settlement of loose sediments, sand boils and other damaging deformations. This phenomenon occurs only below the water table, but, after liquefaction has developed, the effects can propagate upward into overlying non-saturated soil as excess pore water dissipates.

The factors known to influence liquefaction potential include soil type and grain size, relative density, groundwater level, confining pressures, and both intensity and duration of ground shaking. In general, materials that are most susceptible to liquefaction are loose, saturated granular soils having low fines content under low confining pressures.

Due to the presence of shallow bedrock under much of the site, the recommended remedial grading within areas containing alluvial deposits, and the absence of shallow groundwater, it is our opinion that the potential for soil liquefaction and seismically induced settlement is nil to very low.

5.4.4 Other Seismic Hazards

The potential for secondary seismic hazards such as seiche and tsunami is considered to be remote due to site elevation and distance from an open body of water.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 GENERAL

Development of the site appears feasible from a geotechnical viewpoint. Specific recommendations for site development provided in this report will need to be further evaluated when final development plans are provided for our review. The following sections present general recommendations.

6.2 EARTHWORK CONSIDERATIONS

6.2.1 General

Earthwork and grading should be performed in accordance with the applicable grading ordinances of the City of Wildomar, the 2019 California Building Code (CBC) and recommendations contained in this report. The General Grading Guidelines included in Appendix E outline general procedures and do not anticipate all site-specific situations. In the event of conflict, the recommendations presented in the text of this report should supersede those contained in Appendix E.

6.2.2 Site Clearing

Site preparation should start with removal of existing vegetation, roots, debris, and deleterious materials which should be disposed of off-site. All undocumented fill should be removed until native and competent materials are exposed. The undocumented fill can be later used as engineered fill.

6.2.3 Remedial Grading

After all undocumented fill is removed and native materials are uncovered, all topsoil, alluvium, colluvium, and highly weathered bedrock within the planned development areas of the site or any areas to receive engineered fill should be removed to expose competent native materials. Estimated removal depths are anticipated to range from 1 to 3 feet within bedrock areas and 5 to 15 feet within alluvial areas. Either competent alluvium or firm bedrock should be exposed at the base of the removals/over-excavations and all areas to receive new fill. Competent alluvium is defined as materials relatively uniform with no visually porosity and with an in-place compaction of at least 85 percent of the soil's maximum dry density per ASTM D 1557. The bottom of removals/over-excavations should be examined by a GeoTek representative to confirm that the exposed materials are suitable for support.

The approved exposed subgrade should then be scarified to a depth of about 12 inches, be moisture conditioned to slightly above the soil's optimum moisture content and then be compacted to at least 90 percent (ASTM D 1557).

As encountered in Boring B-1 by AKA (2004) and Borings B-1 through B-3 by GeoTek, deep removals are expected to be required near the western property line. Remedial removals may be difficult in this area due to the presence of a sewer easement from the Elsinore Valley Municipal Water District (EVMWD) which encroaches within the toe of the proposed west-facing fill slope. It is our recommendation that EVMWD be contacted to define the exact location of the sewer line and inquire if removals can start within the EVMWD easement but away for the sewer pipe. Preliminary analyses assuming that removals start at the eastern

boundary of the EVMWD easement indicate that removals may be conducted vertically up to a depth of about 4 feet and then at a 1:1 (h:v) gradient down to the depth where firm bedrock or competent alluvium is encountered (13-15 feet). Assuming that alluvial soils up to 15 feet in depth (approximate elevation of 1381 feet amsl) are removed, the structural support of the pads is based on a 1:1 (h:v) projection coming back up from the removal line to the pad for Buildings 5 and 6 (proposed elevation of 1428 feet amsl). The 1:1 (h:v) projection is estimated to fall near the top of the proposed fill slope and more than 15 feet away from the proposed buildings. Therefore, the future building pads are anticipated to be grossly stable and no additional structural setback is anticipated to be warranted. However, this should be further evaluated during grading based on the subsurface conditions encountered.

Additional recommendations can be provided when the final site development plans are available.

6.2.4 Canyon Subdrains

Subdrains are recommended within the bottom of the existing major drainage swales/canyons in areas where the depth of fill will exceed 10 feet in thickness. The subdrains should consist of 6-inch diameter (subdrain length less than 500 feet) or 8-inch diameter (lengths greater than 500 feet) Schedule 40 perforated PVC pipe encapsulated within 9 cubic feet of suitable drainage material (¾ inch open graded rock, or equivalent) surrounded by a filter fabric, such as Mirafi 140N, or equivalent. Where possible, the subdrains should be installed within the bottom of the canyon cleanouts. Where drainage by gravity is not possible for drains installed in the canyon bottoms, the subdrains may be installed on a horizontal bench along the canyon sidewall. The subdrains should be installed with a minimum 1 percent gradient sloping to an approved outlet. The final 10 feet of pipe, where connecting to an outlet, should consist of solid PVC pipe. The tentative canyon subdrain locations were indicated on the 2004 AKA Geologic Map (Plate 1) which are also shown on Figures 2a &b of this report. A subdrain detail is shown on Plate E-1 in Appendix E.

6.2.5 Engineered Fill

The on-site soils are generally considered suitable for reuse as engineered fill provided they are free from vegetation, debris and other deleterious material. The undercut areas should be brought to final subgrade elevations with fill materials that are placed and compacted in general accordance with minimum project standards. Engineered fill should be placed in six-inch to eight-inch loose lifts, moisture conditioned to about two percent above the optimum moisture content and compacted to a minimum relative compaction of 90 percent as determined by ASTM D 1557. Where engineered fill depths exceed 50 feet, the engineered fill below a depth of 50 feet from finish grade should be compacted to a minimum relative compaction of 95 percent as determined by ASTM D 1557. Fills deeper than 30 feet from finish grade should be compacted to a minimum relative compaction of 93 percent.

If wet soils are encountered during remedial grading, methods for drying soils such as stockpiling or mixing with dry soils may be required to bring the soils to the required moisture content for placement as engineered fill. Placement of engineered fill should be observed and tested on a full-time basis by a GeoTek representative during grading activities.

6.2.6 Slope Construction

Fill slopes, fill over natural slopes, and fill over cut slopes, should be constructed with a keyway at the toe of slope and subsequent horizontal benches as noted on Plates E-2 and E-3 within Appendix E. The keyway should possess a minimum width of 15 feet, or generally half the slope height for slopes higher than 20 feet, with a minimum depth into bedrock of 2 feet. The keyway should be inclined at least 2 percent back into the slope.

Fill slopes should be over-built by at least 3 feet and then cut back to the final design grade to expose a properly compacted face. As an alternate, the fill slopes may be constructed as designed provided that the slope face is back-rolled with a sheepsfoot rolled at vertical intervals not exceeding 4 feetas the slope is constructed. The final slope face should be compacted as needed such that the slope face material is compacted to at least 90 percent of the soil's maximum dry density per ASTM D1557.

6.2.7 Excavation Characteristics

Excavations in the on-site alluvial materials should be readily accomplished with heavy-duty earthmoving or excavating equipment in good operating condition. Based on the results of the AKA's seismic traverse S-1 onsite and transverses S-2 through S-4 within Tract 32024 (AKA 2004), the majority of the underlying bedrock is anticipated to be rippable with a D-8 dozer in good working condition. Some localized hard areas, not detected by the seismic traverses, and corestones may be encountered that will be more resistant to ripping. The use of specialized excavation techniques, possibly including blasting, may be necessary in localized areas of the site. We recommend that contingency funds be provided within the project budget for possible excavation difficulties. It may also be desired to perform additional seismic traverses within the site to better assess the uniformity of the rippability characteristics of the bedrock materials.

Overexcavation of street areas underlain by granitic bedrock during rough grading should be considered to prevent significant trenching difficulties associated with utility installations. The overexcavation should extend to a depth of at least one foot below the deepest planned utility and then be backfilled with properly compacted fill.

6.2.8 Oversized Material Disposal

Excavations within the granitic bedrock materials at the site may generate oversized materials (i.e. greater than 6 inches in greatest dimension). All materials larger than 6 inches in greatest dimension should be placed per guidelines given in Appendix E and Plate E-4.

6.2.9 Fill, Transition, and Cut Building Pads

Rough grading will create fill, cut/fill transition and cut building pads. All pads in fill should be overexcavated such that the pads are underlain by at least three feet of engineered fill and overexcavation bottoms should slope to drain to the adjacent street of suitable direction so ponding of water is not likely. In addition, the minimum fill thickness should be at least one-half of the maximum fill thickness under the pad, up to a maximum of 15 feet. The lateral extent of this recommendation should include an area of at least 5 feet beyond the building limits.

The cut portions of transition (i.e. cut/fill) pads should be overexcavated a minimum of three feet below proposed grades or to a depth of one-half the maximum fill thickness.

All building pads in cut exposing granitic bedrock should be overexcavated to a depth of three feet below proposed grade and replaced with engineered fill.

6.2.10 Trench Excavations and Backfill

Temporary trench excavations within the on-site materials should be stable at 1:1 inclinations for short durations during construction and where cuts do not exceed 10 feet in height. We anticipate that temporary cuts to a maximum height of four feet can be excavated vertically.

Trench excavations should conform to Cal-OSHA regulations. The contractor should have a competent person, per OSHA requirements, on site during construction to observe conditions and to make the appropriate recommendations.

Utility trench backfill should be compacted to at least 90 percent relative compaction (as determined per ASTM D 1557). Under-slab trenches should also be compacted to project specifications. Where applicable, based on jurisdictional requirements, the top 12 inches of backfill below subgrade for road pavements should be compacted to at least 95 percent relative compaction. On-site materials may not be suitable for use as bedding material but should be suitable as backfill provided particles larger than 6 inches are removed.

Compaction should be achieved with a mechanical compaction device. Ponding or jetting of trench backfill is not recommended. If backfill soils have dried out, they should be thoroughly moisture conditioned prior to placement in trenches.

6.2.11 Shrinkage and Bulking

For planning purposes, a shrinkage factor of 10 to 15 percent may be considered for the existing alluvial/colluvial deposits. A bulking factor of 5 to 15 percent is deemed appropriate for excavations extending into granitic bedrock. A subsidence factor of about 0.1 foot is also

considered suitable for any fill areas where bedrock is not exposed in removal bottom areas prior to fill placement.

Several factors will impact earthwork balancing on the site, including shrinkage, trench spoil from utilities and footing excavations, as well as the accuracy of topography. Shrinkage and bulking are primarily dependent upon the degree of compactive effort achieved during construction, depth of fill and underlying site conditions.

Site balance areas should be available in order to adjust project grades, depending on actual field conditions at the conclusion of earthwork construction.

6.2.12 Settlement Monitoring

The as-graded site may result in areas where the depth of fill exceeds 50 feet, dependent upon the actual remedial and over-excavations depths. Representative site areas with fill depths greater than 50 feet (if any) should undergo a settlement monitoring period prior to construction. Details of a settlement monument are provided on Plate E-6. Once established, the elevation of the settlement monument should be read on a weekly basis for the first month and then every two weeks thereafter until GeoTek determines that future monitoring is not needed. All elevation recordings should be performed by a licensed land surveyor/civil engineer and that data should be provided to GeoTek. The purpose of this monitoring program is to determine when consolidation of the fill has been completed. At that time, construction on those pads/areas with fill depths greater than 50 feet can commence. The locations of the settlement monuments should be determined by GeoTek during rough grading.

6.3 SLOPE STABILITY EVALUATION

As previously noted and indicated on the preliminary *Site Plan* (K&A, 2021) cut and fill slopes are planned to a maximum height of about 34 feet and ratio of 2:1 (h:v). AKA completed a stability analysis as documented within their 2004 report. The results of these analyses indicate suitable static and pseudostatic factors of safety. Based on the prior analysis, it is our opinion that the planned slopes will be grossly stable. Proper vegetative cover is recommended for all completed slopes to reduce the potential for significant slope erosion.

All finish cut slopes should be examined by a GeoTek geologist to confirm that adverse geologic conditions are not present. All loose rocks exposed on bedrock cut slopes should also be removed.

6.4 DESIGN RECOMMENDATIONS

6.4.1 Foundation Design Criteria

Foundation design criteria for a conventional foundation system, in general conformance with the 2019 CBC, are presented herein. These are typical design criteria and are not intended to supersede the design by the structural engineer.

Based on the soil types present at the site, GeoTek anticipates that the majority of the on-site soils to be encountered during grading may be classified as having "very low" (0≤EI≤20) to "low" (21≤E<50) expansion potential per ASTM D 4829. Additional laboratory testing should be performed at the completion of site grading to verify the expansion potential, plasticity index, and grain size characteristics of the near-surface soils.

A summary of our preliminary foundation design recommendations is presented in the table below:

MINIMUM DESIGN REQUIREMENTS FOR CONVENTIONALLY REINFORCED FOUNDATIONS		
Design Parameter	"Very Low" Expansion Potential (0≤EI≤20)	"Low" Expansion Potential (21≤EI≤50)
Foundation Depth or Minimum Perimeter Beam Depth (inches below lowest adjacent grade)	One- and Two-Story - 12 inches	One- and Two-Story – 12 inches
Minimum Foundation Width (Inches)*	One- and Two-Story - 12	One- and Two-Story - 12
Minimum Slab Thickness (actual)	4 inches	4 inches
Minimum Slab Reinforcing	6" by 6" W1.4-W1.4 wire mesh placed in middle of slab.	6" by 6" W2.9-W2.9 wire mesh placed in middle of slab.
Minimum Footing Reinforcement	Two No. 4 Reinforcing Bars, one top and one bottom	Two No. 4 Reinforcing Bars, one top and one bottom
Design Plasticity Index (PI)**	N/A	15- design value
Presaturation of Subgrade Soil (Percent of Optimum)	Minimum 100% to a depth of 12 inches	Minimum 110% to a depth of 12 inches
*Code minimums per Table 1809.7 of the 2019 CBC. **Effective plasticity index should be verified at the completion of rough grading.		

It should be noted that the criteria provided are based on soil support characteristics only. The structural engineer should design the slab and beam reinforcement based on actual loading conditions.

The following criteria for design of foundations are preliminary and should be re-evaluated based on the results additional laboratory testing of samples obtained at/near finish pad grade.

An allowable bearing capacity of 2,000 pounds per square foot (psf) may be used for design of continuous and perimeter footings 12 inches deep and 12 inches wide, and pad footings 24 inches square and 12 inches deep. This value may be increased by 400 psf for each additional 12 inches in depth and 200 pounds per square foot for each additional 12 inches in width to a maximum value of 3,500 psf. Additionally, an increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads).

Based on the recommended site grading, we estimate a total static settlement of less than 1 inch. A differential static settlement of about ½ inch over a 30-foot span is also estimated. Total and differential seismically induced settlements are estimated to be negligible.

The passive earth pressure may be computed as an equivalent fluid having a density of 250 psf per foot of depth, to a maximum earth pressure of 2,500 psf for footings founded on engineered fill. A coefficient of friction between soil and concrete of 0.40 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

A grade beam, a minimum of 12 inches wide and 12 inches deep, should be utilized across large entrances. The base of the grade beam should be at the same elevation as the bottom of the adjoining footings.

A moisture and vapor retarding system should be placed below slabs-on-grade where moisture migration through the slab is undesirable. Guidelines for these are provided in the 2019 California Green Building Standards Code (CALGreen) Section 4.505.2, the 2019 CBC Section 1907.1 and ACI 360R-10. The vapor retarder design and construction should also meet the requirements of ASTM E 1643. A portion of the vapor retarder design should be the implementation of a moisture vapor retardant membrane.

It should be realized that the effectiveness of the vapor retarding membrane can be adversely impacted as a result of construction related punctures (e.g. stake penetrations, tears, punctures from walking on the vapor retarder placed atop the underlying aggregate layer, etc.). These occurrences should be limited as much as possible during construction. Thicker membranes are generally more resistant to accidental puncture than thinner ones. Products specifically designed for use as moisture/vapor retarders may also be more puncture resistant. Although the CBC specifies a 6-mil vapor retarder membrane, it is GeoTek's opinion that a minimum 10 mil thick membrane with joints properly overlapped and sealed should be considered, unless

otherwise specified by the slab design professional. The membrane should consist of Stego wrap or the equivalent.

Moisture and vapor retarding systems are intended to provide a certain level of resistance to vapor and moisture transmission through the concrete, but do not eliminate it. The acceptable level of moisture transmission through the slab is to a large extent based on the type of flooring used and environmental conditions. Ultimately, the vapor retarding system should be comprised of suitable elements to limited migration of water and reduce transmission of water vapor through the slab to acceptable levels. The selected elements should have suitable properties (i.e. thickness, composition, strength, and permeability) to achieve the desired performance level.

Moisture retarders can reduce, but not eliminate, moisture vapor rise from the underlying soils up through the slab. Moisture retarder systems should be designed and constructed in accordance with applicable American Concrete Institute, Portland Cement Association, Post-Tensioning Concrete Institute, ASTM and California Building Code requirements and guidelines.

GeoTek recommends that a qualified person, such as the flooring contractor, structural engineer, architect, and/or other experts specializing in moisture control within the building be consulted to evaluate the general and specific moisture and vapor transmission paths and associated potential impact on the proposed construction. That person (or persons) should provide recommendations relative to the slab moisture and vapor retarder systems and for migration of potential adverse impact of moisture vapor transmission on various components of the structures, as deemed appropriate.

In addition, the recommendations in this report and our services in general are not intended to address mold prevention; since we, along with geotechnical consultants in general, do not practice in the area of mold prevention. If specific recommendations addressing potential mold issues are desired, then a professional mold prevention consultant should be contacted.

We recommend that control joints be placed in two directions spaced approximately 24 to 36 times the thickness of the slab in inches. These joints are a widely accepted means to control cracks and should be reviewed by the project structural engineer.

6.4.2 Miscellaneous Foundation Recommendations

- To minimize moisture penetration beneath the slab-on-grade areas, utility trenches should be backfilled with engineered fill, lean concrete, or concrete slurry where they intercept the perimeter footing or thickened slab edge.

- Soils from the footing excavations should not be placed in the slab-on-grade areas unless properly compacted and tested. The excavations should be free of loose/sloughed materials and be neatly trimmed at the time of concrete placement.

6.4.3 Foundation Set Backs

Where applicable, the following setbacks should apply to all foundations. Any improvements not conforming to these setbacks may be subject to lateral movements and/or differential settlements:

- The outside bottom edge of all footings should be set back a minimum of H/3 (where H is the slope height) from the face of any descending slope. The setback should be at least 7 feet and need not exceed 40 feet.
- The bottom of all footings for structures near retaining walls should be deepened so as to extend below a 1:1 (h:v) projection upward from the bottom inside edge of the wall footing.
- The bottom of any proposed foundations for structures should be deepened so as to extend below a 1:1 projection upward from the bottom of the nearest excavation.

6.5 RETAINING WALL DESIGN AND CONSTRUCTION

6.5.1 General Design Criteria

Recommendations presented herein may apply to typical masonry or concrete vertical walls retaining up to six feet of compacted soil. Additional review and recommendations should be requested for higher walls.

Retaining wall foundations embedded a minimum of 12 inches into engineered fill or competent native soils should be designed using an allowable bearing capacity of 2,000 psf. An increase of one-third may be applied when considering short-term live loads (e.g. seismic and wind loads). The passive earth pressure may be computed as an equivalent fluid having a density of 250 psf per foot of depth, to a maximum earth pressure of 2,500 psf. A coefficient of friction between

soil and concrete of 0.40 may be used with dead load forces. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

An equivalent fluid pressure approach may be used to compute the horizontal active pressure against the wall. The appropriate fluid unit weights are given in the table below for specific slope gradients of retained materials.

ACTIVE EARTH PRESSURES	
Surface Slope of Retained Materials (H:V)	Equivalent Fluid Pressure (PCF) Select Backfill*
Level	35
2:1	60

*Select backfill should consist of imported sand, on-site granular soils, or other approved materials with an expansion index less than or equal to 20.

The above equivalent fluid weights do not include superimposed loading conditions such as expansive soils, vehicular traffic, structures, seismic conditions or adverse geologic conditions.

6.5.2 Wall Backfill and Drainage

Wall backfill should include a minimum one-foot wide section of ¾- to 1-inch clean crushed rock (or approved equivalent). The rock should be placed immediately adjacent to the back of the wall and extend up from the backdrain to within approximately 12 inches of finish grade. The upper 12 inches should consist of compacted on-site materials. If the walls are designed using the "select" backfill design parameters, then the "select" materials shall be placed within the active zone as defined by a 1:1 (H:V) projection from the back of the retaining wall footing up to the retained surface behind the wall. The presence of other materials might necessitate revision to the parameters provided and modification of wall designs.

The backfill materials should be placed in lifts no greater than eight inches in thickness and compacted to a minimum of 90 percent relative compaction in accordance with ASTM Test Method D 1557. Proper surface drainage needs to be provided and maintained. Water should not be allowed to pond behind retaining walls. Waterproofing of site walls should be performed where moisture migration through the walls is undesirable.

Retaining walls should be provided with an adequate pipe and gravel back drain system to reduce the potential for hydrostatic pressures to develop. A 4-inch diameter perforated

collector pipe (Schedule 40 PVC, or approved equivalent) in a minimum of one cubic foot per linear foot of ¾-inch or one-inch clean crushed rock or equivalent, wrapped in filter fabric should be placed near the bottom of the backfill and be directed (via a solid outlet pipe) to an appropriate disposal area.

Walls from two to four feet in height may be drained using localized gravel packs behind weep holes at 8 feet maximum spacing (e.g. approximately 1.5 cubic feet of gravel in a woven plastic bag). Weep holes should be provided or the head joints omitted in the first course of block extended above the ground surface. However, nuisance water may still collect in front of the wall.

Drain outlets should be maintained over the life of the project and should not be obstructed or plugged by adjacent improvements.

6.5.3 Restrained Retaining Walls

Any retaining wall that will be restrained prior to placing backfill or walls that have male or reentrant corners should be designed for at-rest soil conditions using an equivalent fluid pressure of 60 pcf (select backfill), plus any applicable surcharge loading. For areas having male or reentrant corners, the restrained wall design should extend a minimum distance equal to twice the height of the wall laterally from the corner, or as otherwise determined by the structural engineer.

6.5.4 Other Design Considerations

- Retaining and garden wall foundation elements should be designed in accordance with building code setback requirements.
- Wall design should consider the additional surcharge loads from superjacent slopes and/or footings, where appropriate.
- No backfill should be placed against concrete until minimum design strengths are evident by compression tests of cylinders.
- The retaining wall footing excavations, backcuts, and backfill materials should be approved by the project geotechnical engineer or their authorized representative.
- Positive separations should be provided in garden walls at horizontal distances not exceeding 20 feet.

6.6 POOL DESIGN CONSIDERATIONS

We understand that a pool will be constructed within the center portion of the site. Based on the soils data available and *Conceptual Site Plan* (K&A, 2021), this location may contain engineered compacted fills ranging from 21 feet to 2 feet. We recommend that the proposed swimming pool shell derive support entirely from engineered fill with a differential thickness not exceeding a ratio of 3:1.

The pool walls should be designed for at-rest soil conditions using an equivalent fluid pressure of 60 pcf for at-rest conditions. Pool walls surcharged by adjacent structures should be designed for additional pressures. Alternatively, the pool walls may be designed as freestanding walls using the active soil state conditions provided that some lateral movement of the pool walls would be acceptable. If the active state is to be used, an equivalent fluid pressure of 35 pcf is considered suitable. These recommended pressures are based on drained conditions and using granular imported fill or granular native fills with expansion index of less than 20. If a drain system adjacent/beneath the pool is not provided, the pool walls should then be designed for an equivalent fluid pressure of 95 pcf for the at-rest condition and 83 pcf for the active condition.

As noted above, the use of the lower (drained condition) at-rest or active soil pressures will require a subdrain system beneath/adjacent to the pool. A typical subdrain system includes a series of 4-inch diameter perforated drain pipes encapsulated with at least one cubic foot of free-draining material per linear foot of pipe. The free-draining material should be encapsulated within a geotextile to prevent migration of fines into the drainage medium. The drain pipes should be routed to an acceptable discharge location, as determined by the civil engineer/pool designed. If desired, GeoTek can review the subdrain system once designed to determine if additional measures are warranted.

Pool decking supported on grade should be separated from the pool bond beam by a full-depth, mastic construction joint. If it is desired to extend the pool deck over the bond beam, consideration should be given to designing the deck as a structural slab supported by the pool shell. This will reduce the possibility of deck cracking occurring along the outer edge of the bond beam. We also recommend that the pool decking subgrade be "pre-saturated" prior to concrete placement. The subgrade soils should be moisture conditioned to at least 100% of the soil's optimum moisture content to a depth of 12 inches, prior to concrete placement. Testing by the geotechnical engineer is recommended to confirm that the soils have been adequately moisture treated.

Pool decking may consist of 5-inch thick concrete and the use of reinforcement is suggested. A minimum of #3 bars spaced 24 inches or 6" x 6" – W2.9/W2.9 welded wire mesh placed on

center may be used. Control joints should be placed in two directions and located a distance apart approximately equal to 24 to 36 times the slab thickness. The pool engineer should provide final design recommendations.

Water soluble sulfate testing of the on-site soils (see Section 6.8) showed negligible sulfate content. However, it is our recommendation that Type V cement be used for the pool construction due to the chemicals associated with the pool water.

6.7 SOIL CORROSIVITY

The soil resistivity at this site was not previously tested. Representative samples of the soils encountered during rough grading should be tested to determine their corrosion potential.

6.8 SOIL SULFATE CONTENT

The sulfate content was determined in the laboratory for one representative soil sample by AKA (2004). The results indicate that the water-soluble sulfate for the tested sample was less than 0.1 percent by weight, which is considered "not applicable" (i.e. negligible) as per Table 4.2.1 of ACI 318. Similar results were obtained during the grading of Lots 1-70 of Tract 32024 (GeoTek, 2019). Based upon the test results, no special concrete mix design is required for sulfate attack resistance. Additional testing should be performed during site grading to assess the sulfate content of the as-graded soils.

6.9 IMPORT SOILS

Import soils should have expansion characteristics similar to the on-site soils. GeoTek also recommends that the proposed import soils be tested for expansion and sulfate potential. GeoTek should be notified a minimum of 72 hours prior to importing so that appropriate sampling and laboratory testing can be performed.

6.10 PAVEMENT DESIGN

Pavement design for the proposed interior site streets was conducted per *Caltrans Highway Design Manual* guidelines for flexible pavements. Based on a design R-value test of 50 (AKA, 2004) and for Traffic Indices (TIs) of 5.0 through 7.0 generally associated with these types of projects, the following preliminary sections were calculated:

PRELIMINARY MINIMUM PAVEMENT SECTIONS	
TI	Flexible Pavement*
5.0	3" AC/6" AB**
6.0	3.25" AC/6" AB**
7.0	4" AC/6" AB**

*AC = Asphalt Concrete, AB = Aggregate Base

** County of Riverside minimum sections

Traffic Indices (TIs) used in our pavement design are considered reasonable values for the proposed street areas and should provide a pavement life of approximately 20 years with a normal amount of flexible pavement maintenance. Irrigation adjacent to pavements, without a deep curb or other cutoff to separate landscaping from the paving may result in premature pavement failure. Traffic parameters used for design were selected based upon engineering judgment and not upon information furnished to us such as an equivalent wheel load analysis or a traffic study.

The recommended pavement sections provided are intended as a minimum guideline and final selection of pavement cross section parameters should be made by the project civil engineer, based upon the local laws and ordinates, expected subgrade and pavement response, and desired level of conservatism. If thinner or highly variable pavement sections are constructed, increased maintenance and repair could be expected. Final pavement design should be checked by testing of soils exposed at subgrade (the upper foot) after final grading has been completed.

Asphalt concrete and aggregate base should conform to current Caltrans Standard Specifications Section 39 and 26-1.02, respectively. As an alternative, asphalt concrete can conform to Section 203-6 of the current Standard Specifications for Public Work (Green Book). Crushed aggregate base or crushed miscellaneous base can conform to Section 200-2.2 and 200-2.4 of the Green Book, respectively. Pavement base should be compacted to at least 95 percent of the ASTM D1557 laboratory maximum dry density (modified proctor).

All pavement installation, including preparation and compaction of subgrade, compaction of base material, placement and rolling of asphaltic concrete, should be done in accordance with the County of Riverside specifications, and under the observation and testing of GeoTek and a County Inspector where required. Jurisdictional minimum compaction requirements in excess of the aforementioned minimums may govern.

Deleterious material, excessive wet or dry pockets, oversized rock fragments, and other unsuitable yielding materials encountered during grading should be removed. Once existing compacted fill are brought to the proposed pavement subgrade elevations, the subgrade should be proof-rolled in order to check for a uniform and unyielding surface. The upper 12 inches of

pavement subgrade soils should be scarified, moisture conditioned at or near optimum moisture content, and recompacted to at least 95 percent of the laboratory maximum dry density (ASTM D1557). If loose or yielding materials are encountered during construction, additional evaluation of these areas should be carried out by GeoTek. All pavement section changes should be properly transitioned.

6.11 CONCRETE CONSTRUCTION

6.11.1 General

Concrete construction should follow the 2019 CBC and ACI guidelines regarding design, mix placement and curing of the concrete. If desired, we could provide quality control testing of the concrete during construction.

6.11.2 Concrete Mix Design

As noted in Section 6.7, the onsite materials are anticipated to have negligible soil sulfate content; thus, no special concrete mix design is required by code to resist sulfate attack. However, additional testing should be performed during grading so that specific recommendations can be formulated based on the as-graded conditions.

6.11.3 Concrete Flatwork

Exterior concrete slabs, sidewalks and driveways should be designed using a four-inch minimum thickness. No specific reinforcement is required from a geotechnical perspective. However, some shrinkage and cracking of the concrete should be anticipated as a result of typical mix designs and curing practices commonly utilized in industrial construction.

Sidewalks and driveways may be under the jurisdiction of the governing agency. If so, jurisdictional design and construction criteria would apply, if more restrictive than the recommendations presented in this report.

Subgrade soils should be pre-moistened prior to placing concrete. The subgrade soils below exterior slabs, sidewalks, driveways, etc. should be pre-saturated to a minimum of 110% of the optimum moisture content to a depth of 12 inches.

All concrete installation, including preparation and compaction of subgrade, should be done in accordance with the City of Wildomar specifications, and under the observation and testing of GeoTek and a City inspector, if necessary.

6.11.4 Concrete Performance

Concrete cracks should be expected. These cracks can vary from sizes that are essentially unnoticeable to more than 1/8 inch in width. Most cracks in concrete while unsightly do not significantly impact long-term performance. While it is possible to take measures (proper concrete mix, placement, curing, control joints, etc.) to reduce the extent and size of cracks that occur, some cracking will occur despite the best efforts to minimize it. Concrete undergoes chemical processes that are dependent on a wide range of variables, which are difficult, at best, to control. Concrete, while seemingly a stable material, is subject to internal expansion and contraction due to external changes over time.

One of the simplest means to control cracking is to provide weakened control joints for cracking to occur along. These do not prevent cracks from developing; they simply provide a relief point for the stresses that develop. These joints are a widely accepted means to control cracks but are not always effective. Control joints are more effective the more closely spaced they are. GeoTek suggests that control joints be placed in two directions and located a distance apart approximately equal to 24 to 36 times the slab thickness.

6.12 POST CONSTRUCTION CONSIDERATIONS

6.12.1 Landscape Maintenance and Planting

Water has been shown to weaken the inherent strength of soil, and slope stability is significantly reduced by overly wet conditions. Positive surface drainage away from graded slopes should be maintained and only the amount of irrigation necessary to sustain plant life should be provided for planted slopes. Controlling surface drainage and runoff and maintaining a suitable vegetation cover can minimize erosion. Plants selected for landscaping should be lightweight, deep-rooted types that require little water and are capable of surviving the prevailing climate.

Overwatering should be avoided. Care should be taken when adding soil amendments to avoid excessive watering. An abatement program to control ground-burrowing rodents should be implemented and maintained. This is critical as burrowing rodents can decreased the long-term performance of slopes.

6.12.2 Drainage

The need to maintain proper surface drainage and subsurface systems cannot be overly emphasized. Positive site drainage should be maintained at all times. Drainage should not flow uncontrolled down any descending slope. Water should be directed away from foundations and not allowed to pond or seep into the ground adjacent to the footings and floor-slabs. Pad

drainage should be directed toward approved areas and not be blocked by other improvements.

It is the owner's responsibility to maintain and clean drainage devices on or contiguous to their lot. In order to be effective, maintenance should be conducted on a regular and routine schedule and necessary corrections made prior to each rainy season.

6.13 PLAN REVIEW AND CONSTRUCTION OBSERVATIONS

We recommend that site grading, specifications, retaining wall/shoring plans and foundation plans be reviewed by this office prior to construction to check for conformance with the recommendations of this report. Additional recommendations may be necessary based on these reviews. We also recommend that GeoTek representatives be present during site grading and foundation construction to check for proper implementation of the geotechnical recommendations. The owner/developer should have GeoTek's representative perform at least the following duties:

- Observe site clearing and grubbing operations for proper removal of unsuitable materials.
- Observe and test bottom of removals prior to fill placement.
- Evaluate the suitability of on-site and import materials for fill placement and collect soil samples for laboratory testing when necessary.
- Observe the fill for uniformity during placement including utility trenches.
- Test the fill for field density and relative compaction.
- Test the near-surface soils to verify proper moisture content.
- Observe and probe foundation excavations to confirm suitability of bearing materials.

If requested, a construction observation and compaction report can be provided by GeoTek, which can comply with the requirements of the governmental agencies having jurisdiction over the project. We recommend that these agencies be notified prior to commencement of construction so that necessary grading permits can be obtained.

7. LIMITATIONS

This evaluation does not and should in no way be construed to encompass any areas beyond the specific area of proposed construction as indicated to us by the client. Further, no

evaluation of any existing site improvements is included. The scope is based on our understanding of the project and the client's needs, our proposal (Proposal No. P-0505521-CR) dated May 18, 2021 and geotechnical engineering standards normally used on similar projects in this region.

The materials observed on the project site appear to be representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during site construction. Site conditions may vary due to seasonal changes or other factors. GeoTek, Inc. assumes no responsibility or liability for work, testing or recommendations performed or provided by others.

Since our recommendations are based on the site conditions observed and encountered, and laboratory testing, our conclusions and recommendations are professional opinions that are limited to the extent of the available data. Observations during construction are important to allow for any change in recommendations found to be warranted. These opinions have been derived in accordance with current standards of practice and no warranty is expressed or implied. Standards of practice are subject to change with time.

8. SELECTED REFERENCES

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Modified from Google Earth Pro Aerial Imagery

1000 Ft.

Monte Vista Ranch II, LLC.

Tentative Tract Map No. 38155
Wildomar, Riverside County, California

Project No. 2778-CR

NORTH

Figure 1

Site Location Map

GEOTEK



Monte Vista Ranch II, LLC
Tract No. 38155
Wildomar, Riverside County, California

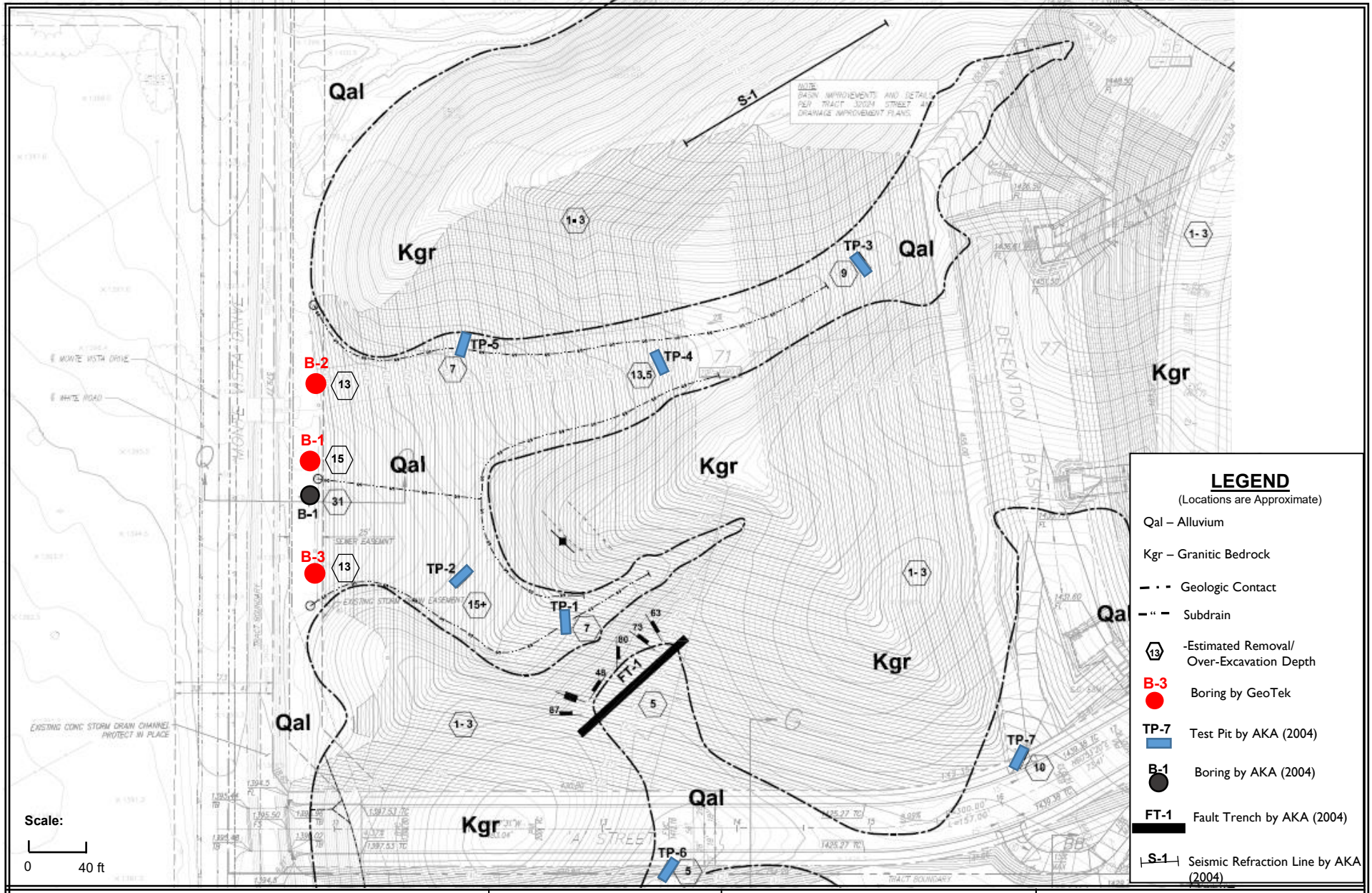
Project No. 2778-CR

N

Figure 2a

Exploration Location Map

GEOTEK



Monte Vista Ranch II, LLC
Tract No. 38155
Wildomar, Riverside County, California

Project No. 2778-CR

N

Figure 2b

Exploration Location Map

GEOTEK

APPENDIX A

LOGS OF EXCAVATIONS, SEISMIC LINES, AND LABORATORY TEST RESULTS BY AKA (2004)

Updated Geotechnical Evaluation

Tract 38155, Wildomar, Riverside County, California

Project No. 2778-CR

GEOTEK

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-1**
Location:	**See Plan**	**Elevation:**	**1396**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:** **08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:** **MOS**

Depth (Feet)	USCS Symb.	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine grained, some scattered medium to coarse sand, brown, dry							MAX DSR SO4 R
5		@ 5': **Silty SAND:** Fine to medium grained, some scattered coarse sand and gravel, brown, dry, loose, slightly porous.		14			2.7	106.7	
10		@10': Cobble in tip, sample disturbed		34					
15		@15': **Silty SAND:** Fine to medium grained, some coarse sand and gravel, brown, dry to damp, loose.		8			3.4		
20		@20': **Silty SAND:** Fine to coarse grained, brown, damp, trace fine gravel, loose		13			5.7	114.0	DS

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-1**
Location:	**See Plan**	**Elevation:**	**1396**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:** **08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:** **MOS**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
25	Qal	@ 25': Same as above		9			4.5		
30		@ 30': **Silty SAND - Gravelly SAND:** Fine to coarse grained, with fine gravel, brown, damp to moist, loose to medium dense, micaceous.		15			4.8	111.1	
	Kgr	**BEDROCK; GRANITE** Coarse grained, gray white, moderately hard.		50 for 5"					
35		Bottom of boring at 35.5' No groundwater Boring backfilled with soil cuttings							
40									
45									

Albus-Keefe & Associates, Inc.
Geotechnical Consultants

Plate A-2

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-1	0-7.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots. @ 2.0', trace gravel @ 4.0', increase in gravel and some cobbles
	7.0-7.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 7.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-2	0-15.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet. @ 4.0', becomes dry to damp.
			Total Depth: 15.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-3	0-9.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	9.0-9.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 9.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-4	0-13.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots. @ 2.0', trace gravel and cobbles
	13.5-14.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 14.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-5	0-7.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	7.0-8.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 8.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-6	0-5.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	5.0-6.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 6.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-7	0-10.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	10.0-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-8	0-9.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	9.5-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

FILE 1850-1.SIP
SEISMIC LINE S-1

SPREAD 1

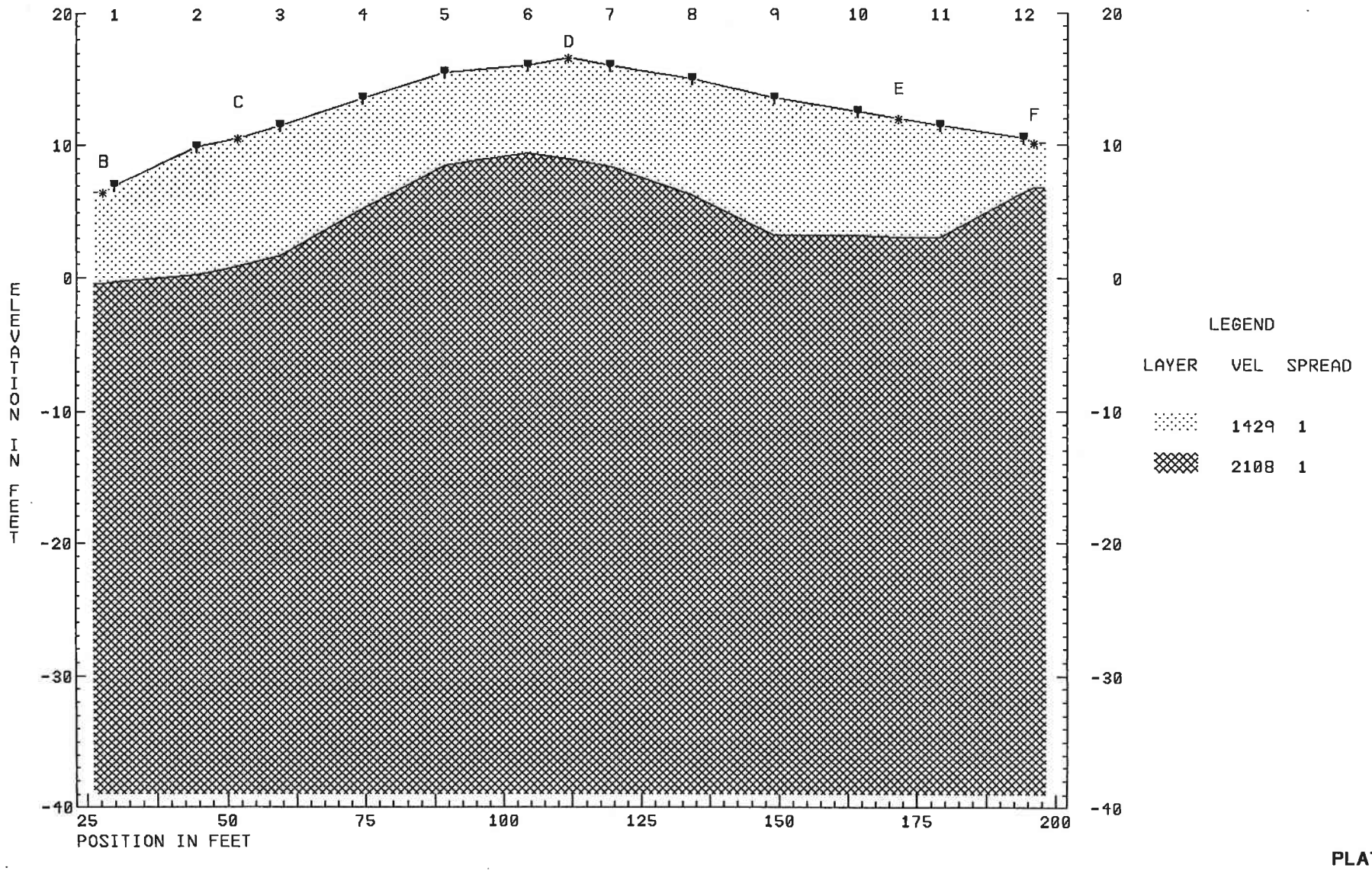
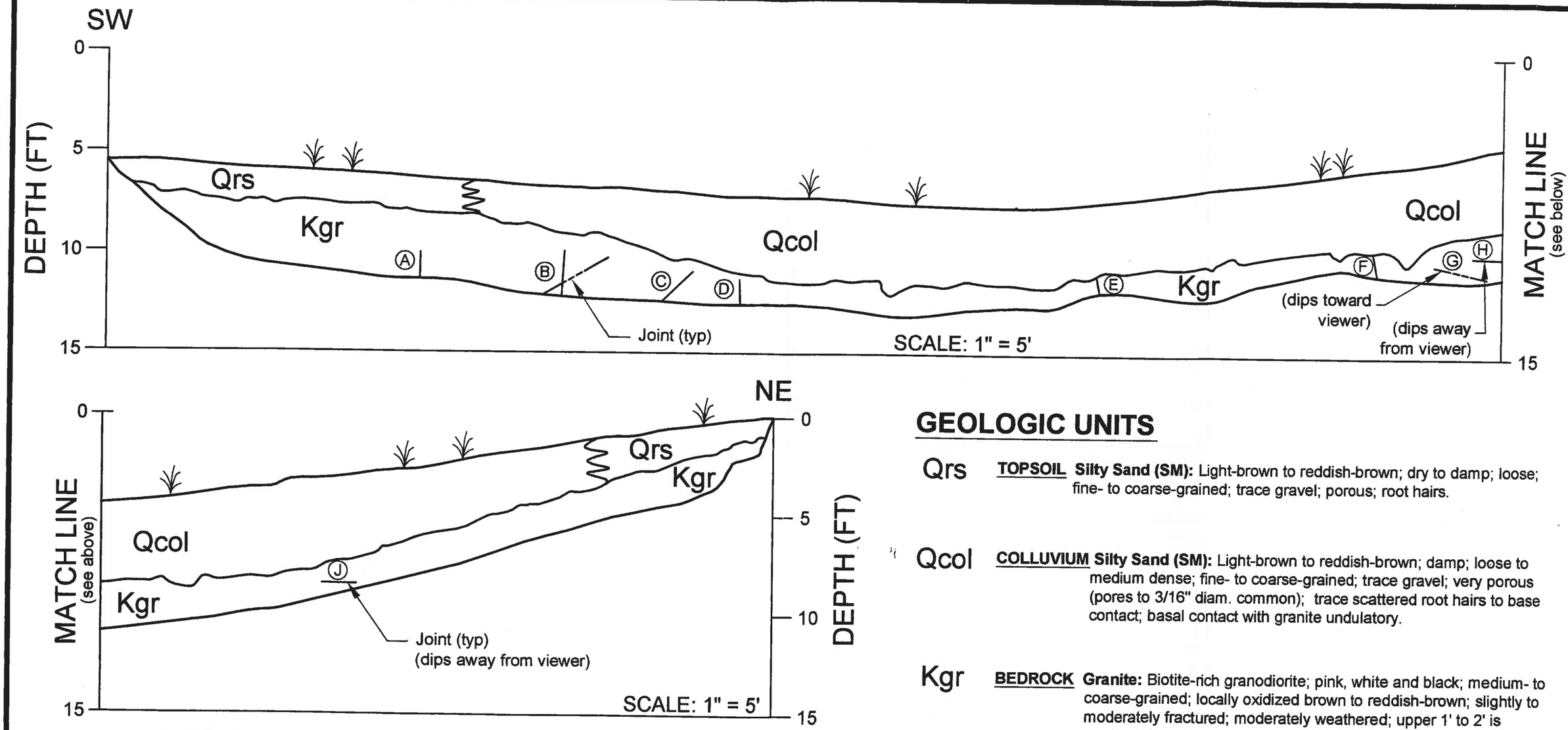


PLATE B-1



JOINT ATTITUDES

- Ⓐ E-W, 87N
- Ⓑ N20E, 90 / N55W, 48SW — SET
- Ⓒ N55W, 56SW
- Ⓓ N20E, 88SE
- Ⓔ N20E, 82SE
- Ⓕ N-S, 80E
- Ⓖ N38E, 73SE
- Ⓗ N60E, 63NW
- Ⓙ N63E, 78NW

GEOLOGIC UNITS

Qrs **TOPSOIL** **Silty Sand (SM):** Light-brown to reddish-brown; dry to damp; loose; fine- to coarse-grained; trace gravel; porous; root hairs.

Qcol **COLLUVIUM** **Silty Sand (SM):** Light-brown to reddish-brown; damp; loose to medium dense; fine- to coarse-grained; trace gravel; very porous (pores to 3/16" diam. common); trace scattered root hairs to base contact; basal contact with granite undulatory.

Kgr **BEDROCK** **Granite:** Biotite-rich granodiorite; pink, white and black; medium- to coarse-grained; locally oxidized brown to reddish-brown; slightly to moderately fractured; moderately weathered; upper 1' to 2' is moderately to highly weathered with some soil infilled fractures.

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

LOG OF FAULT TRENCH FT-1

Job No.: 1338.00	Date: 9/03/04	Plate: A-21

LABORATORY TESTING PROGRAM

Soil Classification

Soils encountered within the exploratory borings and trenches were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D2488-93). The samples were re-examined in the laboratory and classifications reviewed and then revised where appropriate. The assigned group symbols are presented in the Exploration Logs provided in Appendix A.

In Situ Moisture and Density

Moisture content and unit dry density testing of in-place soil materials encountered in selected trenches were determined in accordance with ASTM D2922/D 3017 (nuclear gauge) during our field investigation. Moisture content and unit dry density testing were also determined in the laboratory on undisturbed samples obtained from exploratory excavations. Test data are summarized in Table C-2 and on boring logs in Appendix A.

Laboratory Maximum Dry Density

Maximum dry density and optimum moisture content were performed on representative samples of the site materials. The tests were performed in accordance with Method A of ASTM D 1557-91. Pertinent test values are given on Table C-1.

Particle Size Analyses

A particle size analysis was performed on a representative sample of site materials. The test was performed in accordance with ASTM D 422-63. The result is presented graphically on the attached Plate C-1.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for bulk and relatively undisturbed samples obtained from our subsurface exploration. AMEC Earth & Environmental of Anaheim, California, performed the tests in general conformance with ASTM D 3080-80. The bulk samples were remolded to 90 percent of maximum dry density and 2 percentage over optimum. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plates C-2 through C-4.

Soluble Sulfate Analysis

A chemical analysis was performed on a selected sample to determine soluble sulfate content. The test was performed in accordance with California Test Method No. 417. The test result is included on Table C-1.

R-Value

An R-Value test was performed by AMEC Earth & Environmental of Anaheim, California, on a representative soil sample. The test was performed in general conformance with California Test Method No. 301. The test result is presented on Table C-1.

TABLE C-1
Summary of Laboratory Test Results

Trench No.	Sample Depth (ft)	Soil Description	Test Results	
B-1	0.0-10.0	Alluvium (Qal) Silty F-C Sand (SM)	Maximum Dry Density: Optimum Moisture Content: Soluble Sulfate Content: R-Value:	135.0 pcf 8.0 % 0.015 % 52
FT-1	4.0-5.0	Bedrock: Granite (Kgr)	Maximum Dry Density: Optimum Moisture Content:	130.0 pcf 8.0 %

TABLE C-2
Summary of In-situ Dry Density and Moisture Content Test Results

Trench No.	Depth (ft)	Soil Description	Test Results
TP-1	2.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 92.1 pcf In-situ Moisture Content: 5.4 %
TP-3	3.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 93.0 pcf In-situ Moisture Content: 7.2 %
TP-6	2.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.3 pcf In-situ Moisture Content: 5.3 %
TP-7	2.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 95.3 pcf In-situ Moisture Content: 5.9 %
TP-9	1.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 98.1 pcf In-situ Moisture Content: 4.1 %
TP-9	3.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 105.9 pcf In-situ Moisture Content: 4.6 %
TP-9	4.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 100.4 pcf In-situ Moisture Content: 5.3 %
TP-11	2.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 101.2 pcf In-situ Moisture Content: 4.5 %
TP-11	4.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 95.1 pcf In-situ Moisture Content: 6.9 %
TP-11	5.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.5 pcf In-situ Moisture Content: 6.5 %
TP-11	7.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.4 pcf In-situ Moisture Content: 5.7 %

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GEOTECHNICAL CONSULTANTS

GRAIN SIZE DISTRIBUTION

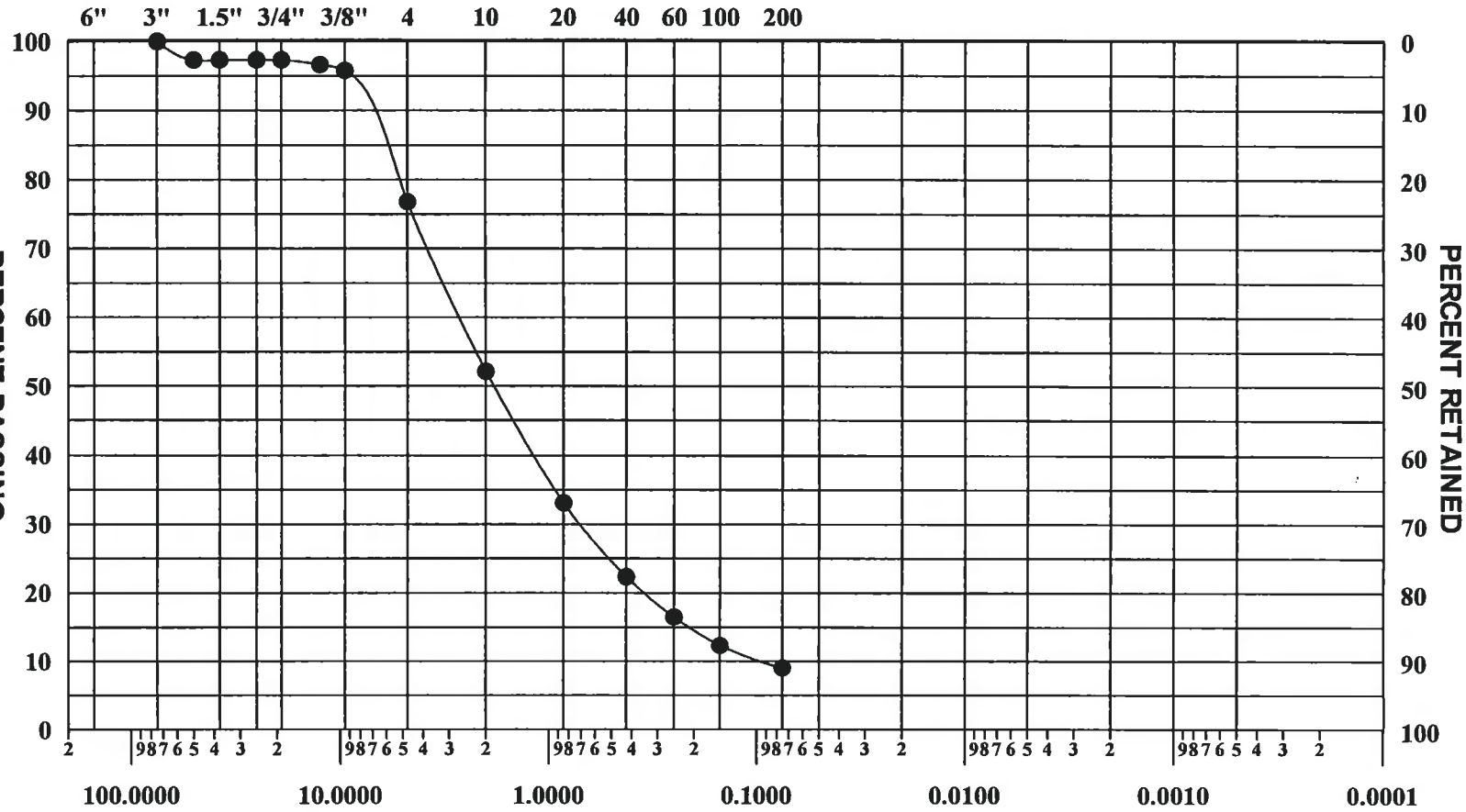
Job No: 1338.00

Plate No: C-1

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZES



GRAIN SIZE IN MILLIMETERS

LOCATION	DEPTH	SYMBOL	LL	PI	CLASSIFICATION
FT-1	4' - 5'				Silty Sand (SP-SM) w/ gravel

DIRECT SHEAR TEST

PROJECT: Albus-Keefe #1338.00 Date: 08/27/2004

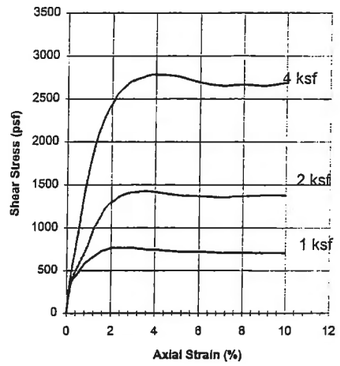
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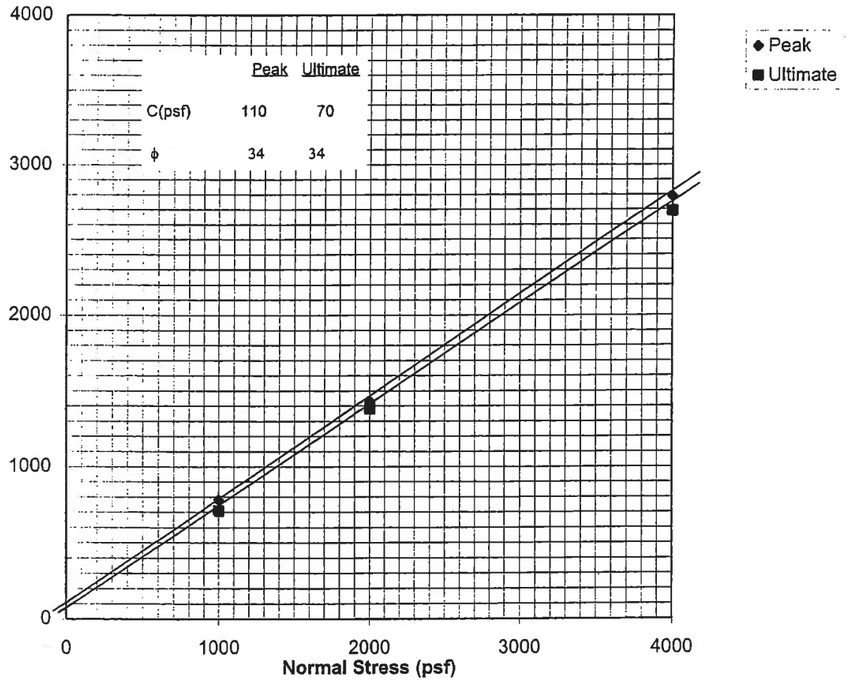
SAMPLE LOCATION: B-1 @ 0-10'

SAMPLE TYPE: Remolded/Saturated

DESCRIPTION: Brown Silt

Specimen No.	1	2	3
Normal Stress, psf	1000	2000	4000
Peak Stress, psf	780	1428	2784
Displacement, in.	0.058	0.079	0.094
Ultimate Stress, psf	708	1380	2688
Displacement, in.	0.250	0.250	0.250
Initial Dry Density, pcf	121.5	121.5	121.5
Initial Water Content, %	10.0	10.0	10.0
Strain Rate, in/min.	0.0083	0.0083	0.0083





amec

PLATE C-2

DIRECT SHEAR TEST

PROJECT: Albus-Keefe #1338.00 Date: 08/17/2004

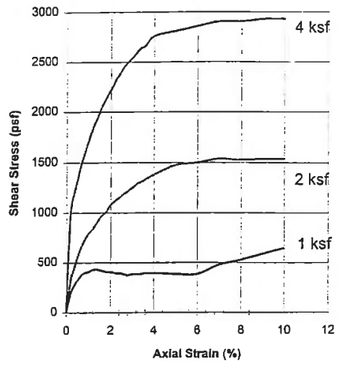
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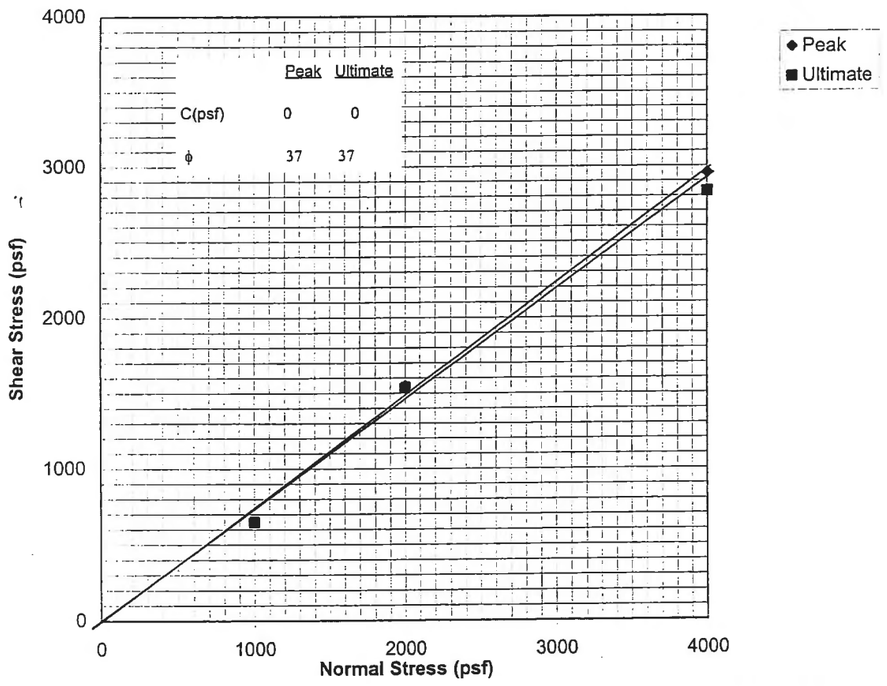
SAMPLE LOCATION: B-1 @ 20'

SAMPLE TYPE: Undisturbed/Saturated

DESCRIPTION: Brown Silt w/Sand

Specimen No.	1	2	3
Normal Stress, psf	1000	2000	4000
Peak Stress, psf	648	1548	2952
Displacement, in.	0.248	0.189	0.242
Ultimate Stress, psf	648	1536	2829
Displacement, in.	0.250	0.250	0.250
Initial Dry Density, pcf	114.0	114.0	114.0
Initial Water Content, %	5.7	5.7	5.7
Strain Rate, in/min.	0.0083	0.0083	0.0083





amec

PLATE C-3

DIRECT SHEAR TEST

PROJECT: Albus-Keefe #1338.00 Date: 08/17/2004

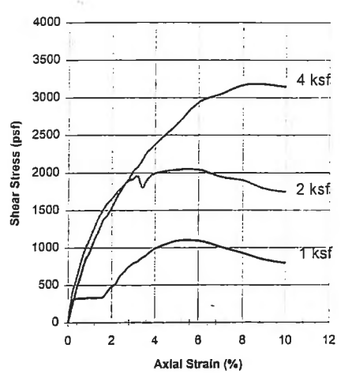
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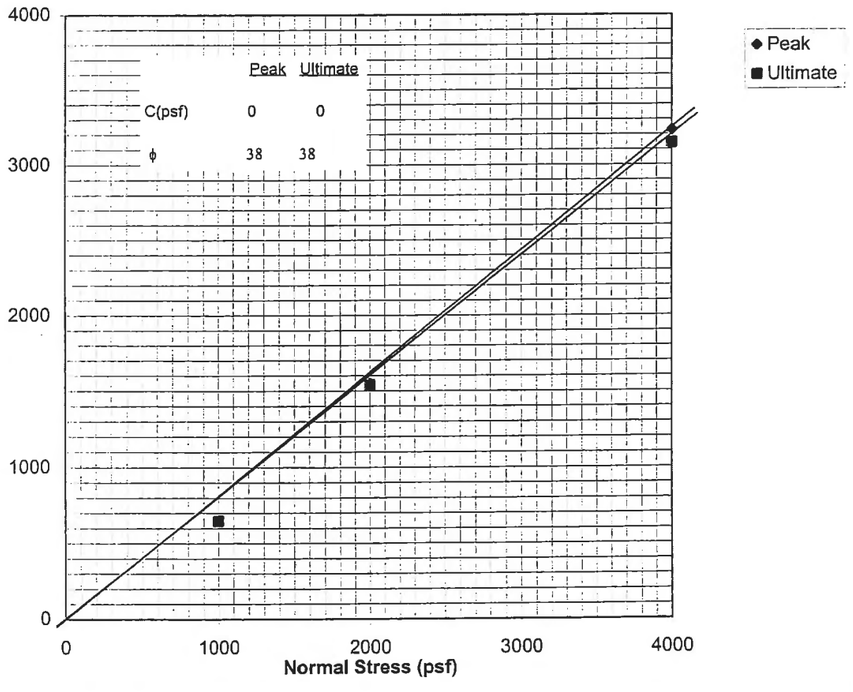
SAMPLE LOCATION: T-1 @ 4-5'

SAMPLE TYPE: Remolded/Saturated

DESCRIPTION: Brown Silt w/Sand

Specimen No.	1	2	3
Normal Stress, psf	1000	2000	4000
Peak Stress, psf	648	1548	3228
Displacement, in.	0.248	0.189	0.220
Ultimate Stress, psf	648	1536	3144
Displacement, in.	0.250	0.250	0.250
Initial Dry Density, pcf	117.0	117.0	117.0
Initial Water Content, %	10.5	10.5	10.5
Strain Rate, in/min.	0.0083	0.0083	0.0083





amec

PLATE C-4

APPENDIX B

EXPLORATORY BORING LOGS BY GEOTEK

Updated Geotechnical Evaluation
Tract 38155, Wildomar, Riverside County, California
Project No. 2778-CR

GEOTEK

A - FIELD TESTING AND SAMPLING PROCEDURES

Bulk Samples (Large)

These samples are normally large bags of earth materials over 20 pounds in weight collected from the field by means of hand digging or exploratory cuttings.

Bulk Samples (Small)

These are plastic bag samples which are normally airtight and contain less than five pounds in weight of earth materials collected from the field by means of hand digging or exploratory cuttings. These samples are primarily used for determining natural moisture content and classification indices.

B – BORING LOG LEGEND

The following abbreviations and symbols often appear in the classification and description of soil and rock on the logs of trenches:

SOILS

USCS	Unified Soil Classification System
f-c	Fine to coarse
f-m	Fine to medium

GEOLOGIC

B: Attitudes	Bedding: strike/dip
J: Attitudes	Joint: strike/dip

C: Contact line

……..	Dashed line denotes USCS material change
———	Solid Line denotes unit / formational change
———	Thick solid line denotes end of boring

(Additional denotations and symbols are provided on the logs of borings).

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Monte Vista Ranch II	**DRILLER:**	2R Drilling Inc.	**LOGGED BY:**	DRW
PROJECT NAME:	TTM 38155	**DRILL METHOD:**	Hollow-Stem Auger	**OPERATOR:**	Jerry
PROJECT NO.:	2778-CR	**HAMMER:**	140lbs/30in.	**RIG TYPE:**	CME 75
LOCATION:	See Exploration Location Map			**DATE:**	6/7/2021

BORING NO.: B-1

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Undocumented fill:			
				SM	Silty f-c SAND, brown, slightly moist, medium dense			
		18						
		18			Same as above	3.9	116.5	
		18			**Alluvium:**			
				SM/ML	Silty f-c SAND to f-c sandy SILT, dark brown, moist, medium dense/very stiff			
5		9			Same as above	10.0	113.6	
		12						
		13						
		8				3.7	107.4	SH
		12						MD
		12		SM	Silty f-c SAND, brown, slightly moist, medium dense			
10		8		SM/SC	Silty clayey f-c SAND, brown, moist, medium dense	6.7	114.6	
		10						
		12						
15		9			Same as above	2.1	139.7	SH
		15						HC
		23						
20		9		SM	Silty f-c SAND, reddish brown, slightly moist, medium dense	3.5	114.4	HC
		15						MD
		18						
25		9			Same as above, becomes dense, trace gravel	3.6	118.8	SH
		26						HC
		36						
30		14		SM/SP	Silty gravelly f-c SAND, light brown, slightly moist, dense	3.6	107.8	HC
		18						
		30						

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Monte Vista Ranch II	**DRILLER:**	2R Drilling Inc.	**LOGGED BY:**	DRW
PROJECT NAME:	TTM 38155	**DRILL METHOD:**	Hollow-Stem Auger	**OPERATOR:**	Jerry
PROJECT NO.:	2778-CR	**HAMMER:**	140lbs/30in.	**RIG TYPE:**	CME 75
LOCATION:	See Exploration Location Map			**DATE:**	6/7/2021

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	BORING NO.: B-1 CONTINUED / MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
35		50/5"			**Granitic Bedrock:** GRANODIORITE, slightly weathered, excavates as silty f-c SAND, brown, slightly moist	4.8	112.6	
40		50/2"			Becomes indurated			
					BORING TERMINATED AT 40.5 FEET No groundwater encountered Boring backfilled with soil cuttings			
45								
50								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Monte Vista Ranch II	**DRILLER:**	2R Drilling Inc.	**LOGGED BY:**	DRW
PROJECT NAME:	TTM 38155	**DRILL METHOD:**	Hollow-Stem Auger	**OPERATOR:**	Jerry
PROJECT NO.:	2778-CR	**HAMMER:**	140lbs/30in.	**RIG TYPE:**	CME 75
LOCATION:	See Exploration Location Map			**DATE:**	6/7/2021

BORING NO.: B-2

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Undocumented fill:			
		7 9 14		SM/ML	Silty f-m SAND, dark brown, moist, medium dense	5.2	114.6	
					Alluvium:			
5		5 7 9		SC	Clayey f-c SAND, brown, moist, loose, trace gravel	7.4	104.9	
		7 8 10			Same as above, becomes medium dense	6.6	114.5	
10		9 13				4.7	114.7	
		19		ML	Clayey SILT, greenish gray, slightly moist, very stiff			
					Granitic Bedrock			
		50/3"			GRANODIORITE, slightly weathered, excavates as silty f-c SAND, gray, moist	1.6		
15								
		50/3"			Becomes indurated			
20					**BORING TERMINATED AT 19 FEET**			
					No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

GeoTek, Inc.

LOG OF EXPLORATORY BORING

CLIENT:	Monte Vista Ranch II	**DRILLER:**	2R Drilling Inc.	**LOGGED BY:**	DRW
PROJECT NAME:	TTM 38155	**DRILL METHOD:**	Hollow-Stem Auger	**OPERATOR:**	Jerry
PROJECT NO.:	2778-CR	**HAMMER:**	140lbs/30in.	**RIG TYPE:**	CME 75
LOCATION:	See Exploration Location Map			**DATE:**	6/7/2021

BORING NO.: B-3

Depth (ft)	SAMPLES: Sample Type	SAMPLES: Blows/ 6 in	SAMPLES: Sample Number	USCS Symbol	MATERIAL DESCRIPTION AND COMMENTS	Laboratory Testing: Water Content (%)	Laboratory Testing: Dry Density (pcf)	Laboratory Testing: Others
					Undocumented fill:			
		8 8 9		SM	Silty f-m SAND, brown, slightly moist, loose, trace gravel	2.6	115.3	
		9 10			Silty f-c SAND, brown, moist, medium dense	7.1	109.2	
5		11		SM/SC	**Alluvium:** Silty clayey f-c SAND, reddish brown, moist, loose to medium dense			
		6 6 8			Same as above	5.3	107.3	
10		6 8 10		SM	Silty f-c SAND, brown, moist to very moist, loose to medium dense, trace gravel	6.6	114.4	
		50/5"			**Granitic Bedrock** GRANODIORITE, slightly weathered, excavates as silty f-c SAND, gray, slightly moist	2.2		
15		50/3"			Becomes indurated			
20					**BORING TERMINATED AT 19 FEET** No groundwater encountered Boring backfilled with soil cuttings			
25								
30								

LEGEND

Sample type: ---Ring ---SPT ---Small Bulk ---Large Bulk ---No Recovery ---Water Table

Lab testing: AL = Atterberg Limits; EI = Expansion Index; SA = Sieve Analysis; RV = R-Value Test; SR = Sulfate/Resisitivity Test; SH = Shear Test; HC= Consolidation; MD = Maximum Density

APPENDIX C

RESULTS OF LABORATORY TESTING BY GEOTEK

Updated Geotechnical Evaluation
Tract 38155, Wildomar, Riverside County, California
Project No. 2778-CR

GEOTEK

SUMMARY OF LABORATORY TESTING

Moisture-Density Relationship

Laboratory testing was performed on two representative soil samples collected during our site visit. The laboratory maximum dry density and optimum moisture content for the soil types was determined in general accordance with test method ASTM Test Method D 1557. The results are presented herein.

Hydro-Collapse

The potential for hydro-collapse on selected samples of the alluvium was determined per ASTM D 4546. The results of these tests are presented herein.

Direct Shear

Direct shear testing was performed on undisturbed samples of the alluvium under saturated conditions, according to ASTM Test Method D 3080. The test results are presented herein.

GEOTEK

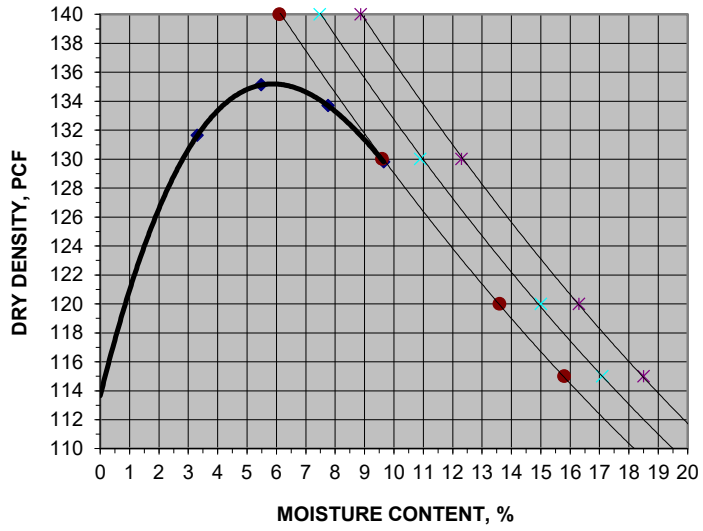
MOISTURE/DENSITY RELATIONSHIP

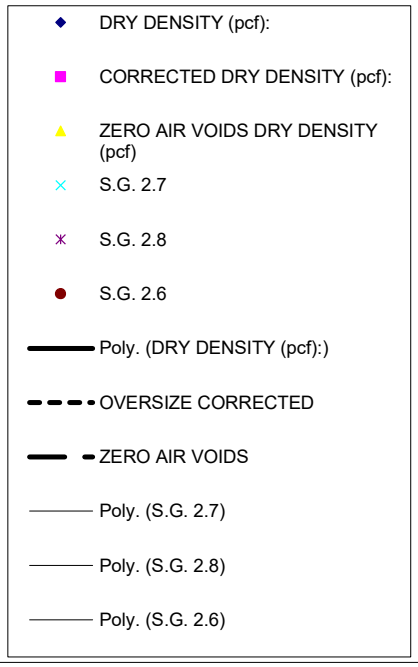
Client:	Monte Vista Ranch II	**Job No.:**	2778-CR
Project:	TR No. 38155	**Lab No.:**	Corona
Location:	Wildomar		
Material Type:	Brown Silty Sand trace Gravel		
Material Supplier:	-		
Material Source:	-		
Sample Location:	B1 @ 7-10'		
	-		
Sampled By:	DRW	**Date Sampled:**	6/2/2021
Received By:	RJ	**Date Received:**	6/2/2021
Tested By:	RL	**Date Tested:**	6/16/2021
Reviewed By:	RJ	**Date Reviewed:**	6/16/2021

Test Procedure: ASTM D1557 **Method:** A

Oversized Material (%): 10.2 **Correction Required:** ■ yes ☐ no

MOISTURE/DENSITY RELATIONSHIP CURVE





MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	135.5	**@ Optimum Moisture, %**	6.0
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

Atterberg Limits:

	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

Classification:

Unified Soils Classification:

AASHTO Soils Classification:

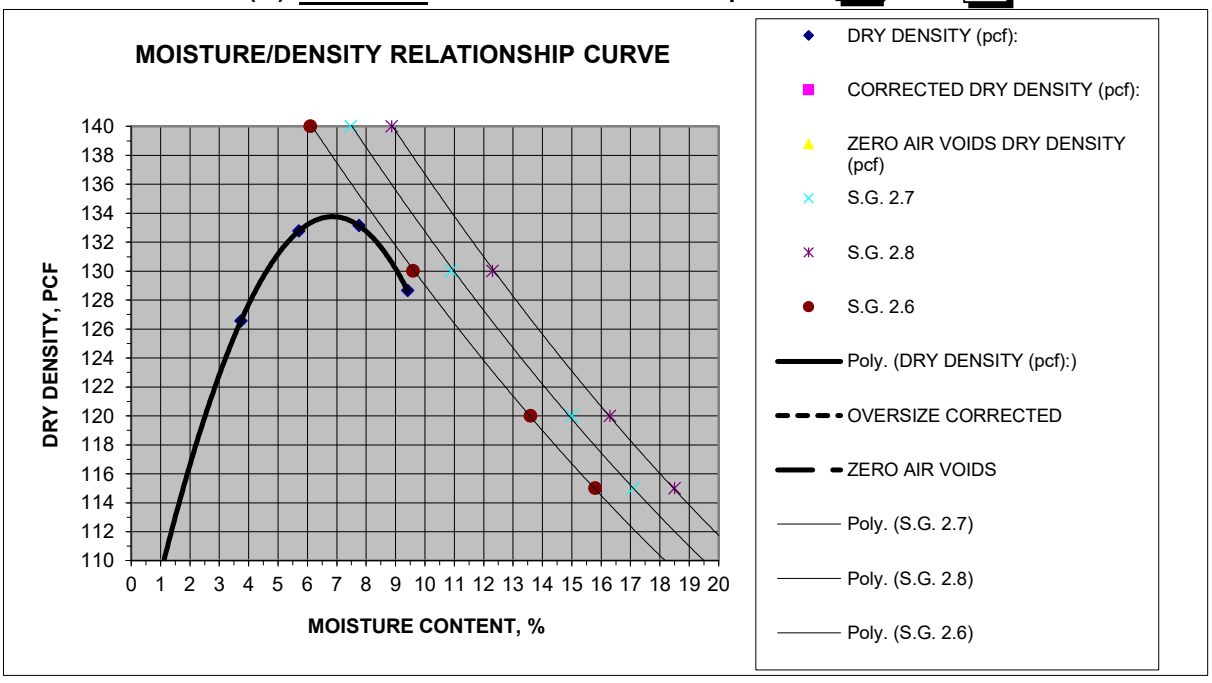
GEOTEK

MOISTURE/DENSITY RELATIONSHIP

Client:	Monte Vista Ranch II	**Job No.:**	2778-CR
Project:	TR No. 38155	**Lab No.:**	Corona
Location:	Wildomar		
Material Type:	Brown Silty Sand trace Gravel		
Material Supplier:	-		
Material Source:	-		
Sample Location:	B1 @ 20-25'		
	-		
Sampled By:	DRW	**Date Sampled:**	6/2/2021
Received By:	RJ	**Date Received:**	6/2/2021
Tested By:	KAA	**Date Tested:**	6/17/2021
Reviewed By:	RJ	**Date Reviewed:**	6/18/2021

Test Procedure: ASTM D1557 **Method:** A

Oversized Material (%): 10.0 **Correction Required:** ■ yes ☐ no



MOISTURE DENSITY RELATIONSHIP VALUES

Maximum Dry Density, pcf	133.5	**@ Optimum Moisture, %**	7.0
Corrected Maximum Dry Density, pcf		**@ Optimum Moisture, %**	

MATERIAL DESCRIPTION

Grain Size Distribution:

	% Gravel (retained on No. 4)
	% Sand (Passing No. 4, Retained on No. 200)
	% Silt and Clay (Passing No. 200)

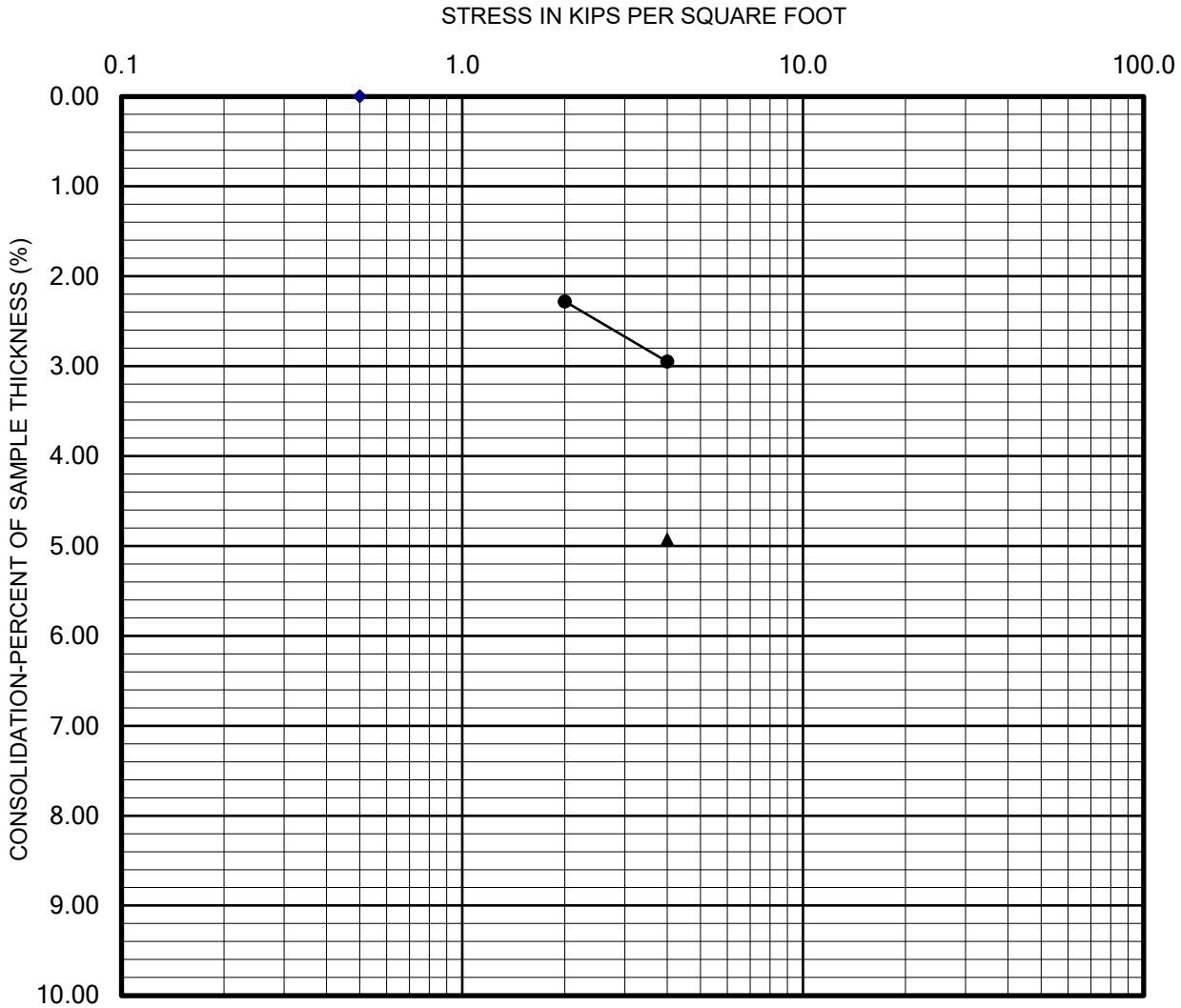
Atterberg Limits:

	Liquid Limit, %
	Plastic Limit, %
	Plasticity Index, %

Classification:

Unified Soils Classification:

AASHTO Soils Classification:



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

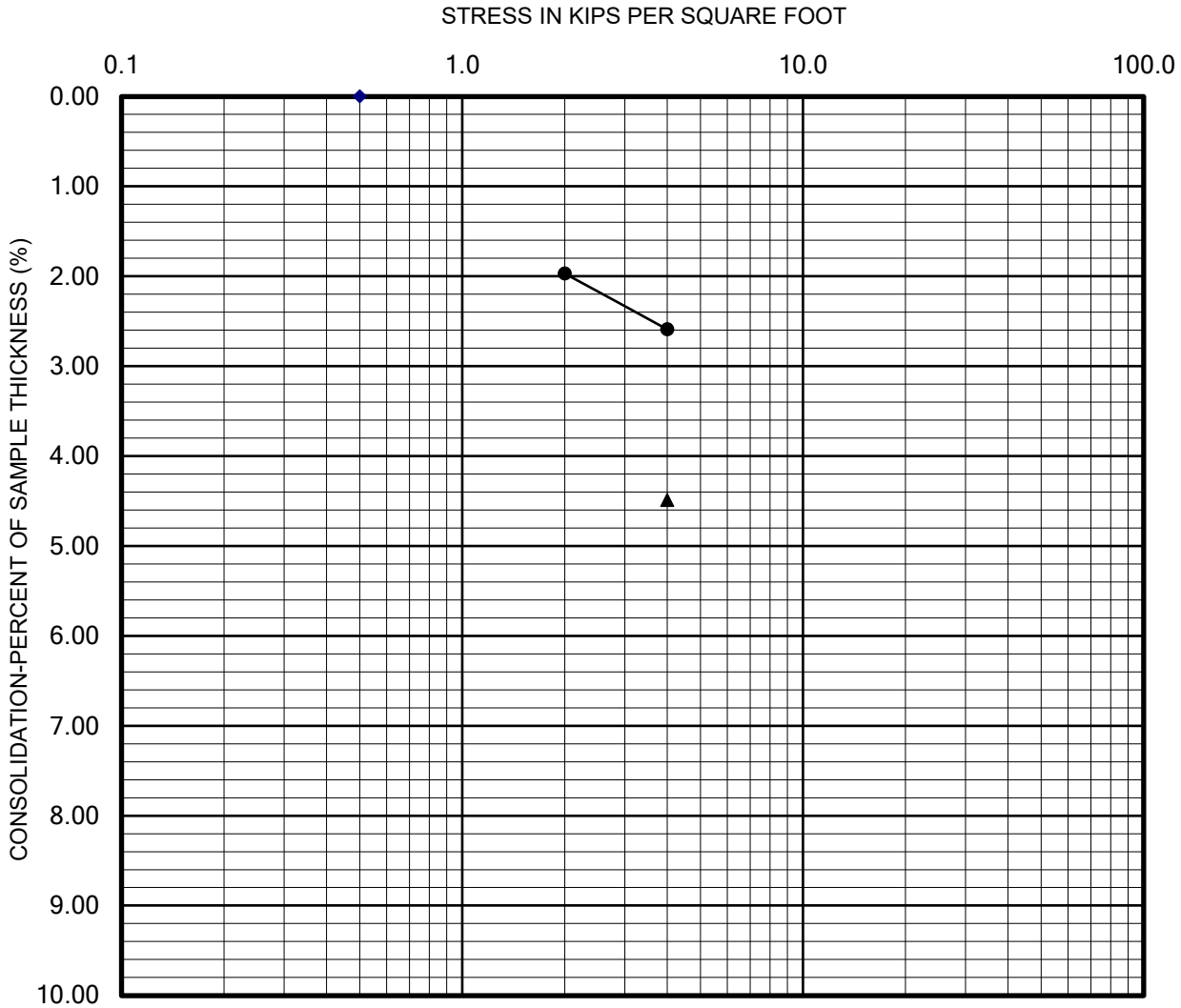
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

COLLAPSE REPORT

Sample: B-1 @ 15 feet

CHECKED BY: RJ	Lab: Corona
PROJECT NO.: 2778-CR	6/18/2021



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

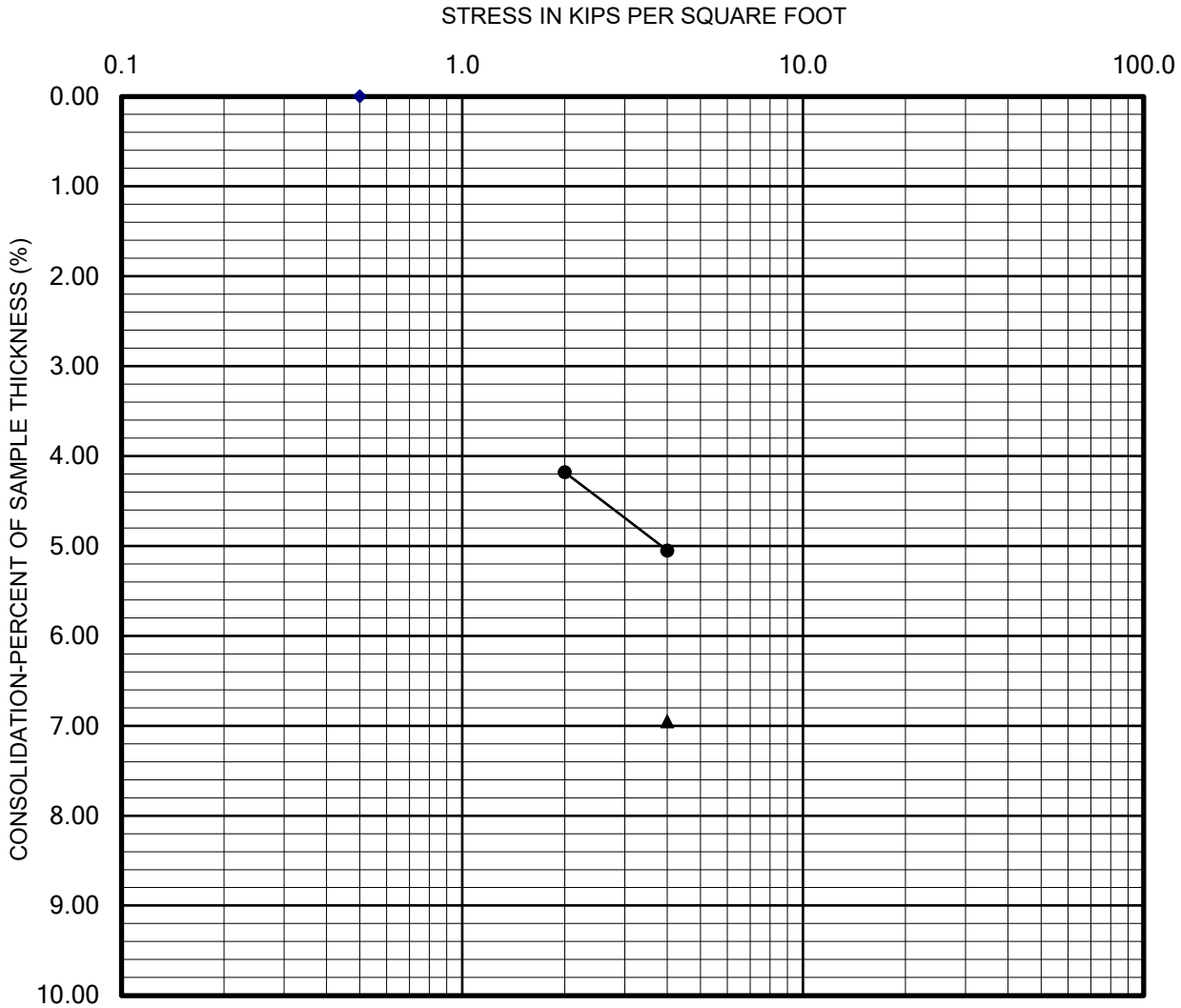
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

COLLAPSE REPORT

Sample: B-1 @ 20 feet

CHECKED BY: RJ	Lab: Corona
PROJECT NO.: 2778-CR	6/18/2021



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

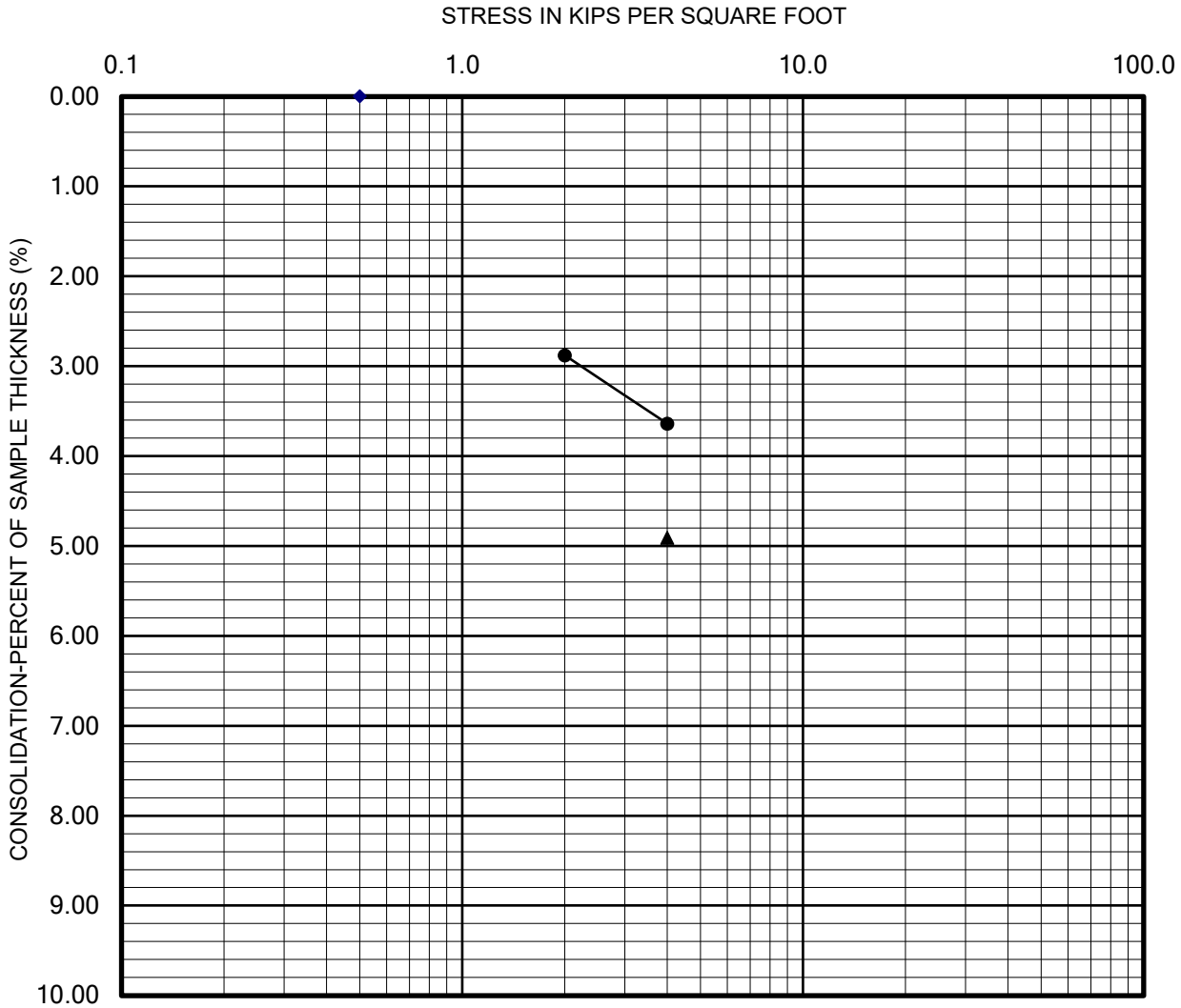
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

COLLAPSE REPORT

Sample: B-1 @ 25 feet

CHECKED BY: RJ	Lab: Corona
PROJECT NO.: 2778-CR	6/18/2021



Seating Cycle
Loading Prior to Inundation
Loading After Inundation
Rebound Cycle

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

GEOTEK

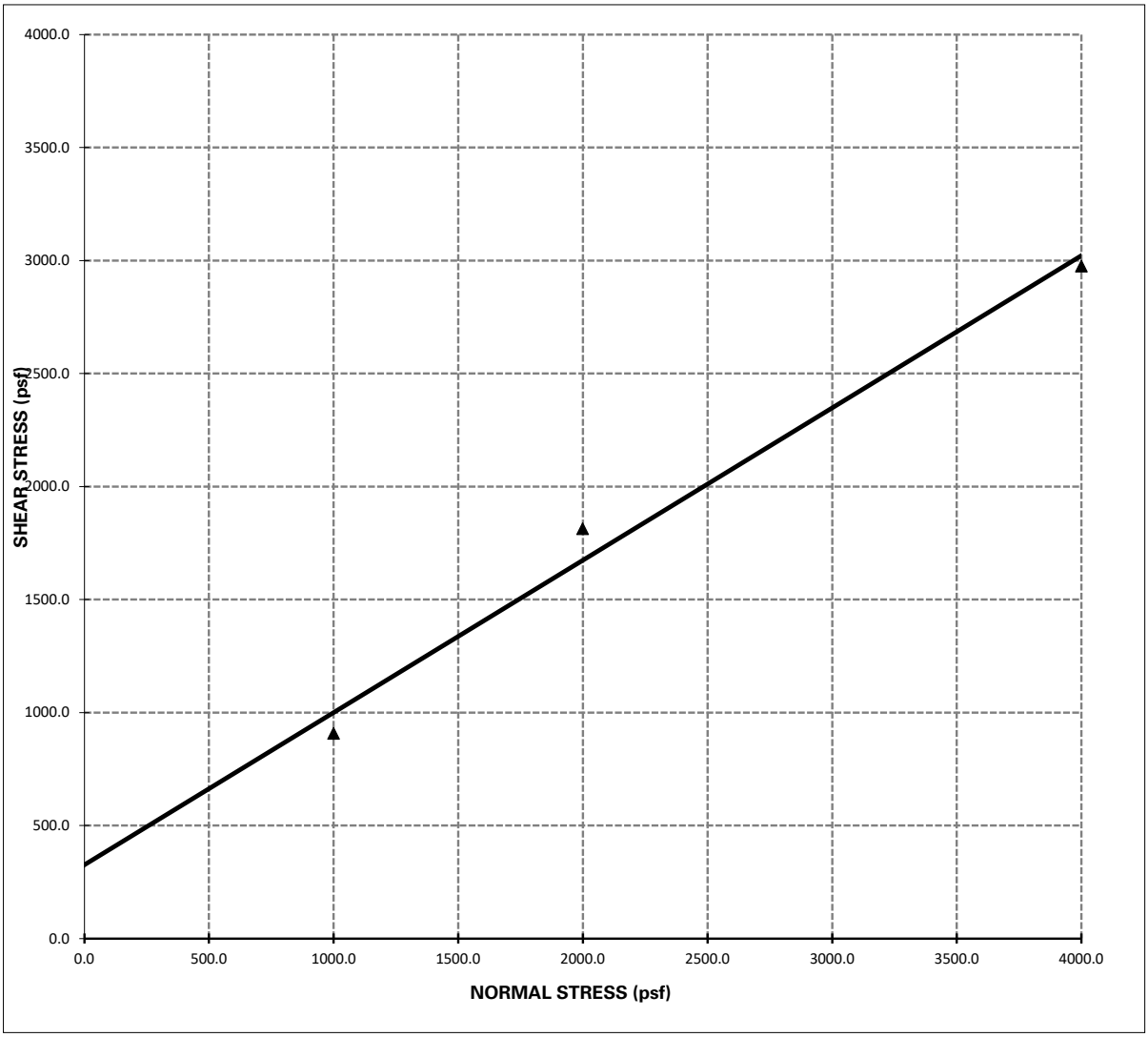
COLLAPSE REPORT

Sample: B-1 @ 30 feet

CHECKED BY: RJ	Lab: Corona
PROJECT NO.: 2778-CR	6/18/2021

DIRECT SHEAR TEST

Project Name:	Monte Vista	***Sample Location:***	B1 @ 7'
Project Number:	2778-CR	***Date Tested:***	6/17/2021

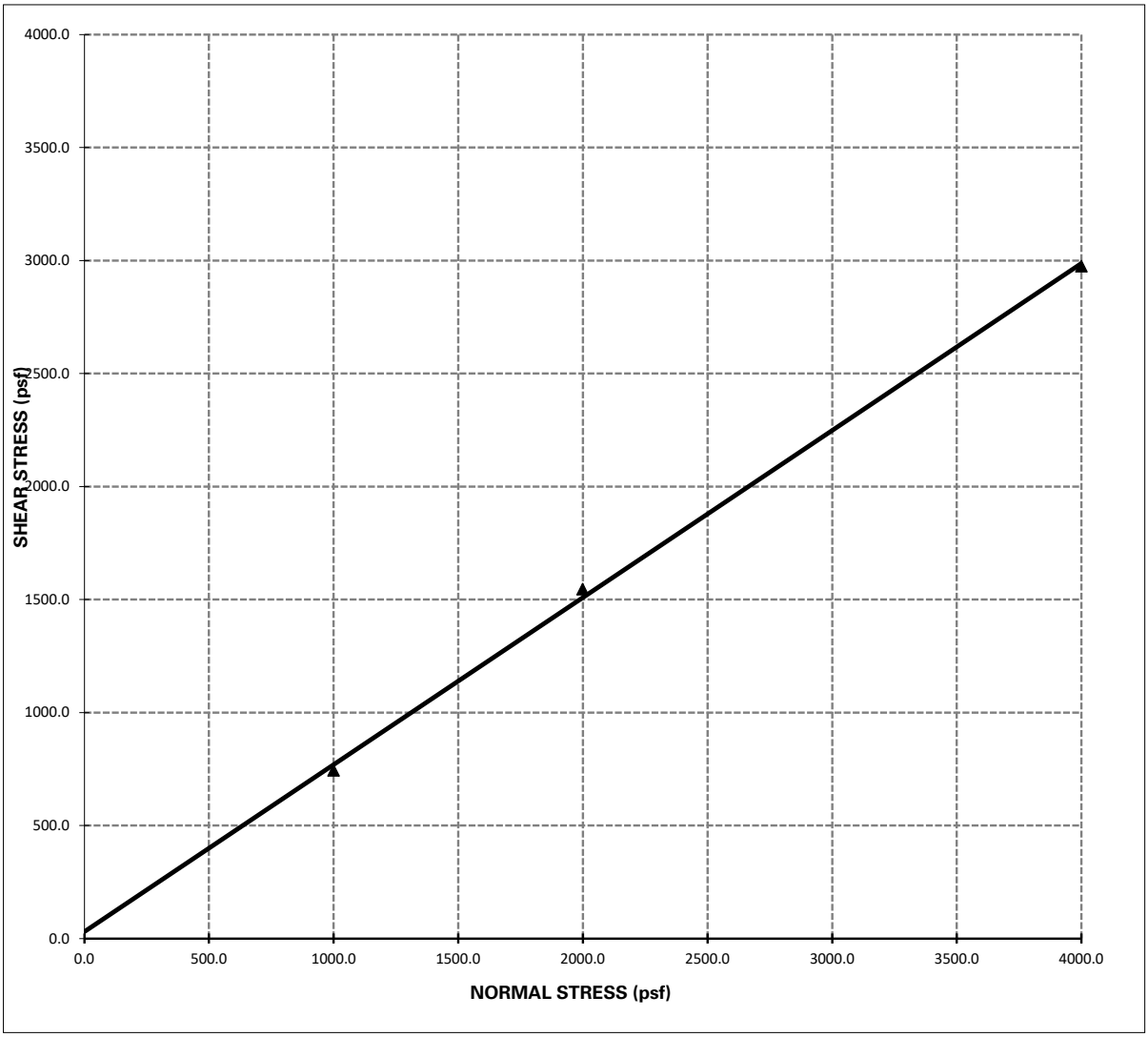


Shear Strength: Φ = **34.0** ° , **C = 326.00 psf**

Notes: 1 - The soil specimens sheared were "undisturbed" ring samples.
2 - The above reflect direct shear strength at saturated conditions.
3 - The tests were run at a shear rate of 0.035 in/min.

DIRECT SHEAR TEST

Project Name:	Monte Vista	***Sample Location:***	B1 @ 15'
Project Number:	2778-CR	***Date Tested:***	6/17/2021

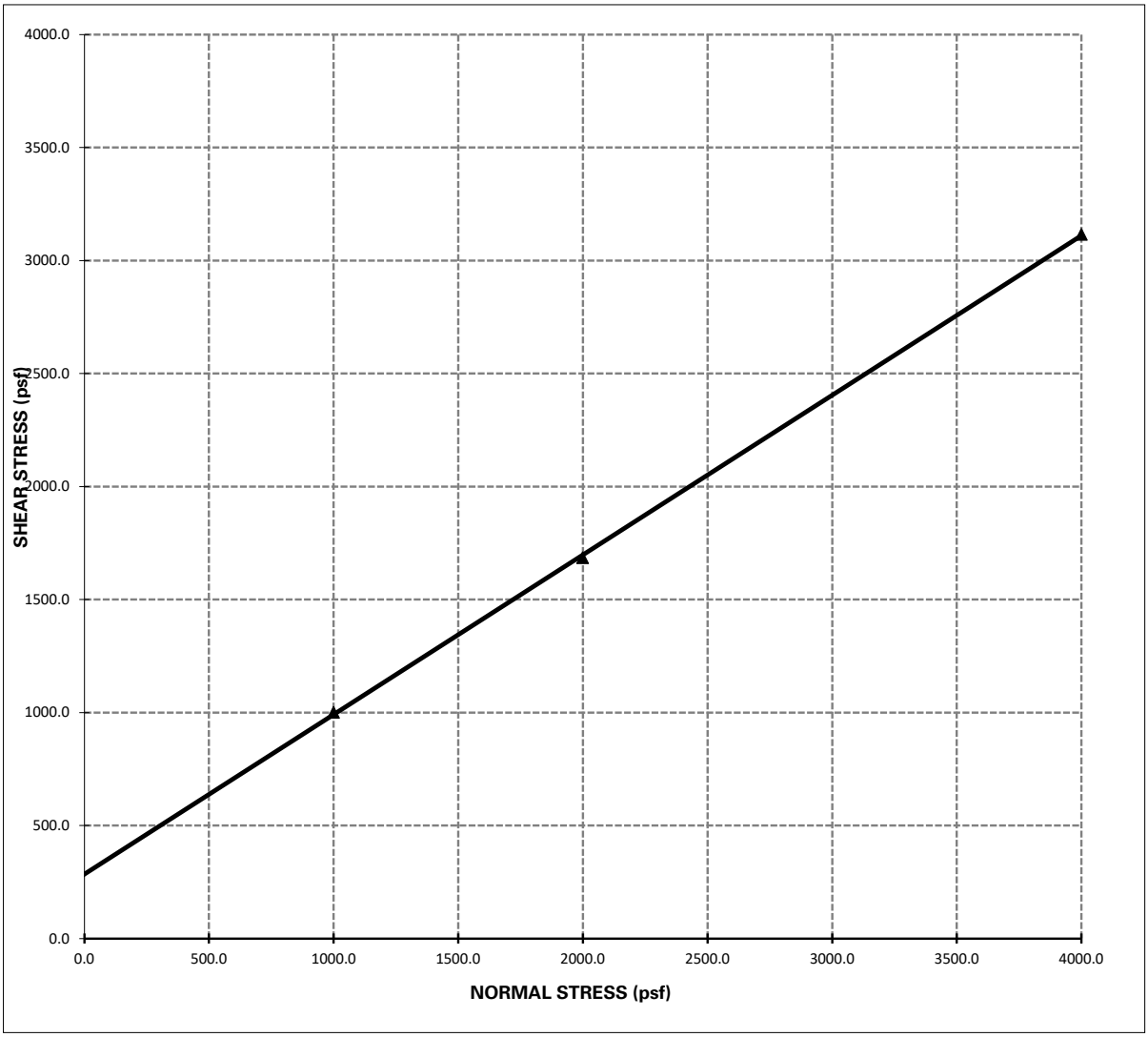


Shear Strength: Φ = **36.0** ° , **C = 30.00 psf**

Notes: 1 - The soil specimens sheared were "undisturbed" ring samples.
2 - The above reflect direct shear strength at saturated conditions.
3 - The tests were run at a shear rate of 0.035 in/min.

DIRECT SHEAR TEST

Project Name:	Monte Vista	***Sample Location:***	B1 @ 25'
Project Number:	2778-CR	***Date Tested:***	6/17/2021



Shear Strength: Φ = **35.0** ° , **C = 285.00 psf**

Notes: 1 - The soil specimens sheared were "undisturbed" ring samples.
2 - The above reflect direct shear strength at saturated conditions.
3 - The tests were run at a shear rate of 0.035 in/min.

APPENDIX D

SLOPE STABILITY ANALYSIS BY AKA (2004)

Updated Geotechnical Evaluation
Tract 38155, Wildomar, Riverside County, California
Project No. 2778-CR

GEOTEK

Computer Program

Stability analyses were performed using the computer program SLOPE/W (Ver. 4.23) by Geo-Slope. The program analyzes slope stability problems by a two-dimensional limit equilibrium methods including Bishop's, Janbu, Morgenstern & Price, and general limit equilibrium (GLE). The particular method used for each analysis is indicated on the output plots.

Soil strength can be modeled in a variety of ways including standard Mohr-Coulomb, bilinear Mohr-Coulomb, and general shear strength relationships. Where materials strengths have anisotropic properties, the program allows the strength to be modeled by introducing a strength function. The function allows the user to define a weighting factor that is applied to the standard Mohr-Coulomb strength depending upon the angle of inclination of the slice base. With this function, anisotropic conditions typically found in bedrock materials can be modeled.

Potential failure surfaces are determined by circular surfaces, block-specified surfaces, or fully-specified surfaces. For circular surfaces, the user provides a grid of radius points and upper and lower bounds for the radius search. The program calculates the factor of safety for each radius grid point and all increments between the upper and lower boundaries. For block-specified surfaces, the user provides two grids of points, one for points of entry and one for points of exit. The program calculates the factor of safety for all possible combinations of surfaces defined by connecting pairs of grid points. For fully-specified surfaces, the user defines a specific failure surface for which the program calculates the factor of safety. The program can also model other factors such as groundwater, earthquake loads, and external loads.

Shear Strengths

The shear strengths used in our analyses were based on direct shear testing and previous experience. The strength values used are summarized In Table D-1 below:

TABLE D-1
Summary of Shear Strengths

Material	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Compacted Fill	130	0	34

Summary of Results

Results of the analyses are summarized in Table D-2 below. Plots of the results are attached as Plates D-1 through D-4.

TABLE D-2
Summary of Stability Analyses

Section	Search Type	Analysis Method	Plates	Static Factor of Safety	Seismic Factor of Safety
Section A-A' 70' Fill Slope	Circular	Bishop's	D-1 thru D-4	1.62	1.17

Section A-A'
1338.00
File Name: 1338AAc1.slp
Analysis Method: Bishop (with Ordinary & Janbu)
Seismic Coefficient: (none)

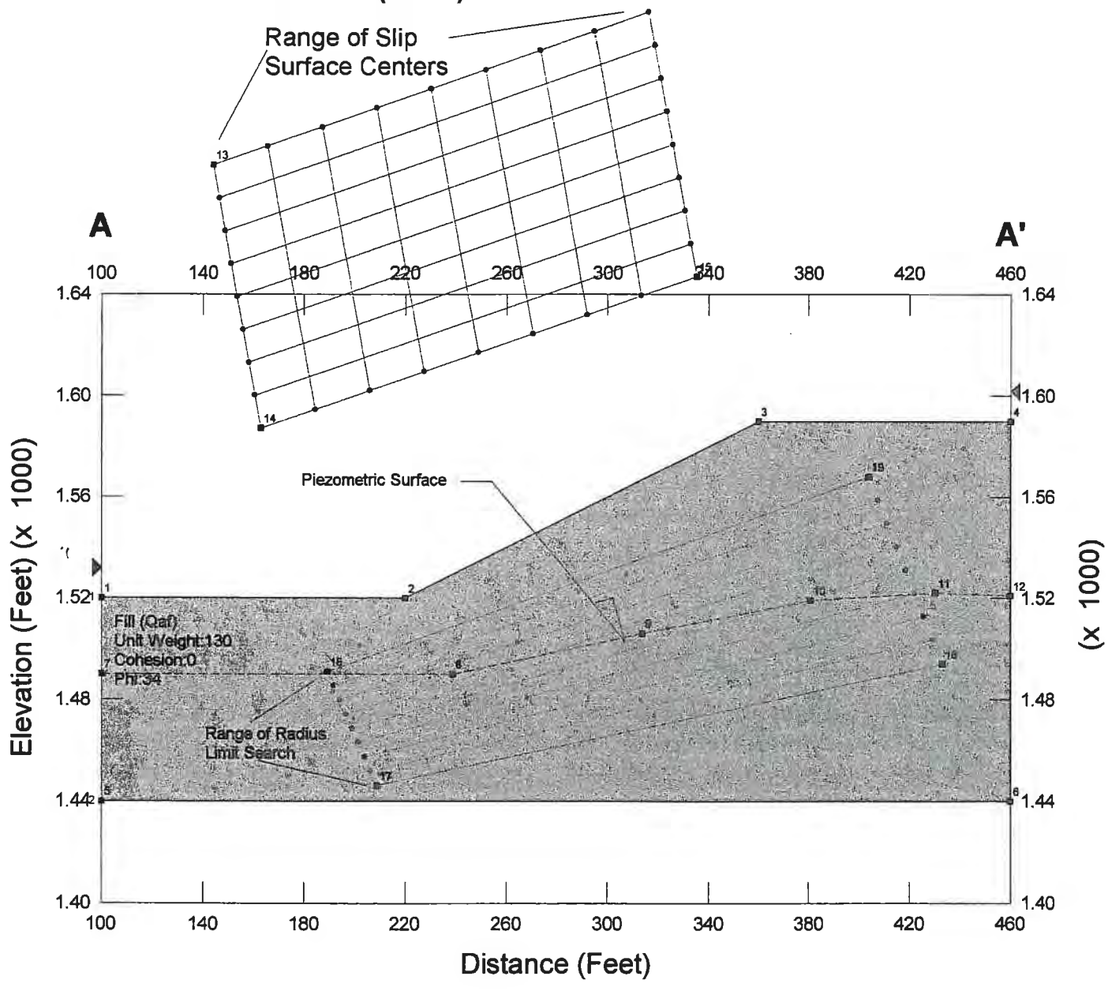


PLATE D–1

Section A-A'
1338.00
File Name: 1338AAc1.slp
Analysis Method: Bishop
Seismic Coefficient: (none)

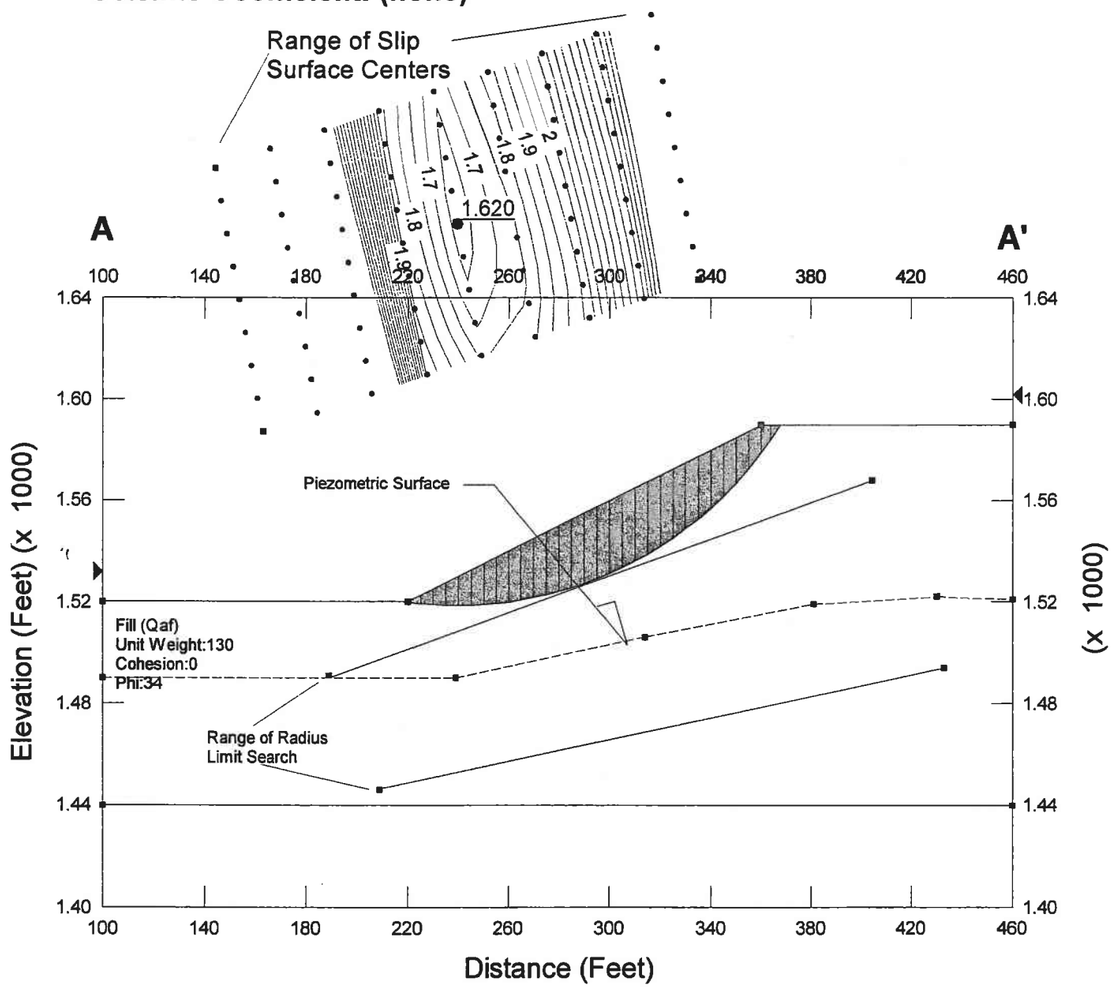


PLATE D–2

Section A-A'
1338.00
File Name: 1338AAc1.s.slp
Analysis Method: Bishop (with Ordinary & Janbu)
Seismic Coefficient: Horizontal

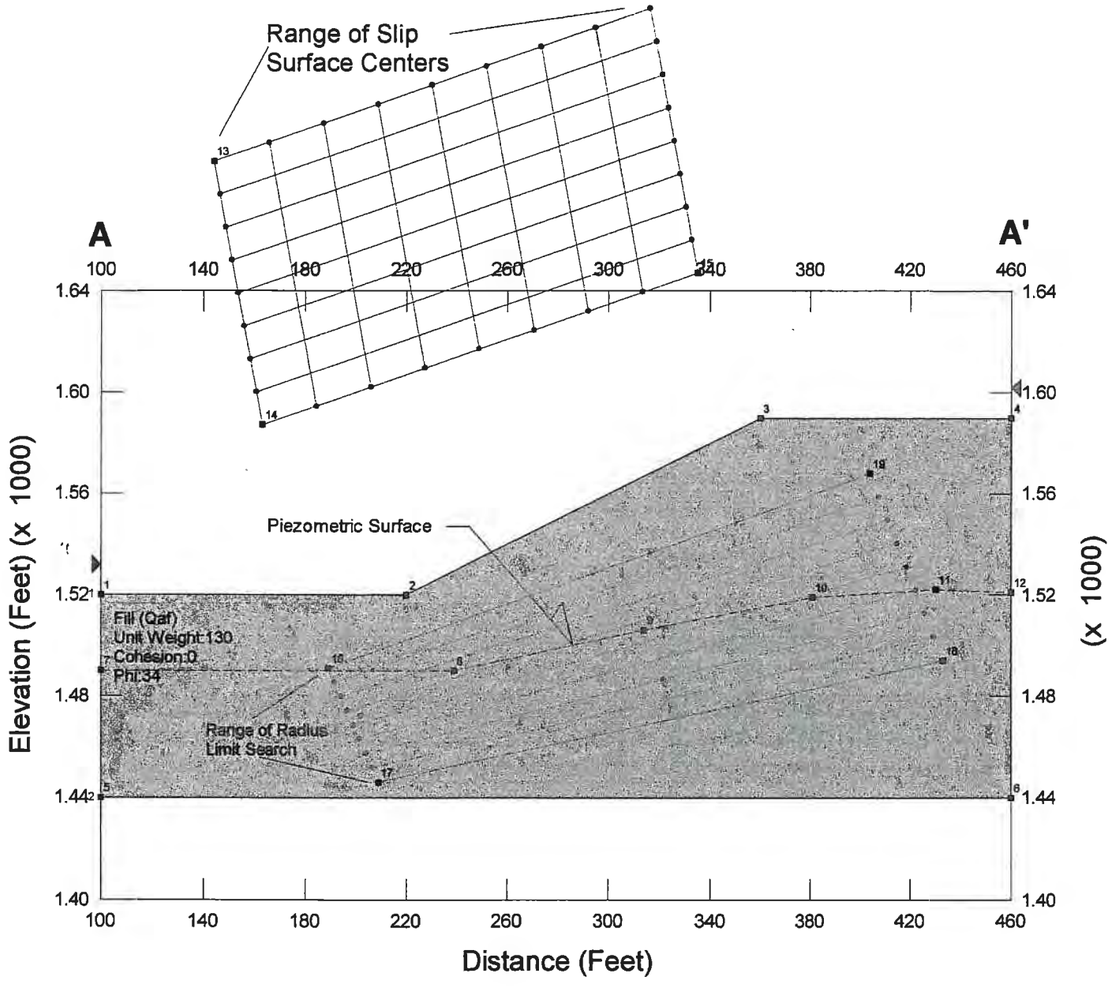


PLATE D–3

Section A-A'
1338.00
File Name: 1338AAc1.s.slp
Analysis Method: Bishop
Seismic Coefficient: Horizontal

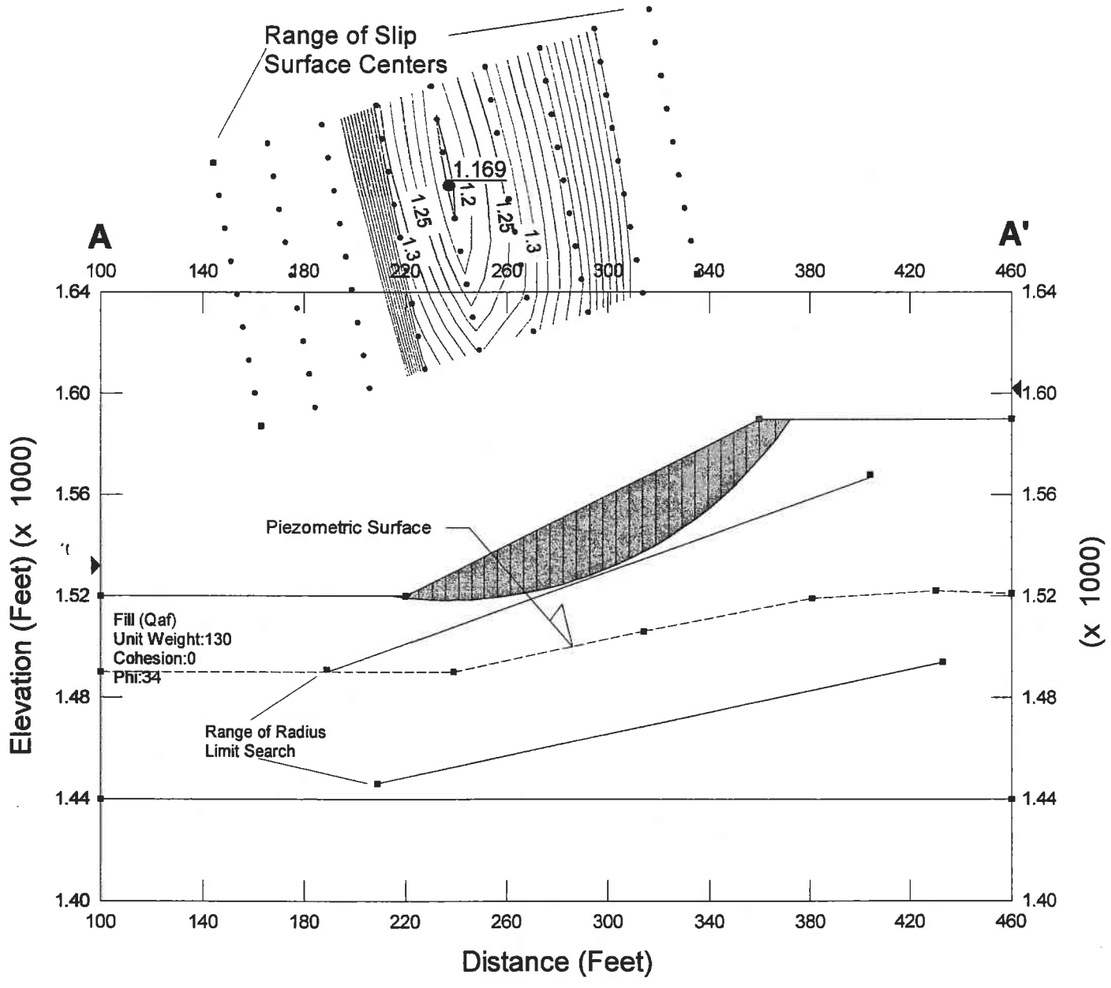


PLATE D-4

APPENDIX E

GENERAL GRADING GUIDELINES

Updated Geotechnical Evaluation
Tract 38155, Wildomar, Riverside County, California
Project No. 2778-CR

GEOTEK

GENERAL GRADING GUIDELINES

Guidelines presented herein are intended to address general construction procedures for earthwork construction. Specific situations and conditions often arise which cannot reasonably be discussed in general guidelines, when anticipated these are discussed in the text of the report. Often unanticipated conditions are encountered which may necessitate modification or changes to these guidelines. It is our hope that these will assist the contractor to more efficiently complete the project by providing a reasonable understanding of the procedures that would be expected during earthwork and the testing and observation used to evaluate those procedures.

General

Grading should be performed to at least the minimum requirements of governing agencies, Chapters 18 and 33 of the Uniform Building Code, CBC (2019) and the guidelines presented below.

Preconstruction Meeting

A preconstruction meeting should be held prior to site earthwork. Any questions the contractor has regarding our recommendations, general site conditions, apparent discrepancies between reported and actual conditions and/or differences in procedures the contractor intends to use should be brought up at that meeting. The contractor (including the main onsite representative) should review our report and these guidelines in advance of the meeting. Any comments the contractor may have regarding these guidelines should be brought up at that meeting.

Grading Observation and Testing

1. Observation of the fill placement should be provided by our representative during grading. Verbal communication during the course of each day will be used to inform the contractor of test results. The contractor should receive a copy of the "Daily Field Report" indicating results of field density tests that day. If our representative does not provide the contractor with these reports, our office should be notified.
2. Testing and observation procedures are, by their nature, specific to the work or area observed and location of the tests taken, variability may occur in other locations. The contractor is responsible for the uniformity of the grading operations; our observations and test results are intended to evaluate the contractor's overall level of efforts during grading. The contractor's personnel are the only individuals participating in all aspect of site work. Compaction testing and observation should not be considered as relieving the contractor's responsibility to properly compact the fill.
3. Cleanouts, processed ground to receive fill, key excavations, and subdrains should be observed by our representative prior to placing any fill. It will be the contractor's responsibility to notify our representative or office when such areas are ready for observation.
4. Density tests may be made on the surface material to receive fill, as considered warranted by this firm.
5. In general, density tests would be made at maximum intervals of two feet of fill height or every 1,000 cubic yards of fill placed. Criteria will vary depending on soil conditions and size of the fill. More frequent testing may be performed. In any case, an adequate number of field density tests should be made to evaluate the required compaction and moisture content is generally being obtained.

6. Laboratory testing to support field test procedures will be performed, as considered warranted, based on conditions encountered (e.g. change of material sources, types, etc.) Every effort will be made to process samples in the laboratory as quickly as possible and in progress construction projects are our first priority. However, laboratory workloads may cause in delays and some soils may require a **minimum of 48 to 72 hours to complete test procedures**. Whenever possible, our representative(s) should be informed in advance of operational changes that might result in different source areas for materials.
7. Procedures for testing of fill slopes are as follows:
   a) Density tests should be taken periodically during grading on the flat surface of the fill, three to five feet horizontally from the face of the slope.
   b) If a method other than over building and cutting back to the compacted core is to be employed, slope compaction testing during construction should include testing the outer six inches to three feet in the slope face to determine if the required compaction is being achieved.
8. Finish grade testing of slopes and pad surfaces should be performed after construction is complete.

Site Clearing

1. All vegetation, and other deleterious materials, should be removed from the site. If material is not immediately removed from the site it should be stockpiled in a designated area(s) well outside of all current work areas and delineated with flagging or other means. Site clearing should be performed in advance of any grading in a specific area.
2. Efforts should be made by the contractor to remove all organic or other deleterious material from the fill, as even the most diligent efforts may result in the incorporation of some materials. This is especially important when grading is occurring near the natural grade. All equipment operators should be aware of these efforts. Laborers may be required as root pickers.
3. Nonorganic debris or concrete may be placed in deeper fill areas provided the procedures used are observed and found acceptable by our representative. Typical procedures are similar to those indicated on Plate E-4.

Treatment of Existing Ground

1. Following site clearing, all surficial deposits of artificial fill, alluvium as well as weathered or creep effected bedrock, should be removed (see Plates E-1, E-2 and E-3) unless otherwise specifically indicated in the text of this report.
2. In some cases, removal may be recommended to a specified depth (e.g. flat sites where partial alluvial removals may be sufficient). The contractor should not exceed these depths unless directed otherwise by our representative.
3. Groundwater existing in alluvial areas may make excavation difficult. Deeper removals than indicated in the text of the report may be necessary due to saturation during winter months.
4. Subsequent to removals, the natural ground should be processed to a depth of six inches, moistened to near optimum moisture conditions and compacted to fill standards.
5. Exploratory back hoe or dozer trenches still remaining after site removal should be excavated and filled with compacted fill if they can be located.

Subdrainage

1. Subdrainage systems should be provided in canyon bottoms prior to placing fill, and behind buttress and stabilization fills and in other areas indicated in the report. Subdrains should conform to schematic diagrams E-1 and E-5, and be acceptable to our representative.
2. For canyon subdrains, runs less than 500 feet may use six-inch pipe. Typically, runs in excess of 500 feet should have the lower end as eight-inch minimum.
3. Filter material should be clean, 1/2 to 1-inch gravel wrapped in a suitable filter fabric. Class 2 permeable filter material per California Department of Transportation Standards tested by this office to verify its suitability, may be used without filter fabric. A sample of the material should be provided to the Soils Engineer by the contractor at least two working days before it is delivered to the site. The filter should be clean with a wide range of sizes.
4. Approximate delineation of anticipated subdrain locations may be offered at 40-scale plan review stage. During grading, this office would evaluate the necessity of placing additional drains.
5. All subdrainage systems should be observed by our representative during construction and prior to covering with compacted fill.
6. Subdrains should outlet into storm drains where possible. Outlets should be located and protected. The need for backflow preventers should be assessed during construction.
7. Consideration should be given to having subdrains located by the project surveyors.

Fill Placement

1. Unless otherwise indicated, all site soil and bedrock may be reused for compacted fill; however, some special processing or handling may be required (see text of report).
2. Material used in the compacting process should be evenly spread, moisture conditioned, processed, and compacted in thin lifts six (6) to eight (8) inches in compacted thickness to obtain a uniformly dense layer. The fill should be placed and compacted on a nearly horizontal plane, unless otherwise found acceptable by our representative.
3. If the moisture content or relative density varies from that recommended by this firm, the contractor should rework the fill until it is in accordance with the following:
    a) Moisture content of the fill should be at or above optimum moisture. Moisture should be evenly distributed without wet and dry pockets. Pre-watering of cut or removal areas should be considered in addition to watering during fill placement, particularly in clay or dry surficial soils. The ability of the contractor to obtain the proper moisture content will control production rates.
    b) Each six-inch layer should be compacted to at least 90 percent of the maximum dry density in compliance with the testing method specified by the controlling governmental agency. In most cases, the testing method is ASTM Test Designation D 1557.
4. Rock fragments less than eight inches in diameter may be utilized in the fill, provided:
    a) They are not placed in concentrated pockets;
    b) There is a sufficient percentage of fine-grained material to surround the rocks;
    c) The distribution of the rocks is observed by, and acceptable to, our representative.
5. Rocks exceeding eight (8) inches in diameter should be taken off site, broken into smaller fragments, or placed in accordance with recommendations of this firm in areas designated suitable for rock disposal (see Plate E-4). On projects where significant large quantities of oversized materials are anticipated, alternate guidelines for placement may be included. If

significant oversize materials are encountered during construction, these guidelines should be requested.

6. In clay soil, dry or large chunks or blocks are common. If in excess of eight (8) inches minimum dimension, then they are considered as oversized. Sheepsfoot compactors or other suitable methods should be used to break up blocks. When dry, they should be moisture conditioned to provide a uniform condition with the surrounding fill.

Slope Construction

1. The contractor should obtain a minimum relative compaction of 90 percent out to the finished slope face of fill slopes. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment.
2. Slopes trimmed to the compacted core should be overbuilt by at least three (3) feet with compaction efforts out to the edge of the false slope. Failure to properly compact the outer edge results in trimming not exposing the compacted core and additional compaction after trimming may be necessary.
3. If fill slopes are built "at grade" using direct compaction methods, then the slope construction should be performed so that a constant gradient is maintained throughout construction. Soil should not be "spilled" over the slope face nor should slopes be "pushed out" to obtain grades. Compaction equipment should compact each lift along the immediate top of slope. Slopes should be back rolled or otherwise compacted at approximately every 4 feet vertically as the slope is built.
4. Corners and bends in slopes should have special attention during construction as these are the most difficult areas to obtain proper compaction.
5. Cut slopes should be cut to the finished surface. Excessive undercutting and smoothing of the face with fill may necessitate stabilization.

Keyways, Buttress and Stabilization Fills

Keyways are needed to provide support for fill slope and various corrective procedures.

1. Side-hill fills should have an equipment-width key at their toe excavated through all surficial soil and into competent material and tilted back into the hill (Plates E-2, E-3). As the fill is elevated, it should be benched through surficial soil and slopewash, and into competent bedrock or other material deemed suitable by our representatives (See Plates E-1, E-2, and E-3).
2. Fill over cut slopes should be constructed in the following manner:
   a) All surficial soils and weathered rock materials should be removed at the cut-fill interface.
   b) A key at least one and one-half (1.5) equipment width wide (or as needed for compaction), and tipped at least one (1) foot into slope, should be excavated into competent materials and observed by our representative.
   c) The cut portion of the slope should be excavated prior to fill placement to evaluate if stabilization is necessary. The contractor should be responsible for any additional earthwork created by placing fill prior to cut excavation. (see Plate E-3 for schematic details.)
3. Daylight cut lots above descending natural slopes may require removal and replacement of the outer portion of the lot. A schematic diagram for this condition is presented on Plate E-2.
4. A basal key is needed for fill slopes extending over natural slopes. A schematic diagram for this condition is presented on Plate E-2.

5. All fill slopes should be provided with a key unless within the body of a larger overall fill mass. Please refer to Plate E-3 for specific guidelines.

Anticipated buttress and stabilization fills are discussed in the text of the report. The need to stabilize other proposed cut slopes will be evaluated during construction. Plate E-5 shows a schematic of buttress construction.

1. All backcuts should be excavated at gradients of 1:1 or flatter. The backcut configuration should be determined based on the design, exposed conditions, and need to maintain a minimum fill width and provide working room for the equipment.
2. On longer slopes, backcuts and keyways should be excavated in maximum 250 feet long segments. The specific configurations will be determined during construction.
3. All keys should be a minimum of two (2) feet deep at the toe and slope toward the heel at least one foot or two (2%) percent, whichever is greater.
4. Subdrains are to be placed for all stabilization slopes exceeding 10 feet in height. Lower slopes are subject to review. Drains may be required. Guidelines for subdrains are presented on Plate E-5.
5. Benching of backcuts during fill placement is required.

Lot Capping

1. When practical, the upper three (3) feet of material placed below finish grade should be comprised of the least expansive material available. Preferably, highly and very highly expansive materials should not be used. We will attempt to offer advice based on visual evaluations of the materials during grading, but it must be realized that laboratory testing is needed to evaluate the expansive potential of soil. Minimally, this testing takes two (2) to four (4) days to complete.
2. Transition lots (cut and fill) both per plan and those created by remedial grading (e.g. lots above stabilization fills, along daylight lines, above natural slopes, etc.) should be capped with a minimum three foot thick compacted fill blanket.
3. Cut pads should be observed by our representative(s) to evaluate the need for overexcavation and replacement with fill. This may be necessary to reduce water infiltration into highly fractured bedrock or other permeable zones, and/or due to differing expansive potential of materials beneath a structure. The overexcavation should be at least three feet. Deeper overexcavation may be recommended in some cases.

ROCK PLACEMENT AND ROCK FILL GUIDELINES

It is anticipated that large quantities of oversize material would be generated during grading. It's likely that such materials may require special handling for burial. Although alternatives may be developed in the field, the following methods of rock disposal are recommended on a preliminary basis.

Limited Larger Rock

When materials encountered are principally soil with limited quantities of larger rock fragments or boulders, placement in windrows is recommended. The following procedures should be applied:

1. Oversize rock (greater than 8 inches) should be placed in windrows.
    a) Windrows are rows of single file rocks placed to avoid nesting or clusters of rock.
    b) Each adjacent rock should be approximately the same size (within ~one foot in diameter).

c) The maximum rock size allowed in windrows is four feet

2. A minimum vertical distance of three feet between lifts should be maintained. Also, the windrows should be offset from lift to lift. Rock windrows should not be closer than 15 feet to the face of fill slopes and sufficient space must be maintained for proper slope construction (see Plate E-4).
3. Rocks greater than eight inches in diameter should not be placed within seven feet of the finished subgrade for a roadway or pads and should be held below the depth of the lowest utility. This will allow easier trenching for utility lines.
4. Rocks greater than four feet in diameter should be broken down, if possible, or they may be placed in a dozer trench. Each trench should be excavated into the compacted fill a minimum of one foot deeper than the largest diameter of rock.
   a) The rock should be placed in the trench and granular fill materials (SE>30) should be flooded into the trench to fill voids around the rock.
   b) The over size rock trenches should be no closer together than 15 feet from any slope face.
   c) Trenches at higher elevation should be staggered and there should be a minimum of four feet of compacted fill between the top of the one trench and the bottom of the next higher trench.
   d) It would be necessary to verify 90 percent relative compaction in these pits. A 24 to 72 hour delay to allow for water dissipation should be anticipated prior to additional fill placement.

Structural Rock Fills

If the materials generated for placement in structural fills contains a significant percentage of material more than six (6) inches in one dimension, then placement using conventional soil fill methods with isolated windrows would not be feasible. In such cases the following could be considered:

1. Mixes of large rock or boulders may be placed as rock fill. They should be below the depth of all utilities both on pads and in roadways and below any proposed swimming pools or other excavations. If these fills are placed within seven (7) feet of finished grade, they may affect foundation design.
2. Rock fills are required to be placed in horizontal layers that should **not exceed two feet in thickness, or the maximum rock size present, which ever is less**. All rocks exceeding two feet should be broken down to a smaller size, windrowed (see above), or disposed of in non-structural fill areas. Localized larger rock up to 3 feet in largest dimension may be placed in rock fill as follows:
   a) individual rocks are placed in a given lift so as to be roughly 50% exposed above the typical surface of the fill ,
   b) loaded rock trucks or alternate compactors are worked around the rock on all sides to the satisfaction of the soil engineer,
   c) the portion of the rock above grade is covered with a second lift.
3. Material placed in each lift should be well graded. No unfilled spaces (voids) should be permitted in the rock fill.

Compaction Procedures

Compaction of rock fills is largely procedural. The following procedures have been found to generally produce satisfactory compaction.

1. Provisions for routing of construction traffic over the fill should be implemented.
   a) Placement should be by rock trucks crossing the lift being placed and dumping at its edge.
   b) The trucks should be routed so that each pass across the fill is via a different path and that all areas are uniformly traversed.
   c) The dumped piles should be knocked down and spread by a large dozer (D-8 or larger suggested). (Water should be applied before and during spreading.)
2. Rock fill should be generously watered (sluiced)
   a) Water should be applied by water trucks to the:
      i) dump piles,
      ii) front face of the lift being placed and,
      iii) surface of the fill prior to compaction.
   b) No material should be placed without adequate water.
   c) The number of water trucks and water supply should be sufficient to provide constant water.
   d) Rock fill placement should be suspended when water trucks are unavailable:
      i) for more than 5 minutes straight, or,
      ii) for more than 10 minutes/hour.
3. In addition to the truck pattern and at the discretion of the soil engineer, large, rubber tired compactors may be required.
   a) The need for this equipment will depend largely on the ability of the operators to provide complete and uniform coverage by wheel rolling with the trucks.
   b) Other large compactors will also be considered by the soil engineer provided that required compaction is achieved.
4. Placement and compaction of the rock fill is largely procedural. Observation by trenching should be made to check:
   a) the general segregation of rock size,
   b) for any unfilled spaces between the large blocks, and
   c) the matrix compaction and moisture content.
5. Test fills may be required to evaluate relative compaction of finer grained zones or as deemed appropriate by the soil engineer.
   a) A lift should be constructed by the methods proposed, as proposed
6. Frequency of the test trenching is to be at the discretion of the soil engineer. Control areas may be used to evaluate the contractor's procedures.
7. A minimum horizontal distance of 15 feet should be maintained from the face of the rock fill and any finish slope face. At least the outer 15 feet should be built of conventional fill materials.

Piping Potential and Filter Blankets

Where conventional fill is placed over rock fill, the potential for piping (migration) of the fine grained material from the conventional fill into rock fills will need to be addressed.

The potential for particle migration is related to the grain size comparisons of the materials present and in contact with each other. Provided that 15 percent of the finer soil is larger than the effective pore size of the coarse soil, then particle migration is substantially mitigated. This can be accomplished with a well-graded matrix material for the rock fill and a zone of fill similar to the matrix above it. The specific gradation of the fill materials placed during grading must be known to evaluate the need for any type of

filter that may be necessary to cap the rock fills. This, unfortunately, can only be accurately determined during construction.

In the event that poorly graded matrix is used in the rock fills, properly graded filter blankets 2 to 3 feet thick separating rock fills and conventional fill may be needed. As an alternative, use of two layers of filter fabric (Mirafi 700 x or equivalent) could be employed on top of the rock fill. In order to mitigate excess puncturing, the surface of the rock fill should be well broken down and smoothed prior to placing the filter fabric. The first layer of the fabric may then be placed and covered with relatively permeable fill material (with respect to overlying material) 1 to 2 feet thick. The relative permeable material should be compacted to fill standards. The second layer of fabric should be placed and conventional fill placement continued.

Subdrainage

Rock fill areas should be tied to a subdrainage system. If conventional fill is placed that separates the rock from the main canyon subdrain, then a secondary system should be installed. A system consisting of an adequately graded base (3 to 4 percent to the lower side) with a collector system and outlets may suffice.

Additionally, at approximately every 25 foot vertical interval, a collector system with outlets should be placed at the interface of the rock fill and the conventional fill blanketing a fill slope

Monitoring

Depending upon the depth of the rock fill and other factors, monitoring for settlement of the fill areas may be needed following completion of grading. Typically, if rock fill depths exceed 40 feet, monitoring would be recommend prior to construction of any settlement sensitive improvements. Delays of 3 to 6 months or longer can be expected prior to the start of construction.

UTILITY TRENCH CONSTRUCTION AND BACKFILL

Utility trench excavation and backfill is the contractor's responsibility. The geotechnical consultant typically provides periodic observation and testing of these operations. While efforts are made to make sufficient observations and tests to verify that the contractors' methods and procedures are adequate to achieve proper compaction, it is typically impractical to observe all backfill procedures. As such, it is critical that the contractor use consistent backfill procedures.

Compaction methods vary for trench compaction and experience indicates many methods can be successful. However, procedures that "worked" on previous projects may or may not prove effective on a given site. The contractor(s) should outline the procedures proposed, so that we may discuss them **prior** to construction. We will offer comments based on our knowledge of site conditions and experience.

1. Utility trench backfill in slopes, structural areas, in streets and beneath flat work or hardscape should be brought to at least optimum moisture and compacted to at least 90 percent of the laboratory standard. Soil should be moisture conditioned prior to placing in the trench.
2. Flooding and jetting are not typically recommended or acceptable for native soils. Flooding or jetting may be used with select sand having a Sand Equivalent (SE) of 30 or higher. This is typically limited to the following uses:
   a) shallow (12 + inches) under slab interior trenches and,
   b) as bedding in pipe zone.

The water should be allowed to dissipate prior to pouring slabs or completing trench compaction.

3. Care should be taken not to place soils at high moisture content within the upper three feet of the trench backfill in street areas, as overly wet soils may impact subgrade preparation. Moisture may be reduced to 2% below optimum moisture in areas to be paved within the upper three feet below sub grade.
4. Sand backfill should not be allowed in exterior trenches adjacent to and within an area extending below a 1:1 projection from the outside bottom edge of a footing, unless it is similar to the surrounding soil.
5. Trench compaction testing is generally at the discretion of the geotechnical consultant. Testing frequency will be based on trench depth and the contractor's procedures. A probing rod would be used to assess the consistency of compaction between tested areas and untested areas. If zones are found that are considered less compact than other areas, this would be brought to the contractor's attention.

JOB SAFETY

General

Personnel safety is a primary concern on all job sites. The following summaries are safety considerations for use by all our employees on multi-employer construction sites. On ground personnel are at highest risk of injury and possible fatality on grading construction projects. The company recognizes that construction activities will vary on each site and that job site safety is the contractor's responsibility. However, it is, imperative that all personnel be safety conscious to avoid accidents and potential injury.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of our field personnel on grading and construction projects.

1. Safety Meetings: Our field personnel are directed to attend the contractor's regularly scheduled safety meetings.
2. Safety Vests: Safety vests are provided for and are to be worn by our personnel while on the job site.
3. Safety Flags: Safety flags are provided to our field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

In the event that the contractor's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

Test Pits Location, Orientation and Clearance

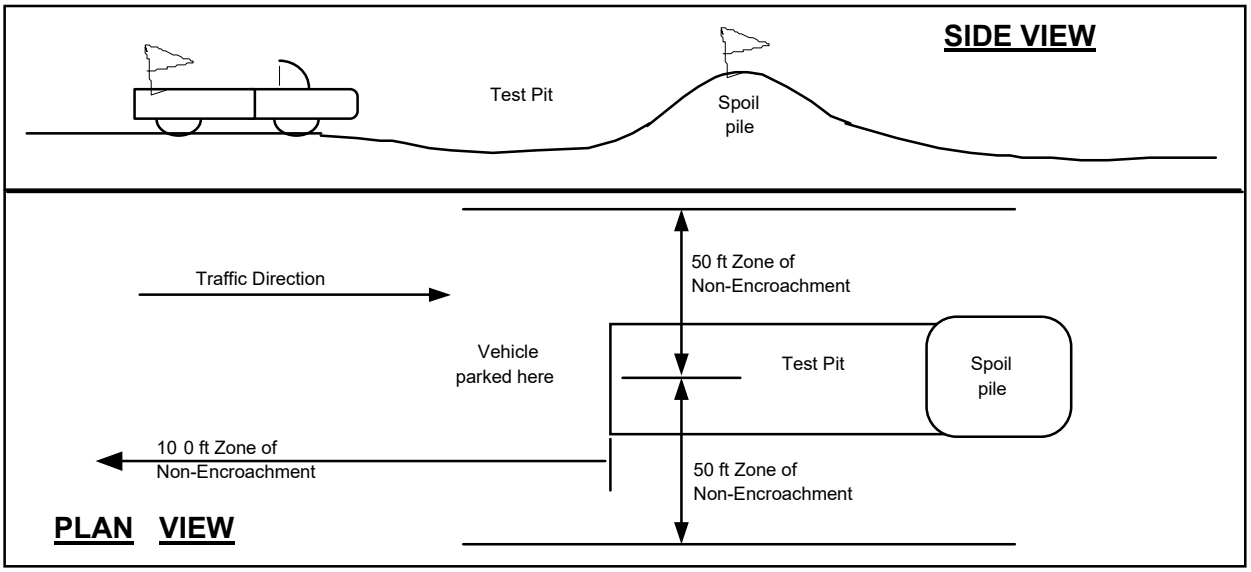
The technician is responsible for selecting test pit locations. The primary concern is the technician's safety. However, it is necessary to take sufficient tests at various locations to obtain a representative sampling of the fill. As such, efforts will be made to coordinate locations with the grading contractors authorized representatives (e.g. dump man, operator, supervisor, grade checker, etc.), and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The contractors authorized representative should direct excavation of the pit and safety during the test period. Again, safety is the paramount concern.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates that the

fill be maintained in a drivable condition. Alternatively, the contractor may opt to park a piece of equipment in front of test pits, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits (see diagram below). No grading equipment should enter this zone during the test procedure. The zone should extend outward to the sides approximately 50 feet from the center of the test pit and 100 feet in the direction of traffic flow. This zone is established both for safety and to avoid excessive ground vibration, which typically decreases test results.

TEST PIT SAFETY PLAN



Slope Tests

When taking slope tests, the technician should park their vehicle directly above or below the test location on the slope. The contractor's representative should effectively keep all equipment at a safe operation distance (e.g. 50 feet) away from the slope during testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location.

Trench Safety

It is the contractor's responsibility to provide safe access into trenches where compaction testing is needed. Trenches for all utilities should be excavated in accordance with CAL-OSHA and any other applicable safety standards. Safe conditions will be required to enable compaction testing of the trench backfill.

All utility trench excavations in excess of 5 feet deep, which a person enters, are to be shored or laid back. Trench access should be provided in accordance with OSHA standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

Our personnel are directed not to enter any excavation which;

1. is 5 feet or deeper unless shored or laid back,
2. exit points or ladders are not provided,

3. displays any evidence of instability, has any loose rock or other debris which could fall into the trench, or
4. displays any other evidence of any unsafe conditions regardless of depth.

If the contractor fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraws and notifies their supervisor. The contractor's representative will then be contacted in an effort to affect a solution. All backfill not tested due to safety concerns or other reasons is subject to reprocessing and/or removal.

Procedures

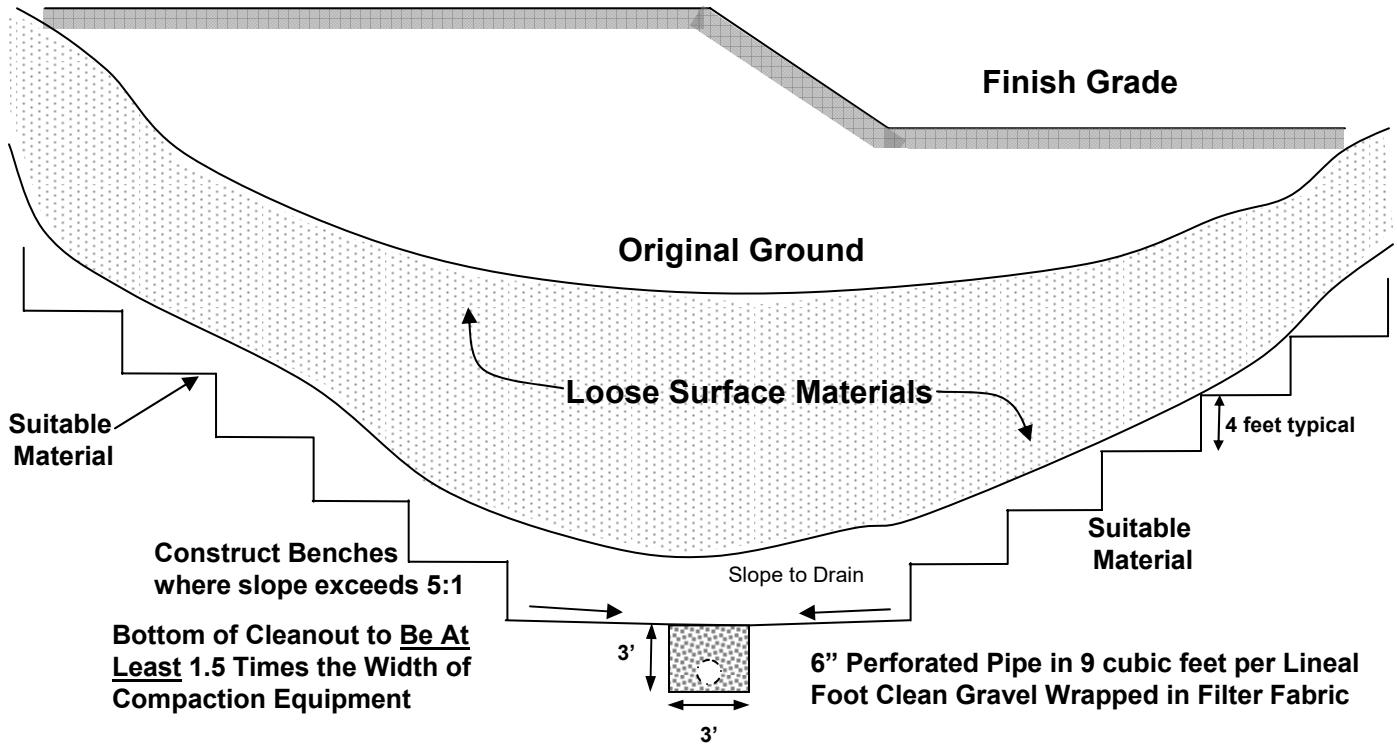
In the event that the technician's safety is jeopardized or compromised as a result of the contractor's failure to comply with any of the above, the technician is directed to inform both the developer's and contractor's representatives. If the condition is not rectified, the technician is required, by company policy, to immediately withdraw and notify their supervisor. The contractor's representative will then be contacted in an effort to affect a solution. No further testing will be performed until the situation is rectified. Any fill placed in the interim can be considered unacceptable and subject to reprocessing, recompaction or removal.

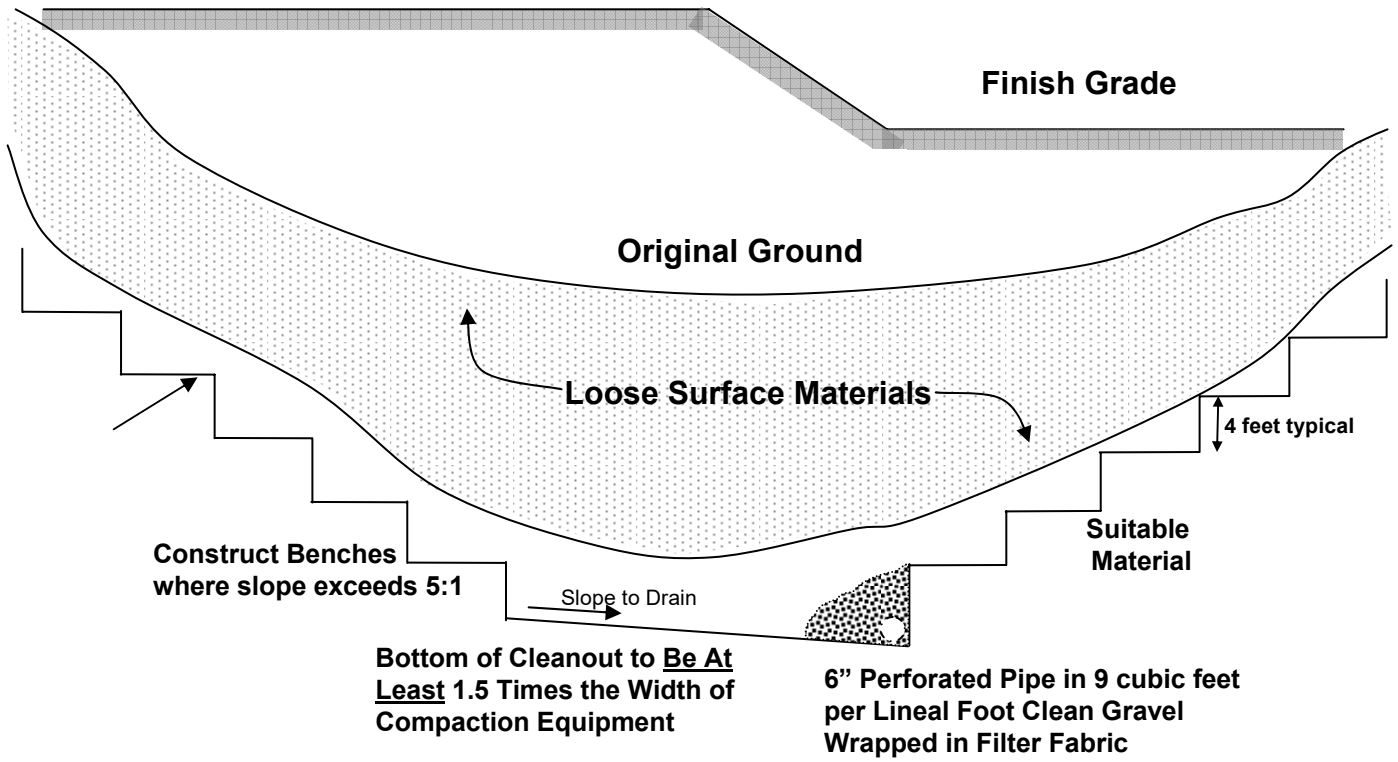
In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the contractor bring this to technician's attention and notify our project manager or office. Effective communication and coordination between the contractors' representative and the field technician(s) is strongly encouraged in order to implement the above safety program and safety in general.

The safety procedures outlined above should be discussed at the contractor's safety meetings. This will serve to inform and remind equipment operators of these safety procedures particularly the zone of non-encroachment.

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ALTERNATES





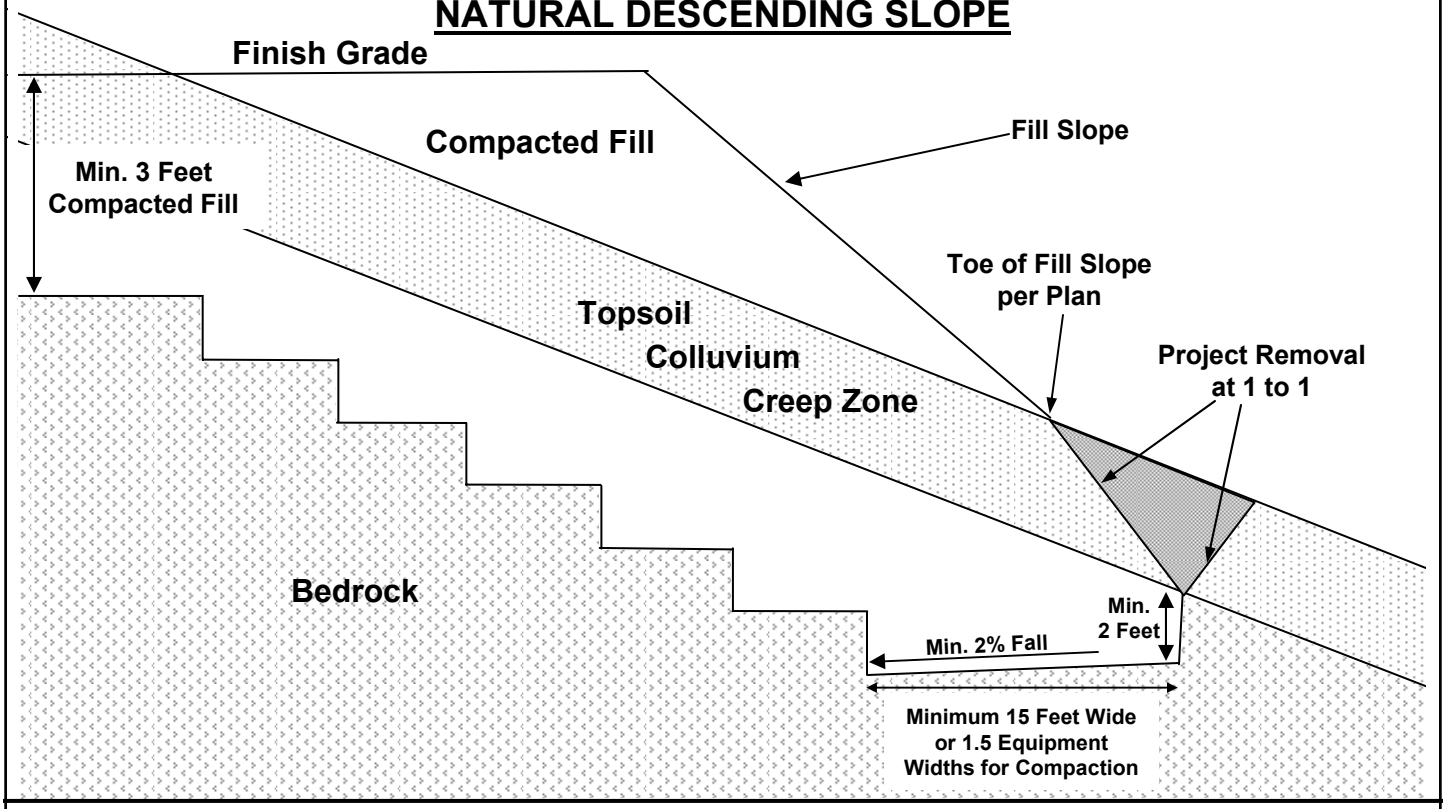
GEOTEK
1548 North Maple Street
Corona, California 92880

TYPICAL CANYON CLEANOUT

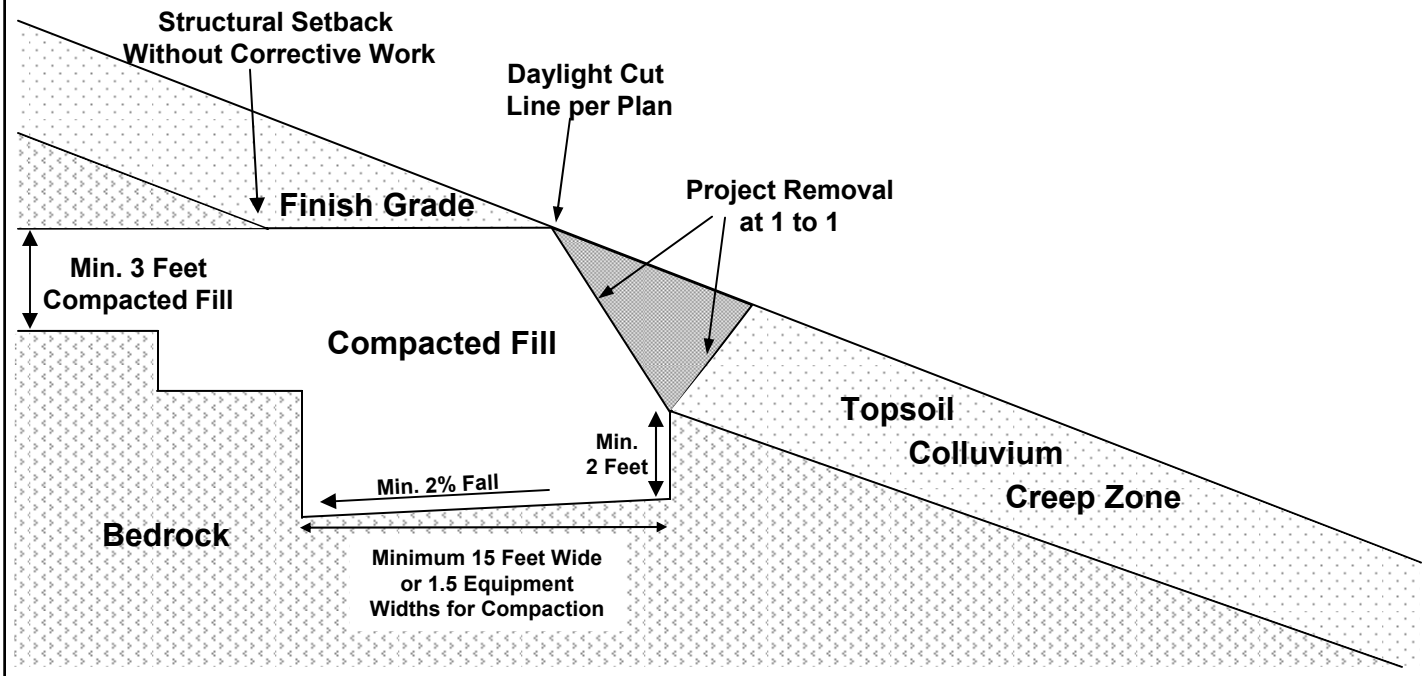
STANDARD GRADING GUIDELINES

PLATE E-1

TYPICAL FILL SLOPE OVER NATURAL DESCENDING SLOPE



DAYLIGHT CUT AREA OVER NATURAL DESCENDING SLOPE



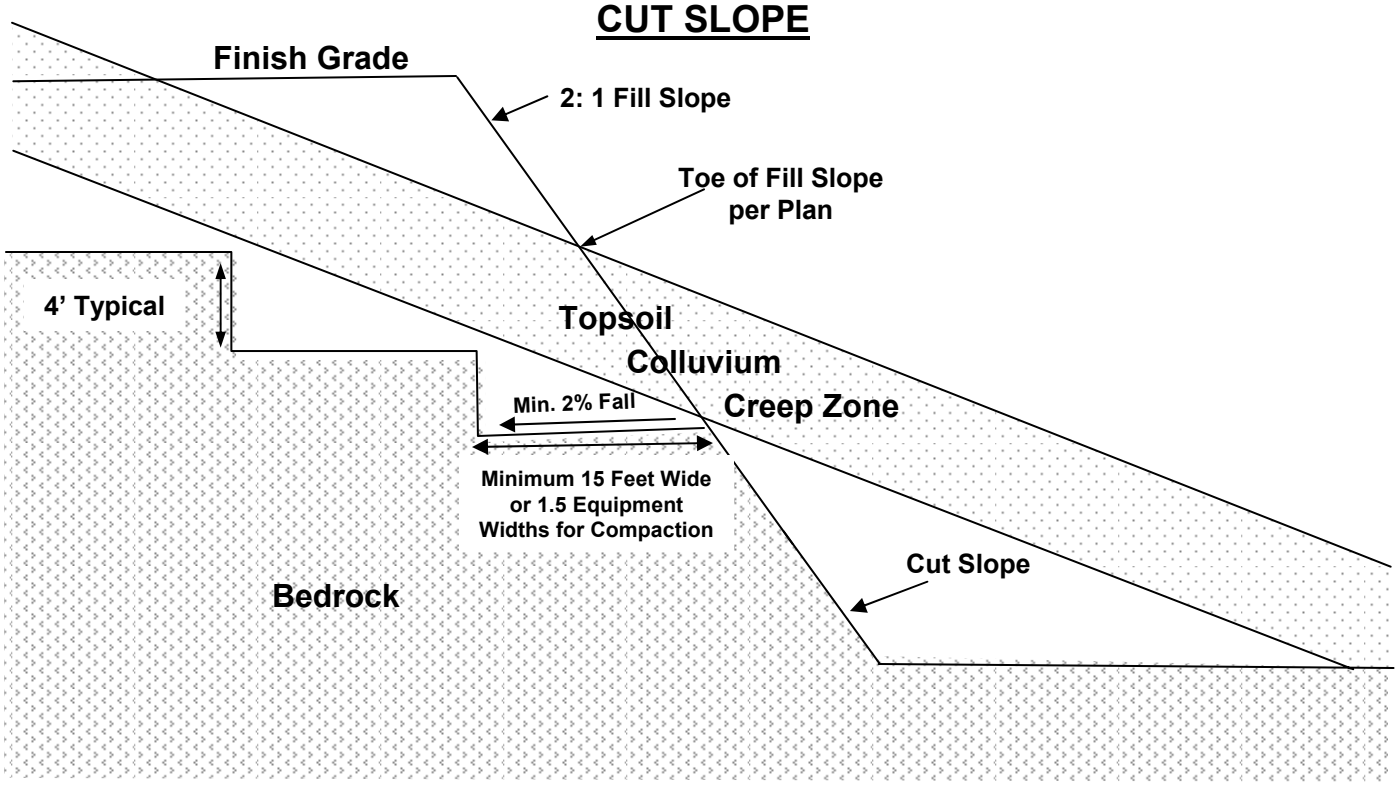
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TREATMENT ABOVE NATURAL SLOPES

STANDARD GRADING GUIDELINES

PLATE E-2

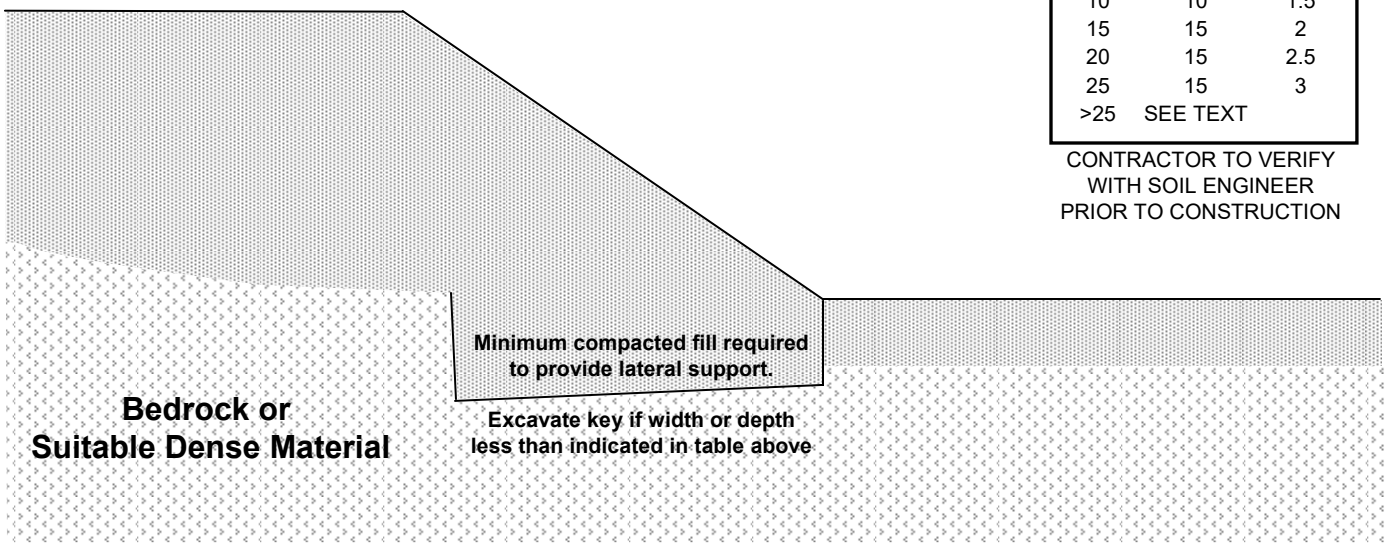
TYPICAL FILL SLOPE OVER CUT SLOPE



TYPICAL FILL SLOPE

SLOPE HEIGHT	MIN. KEY WIDTH	MIN. KEY DEPTH
5	7	1
10	10	1.5
15	15	2
20	15	2.5
25	15	3
>25	SEE TEXT	

CONTRACTOR TO VERIFY WITH SOIL ENGINEER PRIOR TO CONSTRUCTION



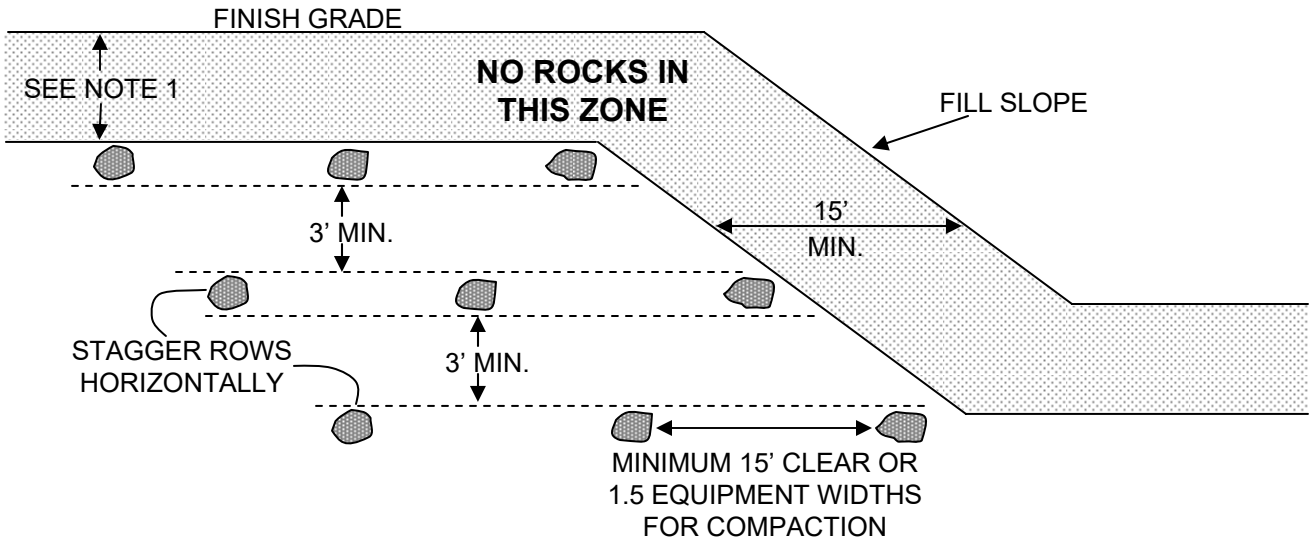
GEOTEK
1548 North Maple Street
Corona, California 92880

COMMON FILL SLOPE KEYS

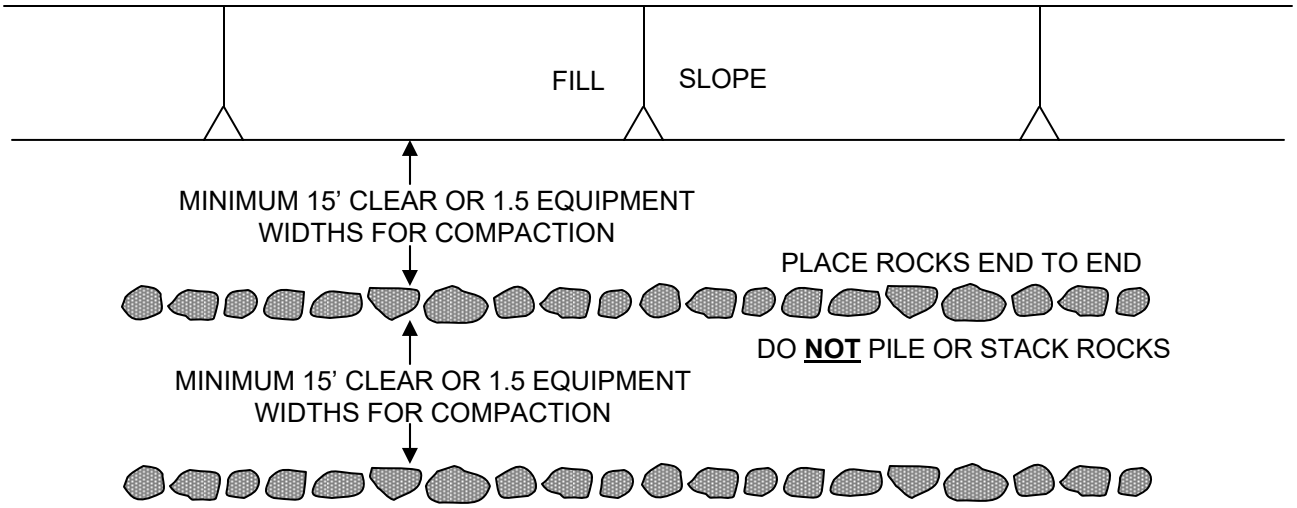
STANDARD GRADING GUIDELINES

PLATE E-3

CROSS SECTIONAL VIEW



PLAN VIEW



NOTES:

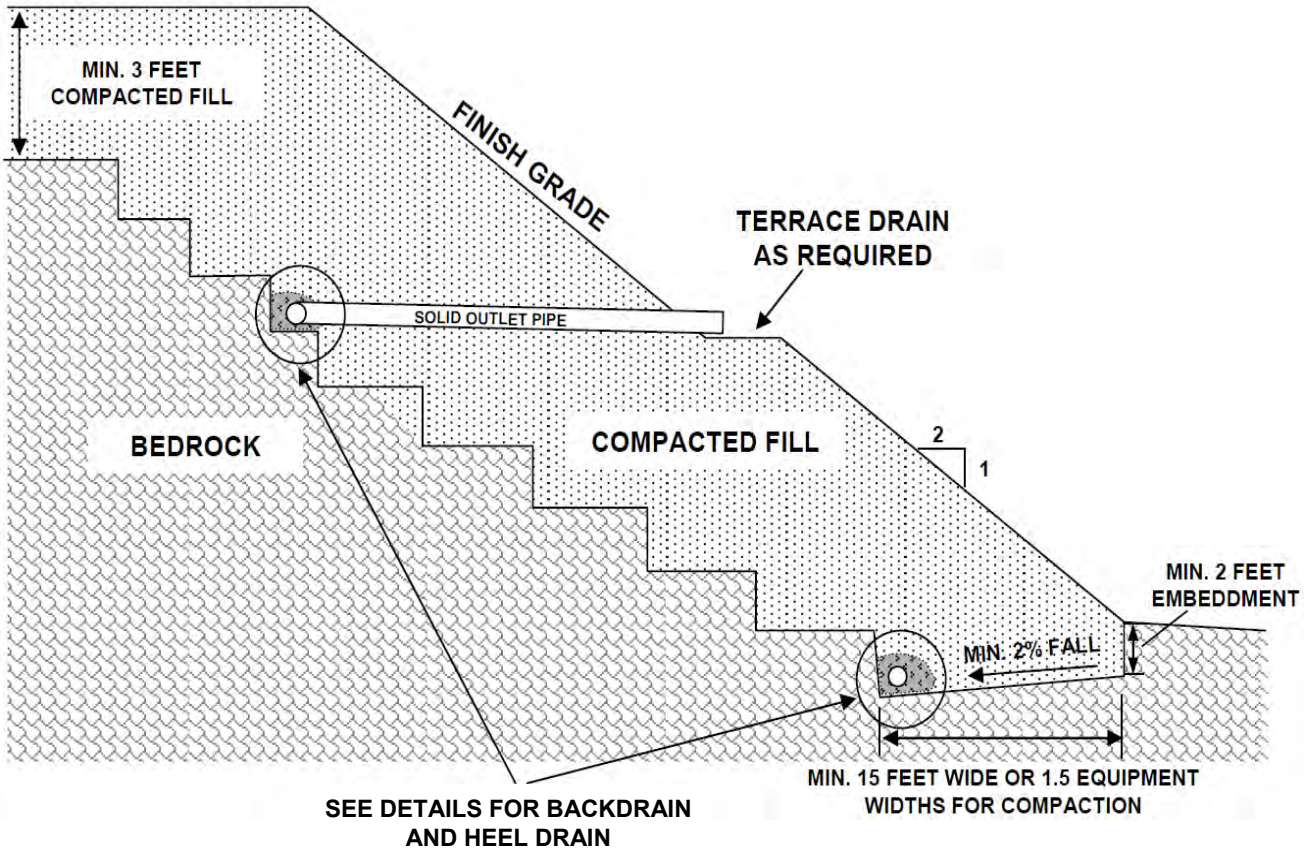
1) SOIL FILL OVER WINDROW SHOULE BE 7 FEET OR PER JURISDUICTIONAL STANDARDS AND SUFFICIENT FOR FUTURE EXCAVATIONS TO AVOID ROCKS
2) MAXIMUM ROCK SIZE IN WINDROWS IS 4 FEET IN DIAMETER
3) SOIL AROUND WINDROWS TO BE SANDY MATERIAL SUBJECT TO SOIL ENGINEER ACCEPTANCE
4) SPACING AND CLEARANCES MUST BE SUFFICIENT TO ALLOW FOR PROPER COMPACTION
5) INDIVDUAL LARGE ROCKS MAY BE BURIED IN PITS.

GEOTEK
1548 North Maple Street
Corona, California 92880

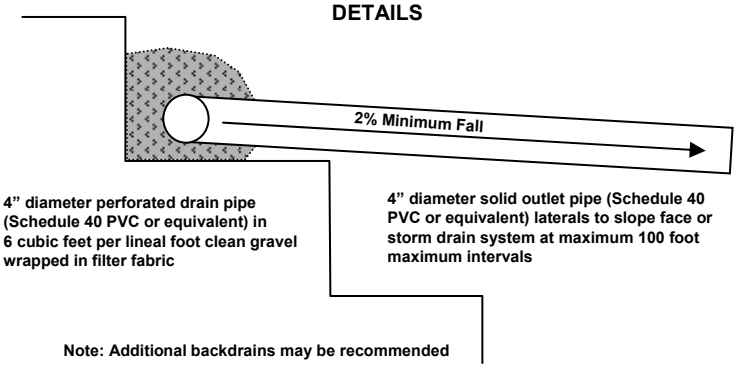
ROCK BURIAL DETAILS

STANDARD GRADING GUIDELINES

PLATE E-4



BACKDRAIN DETAILS



4" diameter perforated drain pipe (Schedule 40 PVC or equivalent) in 6 cubic feet per lineal foot clean gravel wrapped in filter fabric

4" diameter solid outlet pipe (Schedule 40 PVC or equivalent) laterals to slope face or storm drain system at maximum 100 foot maximum intervals

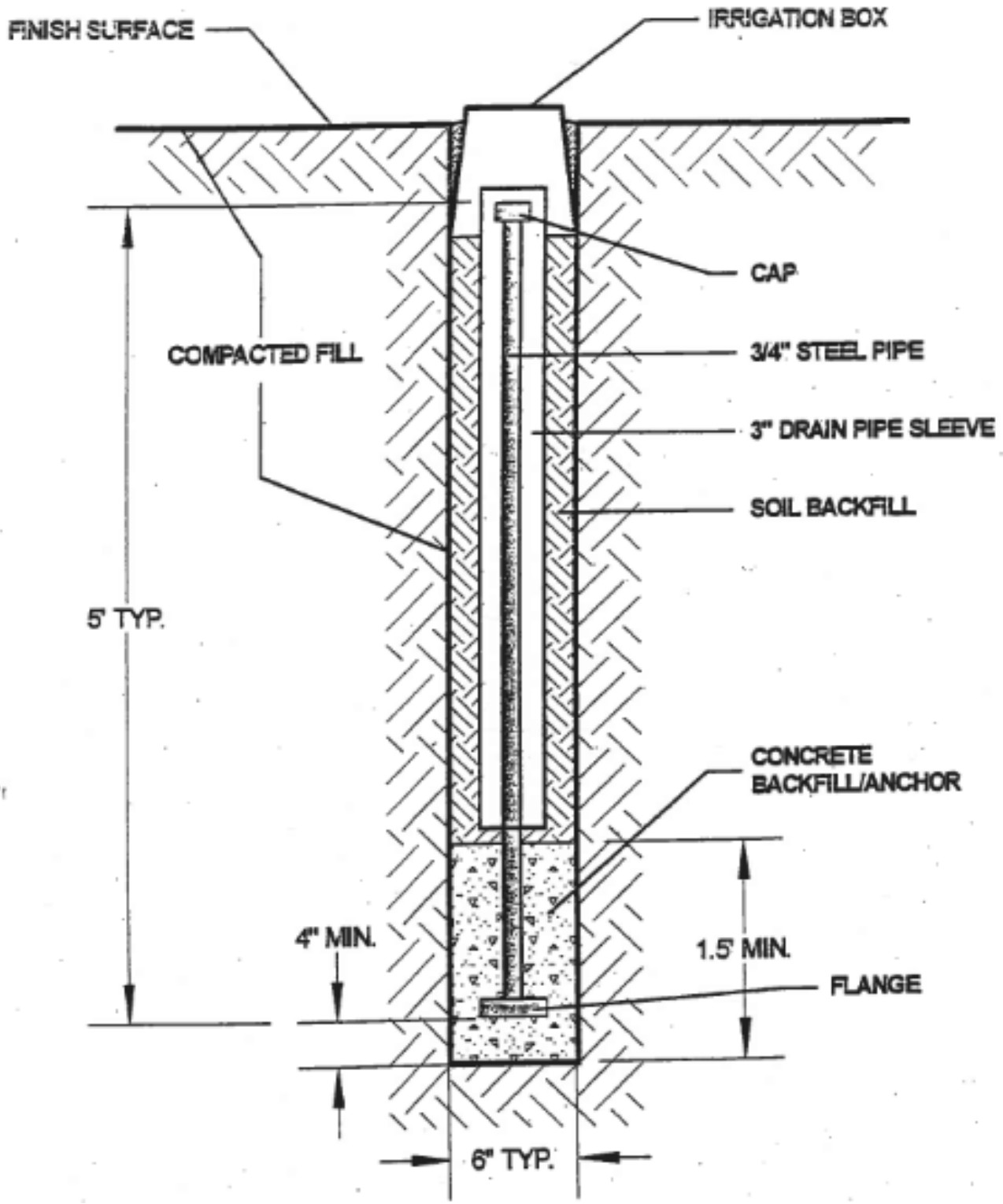
Note: Additional backdrains may be recommended

HEEL DRAIN DETAILS



6" diameter perforated drain pipe in 6 cubic feet per lineal foot clean gravel wrapped in filter fabric, outlet pipe to gravity flow with 2% minimum fall

GEOTEK	1548 North Maple Street Corona, California 92880	TYPICAL BUTTRESS AND STABILIZATION FILL	STANDARD GRADING GUIDELINES PLATE E-5



GEOTEK

1548 North Maple Street
Corona, California 92880

SETTLEMENT MONUMENT

STANDARD GRADING GUIDELINES

PLATE E-6

Appendix 7

Paleontological Survey

John Minch and Associates, Inc.
NATURAL RESOURCES & ENVIRONMENTAL

PALEONTOLOGICAL SURVEY OF THE 40 ACRE PROPERTY APN 367-14011 & 367-14007 SOUTH OF BUNDY CANYON ROAD WILDOMAR, RIVERSIDE COUNTY, CALIFORNIA.

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May 2003

INTRODUCTION

In accordance with your authorization JMA has performed a Paleontological Resources Survey of 40 acre Property [APN 367-14011 & 367-14007] situated South of Bundy Canyon, Wildomar, Riverside County, California (Figure 1). This survey was performed to evaluate the site and the existing paleontological resources of the area; to determine if the development of the site will have any significant adverse impact on the paleontological resources if developed as per the Development Plan and to determine appropriate mitigation measures to minimize adverse impacts (if any).

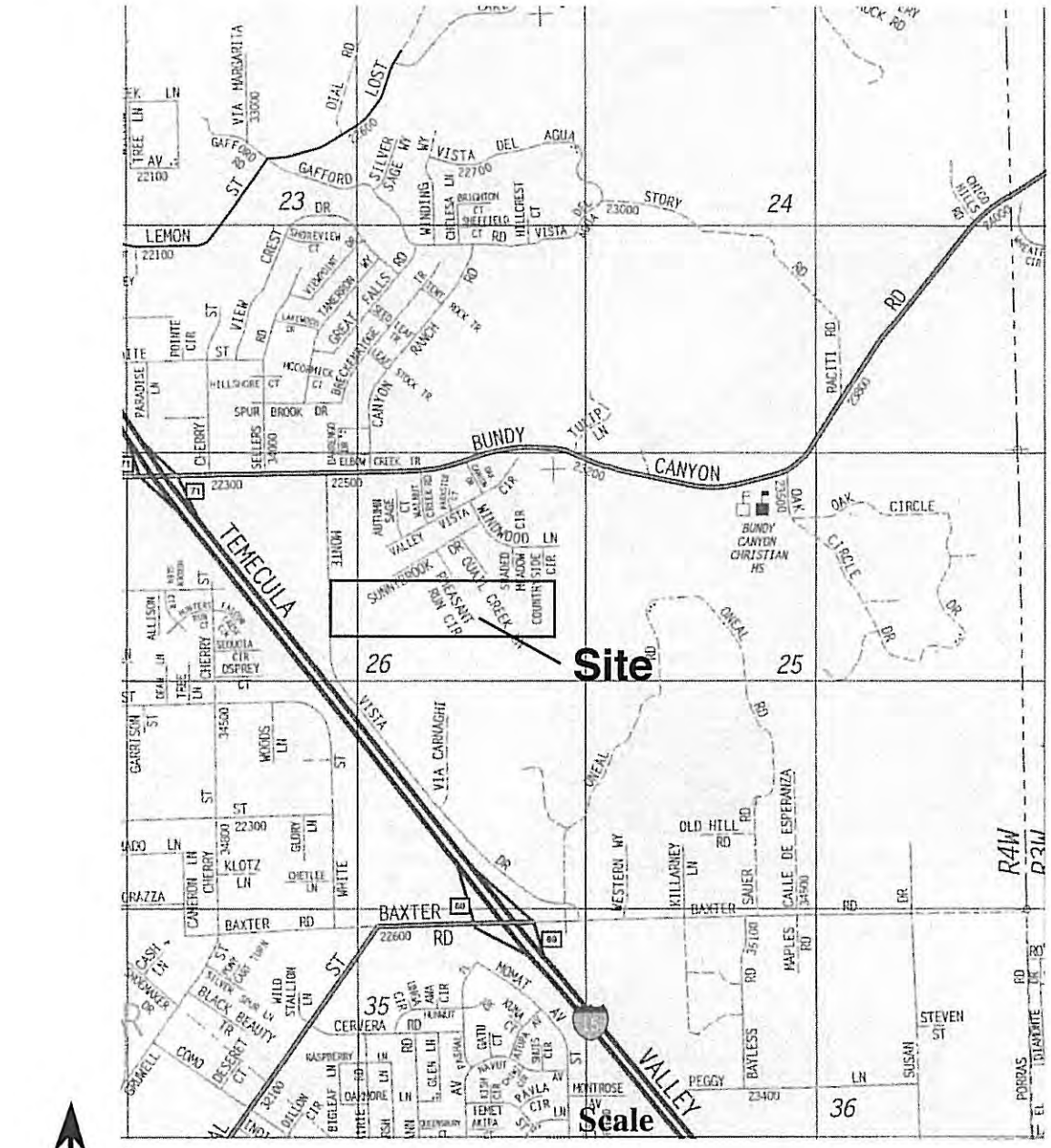
DESCRIPTION OF THE SITE

The site is situated within an older partially developed area of mixed use in the Elsinore Trough, a major alluviated linear valley which dominates the area. The site consists of the lower part of a ridgeline bounded by a dissected gently sloping flat surface descending to the south. There are no obvious roads on the site. The site consists of vacant land.

METHODOLOGY

Where appropriate the following was included in the investigation:

1. Walkover and inspection of exposures and slopes of each geologic unit mapped on the site.
2. Review of the geologic literature pertinent to the geologic units and fossils including paleontological localities.
3. Review of available EIR reports deemed pertinent to the site development.
4. Discussion of the significance of paleontological localities on and near the site with appropriate professionals.



John Minch and Associates

NATURAL RESOURCES

Figure 1

Site Locality Map

PERTINENT LITERATURE

The literature search involved a check of all available published and unpublished literature pertinent to the site.

FIELD RECONNAISSANCE

A reconnaissance walk over survey of the site was conducted by the author in May, 2004. The survey did not uncover any vertebrate fossil remains.

BIOSTRATIGRAPHY

The slopes of the mountain front are underlain by mixer granitic and metamorphic rocks of the Peninsular Ranges Batholith. These rocks are, by their nature, unfossiliferous. The flatter area is underlain by Pleistocene sedimentary rocks. This sedimentary rock unit consists of an alluvial apron which most likely underlain by sediments equivalent to the Pauba Formation? (late Pleistocene).

Pauba Formation (late Pleistocene) - reddish to yellowish brown and buff, poorly sorted, friable, massive, very coarse-grained sandstone and conglomeratic sandstone. The unit contains numerous cut and fill structures and channels. These units are known to contain lake sediments where faulting has impounded the drainage forming a lake. Concentrations of vertebrates are often abundant.

FOSSILS ON OR ADJACENT TO THE SITE

The Walkover and inspection of exposures and slopes of the geologic units on the site did not uncover any vertebrate fossil remains.

The Pauba Formation is the rock unit which may underlie the site. Published and unpublished literature indicates that the Pauba Formation contains fossil localities in areas south of the site. Numerous Pauba Formation localities containing a diverse vertebrate fauna occur within a few miles of the site. These localities contain mastodon, mammoth, horse, camel, sloth, and numerous other types of vertebrates. Numerous tracts in the Cal Oaks area north of Interstate 15 have yielded a diverse vertebrate fauna. No published fossil localities are listed on the site.

SIGNIFICANCE OF FOSSILS

The fossils contained in this unit elsewhere in the Temecula Basin have proven to be of significant scientific value. They are from the Rancholabrean to Irvingtonian Land Mammal Stages of the Pleistocene with a probable age of up to 700,000 years before present. We have only patchy information about the fauna of the Rancholabrean and Irvingtonian Land Mammal Stage in this area and any new localities need to be carefully collected.

CONCLUSIONS

The subject area may contain Paleontological Resources from Pleistocene sedimentary units. The sedimentary rock unit underlying the site is considered to be of high Paleontologic sensitivity and is known to contain significant fossils near to the proposed development area. Careful development of this area may increase our knowledge and collections of the fossil assemblages and environment of deposition of the rock units in this area. The site can be developed and still protect the paleontological resources of the area if the following mitigation measures are followed.

MITIGATION RECOMMENDATIONS

1. No additional mitigation measures are necessary prior to the initiation of grading operations.
2. A paleontological grading observation schedule by a Certified Paleontologist should be maintained when grading in bedrock units to further evaluate the fossil resources of the site.
3. Salvage operations should be initiated and coordinated with the developer if other significant concentrations of fossils are encountered.

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Appendix 8

Monte Vista Ranch Greenhouse Gas Analysis

Monte Vista Ranch

GREENHOUSE GAS ANALYSIS

CITY OF WILDOMAR

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MAY 27, 2021

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LIST OF ABBREVIATED TERMS

%	Percent
°C	Degrees Celsius
°F	Degrees Fahrenheit
(1)	Reference
2017 Scoping Plan	Final 2017 Scoping Plan Update
AB	Assembly Bill
AB 32	Global Warming Solutions Act of 2006
AB 1493	Pavley Fuel Efficiency Standards
AB 1881	California Water Conservation Landscaping Act of 2006
Annex I	Industrialized Nations
AQIA	*Monte Vista Ranch Air Quality Impact Analysis*
BAU	Business As Usual
C_2F_6	Hexafluoroethane
C_2H_6	Ethane
CAA	Federal Clean Air Act
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Protection
CALGAPS	California LBNL GHG Analysis of Policies Spreadsheet
CALGreen	California Green Building Standards Code
CalSTA	California State Transportation Agency
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resource Board
CBSC	California Building Standards Commission
CEC	California Energy Commission
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CEQA Guidelines	*2019 CEQA Statute and Guidelines*
CDFA	California Department of Food and Agriculture
CF_4	Tetrafluoromethane
CFC	Chlorofluorocarbons
CFC-113	Trichlorotrifluoroethane
CH_4	Methane
City	City of Wildomar

CNRA	California Natural Resources Agency
CNRA 2009	*2009 California Climate Adaptation Strategy*
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent
Convention	United Nation's Framework Convention on Climate Change
COP	Conference of the Parties
CPUC	California Public Utilities Commission
CTC	California Transportation Commission
DOF	Department of Finance
DU	Dwelling Units
DWR	Department of Water Resources
EMFAC	Emission Factor Model
EPA	Environmental Protection Agency
EV	Electric Vehicle
FED	Functional Equivalent Document
GCC	Global Climate Change
Gg	Gigagram
GHGA	Greenhouse Gas Analysis
GO-Biz	Governor's Office of Business and Economic Development
GWP	Global Warming Potential
H_2O	Water
HFC	Hydrofluorocarbons
HDT	Heavy-Duty Trucks
HFC-23	Fluoroform
HFC-134a	1,1,1,2-tetrafluoroethane
HFC-152a	1,1-difluoroethane
IBANK	California Infrastructure and Economic Development Bank
IPCC	Intergovernmental Panel on Climate Change
IRP	Integrated Resource Planning
ISO	Independent System Operator
ITE	Institute of Transportation Engineers
kWh	Kilowatt Hours
lbs	Pounds
LBNL	Lawrence Berkeley National Laboratory
LCA	Life-Cycle Analysis
LCD	Liquid Crystal Display
LCFS	Low Carbon Fuel Standard or Executive Order S-01-07
LEV III	Low-Emission Vehicle

LULUCF	Land-Use, Land-Use Change and Forestry
MDT	Medium-Duty Trucks
MMR	Mandatory Reporting Rule
$MMTCO_2e$	Million Metric Ton of Carbon Dioxide Equivalent
mpg	Miles Per Gallon
MPOs	Metropolitan Planning Organizations
$MMTCO_2e/yr$	Million Metric Ton of Carbon Dioxide Equivalent Per Year
MT/yr	Metric Tons Per Year
$MTCO_2e$	Metric Ton of Carbon Dioxide Equivalent
$MTCO_2e/yr$	Metric Ton of Carbon Dioxide Equivalent Per Year
MW	Megawatts
MWh	Megawatts Per Hour
MWELO	California Department of Water Resources' Model Water Efficient
N_2O	Nitrous Oxide
NDC	Nationally Determined Contributions
NF_3	Nitrogen Trifluoride
NHTSA	National Highway Traffic Safety Administration
NIOSH	National Institute for Occupational Safety and Health
NO_X	Nitrogen Oxides
Non-Annex I	Developing Nations
OAL	Office of Administrative Law
OPR	Office of Planning and Research
PFC	Perfluorocarbons
ppb	Parts Per Billion
ppm	Parts Per Million
ppt	Parts Per Trillion
Project	Monte Vista Ranch
RECLAIM	Regional Clean Air Incentives Market
RPS	Renewable Portfolio Standards
RTP	Regional Transportation Plan
SAFE	Safer Affordable Fuel-Efficient Vehicles Rule
SB	Senate Bill
SB 32	California Global Warming Solutions Act of 2006
SB 375	Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies
SB 1078	Renewable Portfolio Standards
SB 1368	Statewide Retail Provider Emissions Performance

	Standards
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
Scoping Plan	California Air Resources Board Climate Change Scoping Plan
SCS	Sustainable Communities Strategy
SF_6	Sulfur Hexaflouride
SGC	Strategic Growth Council
SLPS	Short-Lived Climate Pollutant Strategy
SP	Service Population
TA	*Monte Vista Ranch (Tract No. 32024, Lot 71) Traffic Analysis*
Title 20	Appliance Energy Efficiency Standards
Title 24	California Building Code
U.N.	United Nations
U.S.	United States
UNFCCC	United Nations' Framework Convention on Climate Change
VMT	Vehicle Miles Traveled
WCI	Western Climate Initiative
WRCOG	Western Riverside Council of Governments
WRI	World Resources Institute
ZE/NZE	Zero and Near-Zero Emissions
ZEV	Zero-Emissions Vehicles

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EXECUTIVE SUMMARY

ES.1 SUMMARY OF FINDINGS

The results of this *Monte Vista Ranch Greenhouse Gas Analysis* (GHGA) is summarized below based on the significance criteria in Section 3 of this report consistent with Appendix G of the *California Environmental Quality Act (CEQA) Guidelines* (*CEQA Guidelines*) (1). Table ES-1 shows the findings of significance for potential greenhouse gas (GHG) impacts under CEQA.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
GHG Impact #1: Would the Project generate GHG emissions either directly or indirectly, that may have a significant impact on the environment?	3.7	*Less Than Significant*	*n/a*
GHG Impact #2: Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?	3.7	*Less Than Significant*	*n/a*

ES.2 PROJECT REQUIREMENTS

The Project would be required to comply with regulations imposed by the State of California and the South Coast Air Quality Management District (SCAQMD) aimed at the reduction of air pollutant emissions. Those that are directly and indirectly applicable to the Project and that would assist in the reduction of GHG emissions include:

- Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32) (2).
- Regional GHG Emissions Reduction Targets/Sustainable Communities Strategies (Senate Bill (SB) 375) (3).
- Pavley Fuel Efficiency Standards (AB 1493). Establishes fuel efficiency ratings for new vehicles (4).
- California Building Code (Title 24 California Code of Regulations (CCR)). Establishes energy efficiency requirements for new construction (5).
- Appliance Energy Efficiency Standards (Title 20 CCR). Establishes energy efficiency requirements for appliances (6).
- Low Carbon Fuel Standard (LCFS). Requires carbon content of fuel sold in California to be 10 percent (%) less by 2020 (7).
- California Water Conservation in Landscaping Act of 2006 (AB 1881). Requires local agencies to adopt the Department of Water Resources updated Water Efficient Landscape Ordinance or

equivalent by January 1, 2010 to ensure efficient landscapes in new development and reduced water waste in existing landscapes (8).

- Statewide Retail Provider Emissions Performance Standards (SB 1368). Requires energy generators to achieve performance standards for GHG emissions (9).
- Renewable Portfolio Standards (SB 1078 – also referred to as RPS). Requires electric corporations to increase the amount of energy obtained from eligible renewable energy resources to 20% by 2010 and 33% by 2020 (10).
- California Global Warming Solutions Act of 2006 (SB 32). Requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15 (11).

Promulgated regulations that will affect the Project's emissions are accounted for in the Project's GHG calculations provided in this report. In particular, AB 1493, LCFS, and RPS, and therefore are accounted for in the Project's emission calculations.

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1 INTRODUCTION

This report presents the results of the GHGA prepared by Urban Crossroads, Inc., for the proposed Monte Vista Ranch (Project). The purpose of this GHGA is to evaluate Project-related construction and operational emissions and determine the level of GHG impacts as a result of constructing and operating the Project.

1.1 SITE LOCATION

The proposed Project site is generally located on the northeast corner of Monte Vista Drive (Dr.) and Summer Sage Dr. in the City of Wildomar, as shown on Exhibit 1-A. The Project site is currently vacant. The Project site is currently designated for Commercial Retail (CR) uses (12). The Project site is surrounded by residential uses to the north, vacant land to the east, a church to the south, and Interstate 15 (I-15) is to the east.

1.2 PROJECT DESCRIPTION

Exhibit 1-B illustrates a preliminary site plan for the Project. The Project is anticipated to be developed within a single phase with an opening year of 2023. Consistent with the *Monte Vista Ranch (Tract No. 32024, Lot 71) Traffic Analysis* (TA) report, the Project is proposed to consist of 65 multifamily housing (low-rise) residential dwelling units (DUs) (13).

This analysis includes a conservative assumption of on-site Project-related emission sources for potential future tenants, including landscape maintenance equipment, emissions associated with natural gas and electricity, and mobile source emissions. This analysis is intended to describe GHG impacts associated with the expected operational activities at the Project site.

EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN



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2 CLIMATE CHANGE SETTING

2.1 INTRODUCTION TO GLOBAL CLIMATE CHANGE

GCC is defined as the change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms. The majority of scientists believe that the climate shift taking place since the Industrial Revolution is occurring at a quicker rate and magnitude than in the past. Scientific evidence suggests that GCC is the result of increased concentrations of GHGs in the earth's atmosphere, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. The majority of scientists believe that this increased rate of climate change is the result of GHGs resulting from human activity and industrialization over the past 200 years.

An individual project like the proposed Project evaluated in this GHGA cannot generate enough GHG emissions to affect a discernible change in global climate. However, the proposed Project may participate in the potential for GCC by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on GCC. Because these changes may have serious environmental consequences, Section 3.0 will evaluate the potential for the proposed Project to have a significant effect upon the environment as a result of its potential contribution to the greenhouse effect.

2.2 GLOBAL CLIMATE CHANGE DEFINED

GCC refers to the change in average meteorological conditions on the earth with respect to temperature, wind patterns, precipitation and storms. Global temperatures are regulated by naturally occurring atmospheric gases such as water vapor, CO_2, N_2O, CH_4, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These particular gases are important due to their residence time (duration they stay) in the atmosphere, which ranges from 10 years to more than 100 years. These gases allow solar radiation into the earth's atmosphere, but prevent radioactive heat from escaping, thus warming the earth's atmosphere. GCC can occur naturally as it has in the past with the previous ice ages.

Gases that trap heat in the atmosphere are often referred to as GHGs. GHGs are released into the atmosphere by both natural and anthropogenic activity. Without the natural GHG effect, the earth's average temperature would be approximately 61 degrees Fahrenheit (°F) cooler than it is currently. The cumulative accumulation of these gases in the earth's atmosphere is considered to be the cause for the observed increase in the earth's temperature.

2.3 GHGS

2.3.1 GHGS AND HEALTH EFFECTS

GHGs trap heat in the atmosphere, creating a GHG effect that results in global warming and climate change. Many gases demonstrate these properties and as discussed in Table 2-1. For the purposes of this analysis, emissions of CO_2, CH_4, and N_2O were evaluated (see Table 3-1 later in this report) because these gases are the primary contributors to GCC from development projects.

Although there are other substances such as fluorinated gases that also contribute to GCC, these fluorinated gases were not evaluated as their sources are not well-defined and do not contain accepted emissions factors or methodology to accurately calculate these gases.

TABLE 2-1: GHGS

GHGs	Description	Sources	Health Effects
Water	Water is the most abundant, important, and variable GHG in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization. A climate feedback is an indirect, or secondary, change, either positive or negative, that occurs within the climate system in response to a forcing mechanism. The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a GHG, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is	The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.	There are no known direct health effects related to water vapor at this time. It should be noted however that when some pollutants react with water vapor, the reaction forms a transport mechanism for some of these pollutants to enter the human body through water vapor.

GHGs	Description	Sources	Health Effects
	unknown as there are also dynamics that hold the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the earth's surface and heat it up) (14).		
CO_2	CO_2 is an odorless and colorless GHG. Since the industrial revolution began in the mid-1700s, the sort of human activity that increases GHG emissions has increased dramatically in scale and distribution. Data from the past 50 years suggests a corollary increase in levels and concentrations. As an example, prior to the industrial revolution, CO_2 concentrations were fairly stable at 280 parts per million (ppm). Today, they are around 370 ppm, an increase of more than 30%. Left unchecked, the concentration of CO_2 in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources (15).	CO_2 is emitted from natural and manmade sources. Natural sources include: the decomposition of dead organic matter; respiration of bacteria, plants, animals and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources include: the burning of coal, oil, natural gas, and wood. CO_2 is naturally removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks (16).	Outdoor levels of CO_2 are not high enough to result in negative health effects. According to the National Institute for Occupational Safety and Health (NIOSH) high concentrations of CO_2 can result in health effects such as: headaches, dizziness, restlessness, difficulty breathing, sweating, increased heart rate, increased cardiac output, increased blood pressure, coma, asphyxia, and/or convulsions. It should be noted that current concentrations of CO_2 in the earth's atmosphere are estimated to be approximately 370 ppm, the actual reference exposure level (level at which adverse health effects typically occur) is at exposure levels of 5,000 ppm averaged over 10 hours in a 40-hour workweek and short-term reference exposure levels of 30,000 ppm averaged over a 15 minute period (17).

GHGs	Description	Sources	Health Effects
CH_4	CH_4 is an extremely effective absorber of radiation, although its atmospheric concentration is less than CO_2 and its lifetime in the atmosphere is brief (10-12 years), compared to other GHGs.	CH_4 has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropocentric sources include fossil-fuel combustion and biomass burning (18).	CH_4 is extremely reactive with oxidizers, halogens, and other halogen-containing compounds. Exposure to high levels of CH_4 can cause asphyxiation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, loss of coordination, and an increased breathing rate.
N_2O	N_2O, also known as laughing gas, is a colorless GHG. Concentrations of N_2O also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb).	N_2O is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load. It is used as an aerosol spray propellant, i.e., in whipped cream bottles. It is also	N_2O can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is considered harmless. However, in some cases, heavy and extended use can cause Olney's Lesions (brain damage) (19).

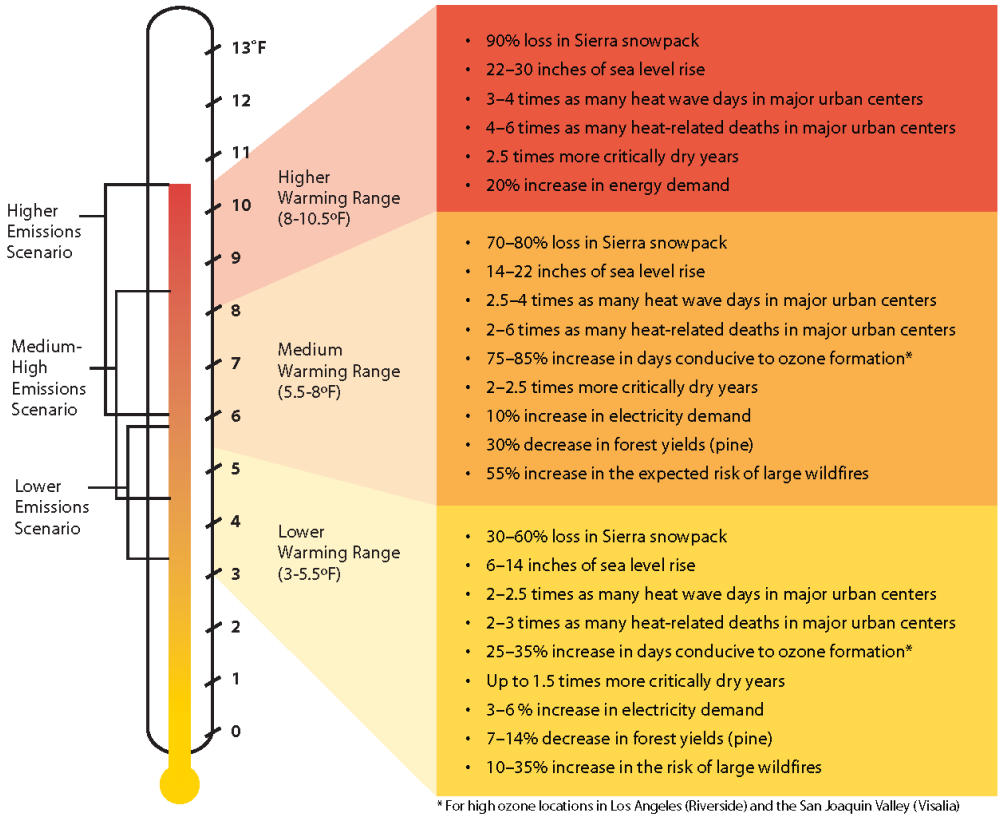
GHGs	Description	Sources	Health Effects
		used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. N_2O can be transported into the stratosphere, be deposited on the earth's surface, and be converted to other compounds by chemical reaction (19).	
Chlorofluorocarbons (CFCs)	CFCs are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble and chemically unreactive in the troposphere (the level of air at the earth's surface).	CFCs have no natural source but were first synthesized in 1928. They were used for refrigerants, aerosol propellants and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years (20).	In confined indoor locations, working with trichlorotrifluoroethane (CFC-113) or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.

GHGs	Description	Sources	Health Effects
HFCs	HFCs are synthetic, man-made chemicals that are used as a substitute for CFCs. Out of all the GHGs, they are one of three groups with the highest global warming potential (GWP). The HFCs with the largest measured atmospheric abundances are (in order), Fluoroform (HFC-23), 1,1,1,2-tetrafluoroethane (HFC-134a), and 1,1-difluoroethane (HFC-152a). Prior to 1990, the only significant emissions were of HFC-23. HCF-134a emissions are increasing due to its use as a refrigerant.	HFCs are manmade for applications such as automobile air conditioners and refrigerants.	No health effects are known to result from exposure to HFCs.
PFCs	PFCs have stable molecular structures and do not break down through chemical processes in the lower atmosphere. High-energy ultraviolet rays, which occur about 60 kilometers above earth's surface, are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). The EPA estimates that concentrations of CF_4 in the atmosphere are over 70 parts per trillion (ppt).	The two main sources of PFCs are primary aluminum production and semiconductor manufacture.	No health effects are known to result from exposure to PFCs.
SF_6	SF_6 is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated (23,900) (21). The EPA indicates that concentrations in the 1990s were about 4 ppt.	SF_6 is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.	In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing.

GHGs	Description	Sources	Health Effects
Nitrogen Trifluoride (NF_3)	NF_3 is a colorless gas with a distinctly moldy odor. The World Resources Institute (WRI) indicates that NF_3 has a 100-year GWP of 17,200 (22).	NF_3 is used in industrial processes and is produced in the manufacturing of semiconductors, Liquid Crystal Display (LCD) panels, types of solar panels, and chemical lasers.	Long-term or repeated exposure may affect the liver and kidneys and may cause fluorosis (23).

The potential health effects related directly to the emissions of CO_2, CH_4, and N_2O as they relate to development projects such as the proposed Project are still being debated in the scientific community. Their cumulative effects to GCC have the potential to cause adverse effects to human health. Increases in Earth's ambient temperatures would result in more intense heat waves, causing more heat-related deaths. Scientists also purport that higher ambient temperatures would increase disease survival rates and result in more widespread disease. Climate change will likely cause shifts in weather patterns, potentially resulting in devastating droughts and food shortages in some areas (24). Exhibit 2-A presents the potential impacts of global warming (25).

EXHIBIT 2-A: SUMMARY OF PROJECTED GLOBAL WARMING IMPACT, 2070-2099 (AS COMPARED WITH 1961-1990)



Source: Barbara H. Allen-Diaz. "Climate change affects us all." *University of California, Agriculture and Natural Resources*, 2009.

2.4 GLOBAL WARMING POTENTIAL

GHGs have varying GWP values. GWP of a GHG indicates the amount of warming a gas causes over a given period of time and represents the potential of a gas to trap heat in the atmosphere. CO_2 is utilized as the reference gas for GWP, and thus has a GWP of 1. CO_2 equivalent (CO_2e) is a term used for describing the difference GHGs in a common unit. CO_2e signifies the amount of CO_2 which would have the equivalent GWP.

The atmospheric lifetime and GWP of selected GHGs are summarized at Table 2-2. As shown in the table below, GWP for the 2nd Assessment Report, the Intergovernmental Panel on Climate Change (IPCC)'s scientific and socio-economic assessment on climate change, range from 1 for CO_2 to 23,900 for SF_6 and GWP for the IPCC's 5th Assessment Report range from 1 for CO_2 to 23,500 for SF_6 (26).

TABLE 2-2: GWP AND ATMOSPHERIC LIFETIME OF SELECT GHGS

Gas	Atmospheric Lifetime (years)	GWP (100-year time horizon)	
		2nd Assessment Report	5th Assessment Report
CO_2	See*	1	1
CH_4	12 .4	21	28
N_2O	121	310	265
HFC-23	222	11,700	12,400
HFC-134a	13.4	1,300	1,300
HFC-152a	1.5	140	138
SF_6	3,200	23,900	23,500

*As per Appendix 8.A. of IPCC's 5th Assessment Report, no single lifetime can be given.
Source: Table 2.14 of the IPCC Fourth Assessment Report, 2007

2.5 GHG EMISSIONS INVENTORIES

2.5.1 GLOBAL

Worldwide anthropogenic GHG emissions are tracked by the IPCC for industrialized nations (referred to as Annex I) and developing nations (referred to as Non-Annex I). Human GHG emissions data for Annex I nations are available through 2018. Based on the latest available data, the sum of these emissions totaled approximately 28,768,439 gigagram (Gg) CO_2e[1] (27) (28) as summarized on Table 2-3.

[1] The global emissions are the sum of Annex I and non-Annex I countries, without counting Land-Use, Land-Use Change and Forestry (LULUCF). For countries without 2018 data, the United Nations' Framework Convention on Climate Change (UNFCCC) data for the most recent year were used U.N. Framework Convention on Climate Change, "Annex I Parties – GHG total without LULUCF," The most recent GHG emissions for China and India are from 2014 and 2010, respectively.

2.5.2 UNITED STATES

As noted in Table 2-3, the United States, as a single country, was the number two producer of GHG emissions in 2018.

TABLE 2-3: TOP GHG PRODUCING COUNTRIES AND THE EUROPEAN UNION [2]

Emitting Countries	GHG Emissions (Gg CO_2e)
China	12,300,200
United States	6,676,650
European Union (28-member countries)	4,232,274
Russian Federation	2,220,123
India	2,100,850
Japan	1,238,343
Total	**28,768,439**

2.5.3 STATE OF CALIFORNIA

California has significantly slowed the rate of growth of GHG emissions due to the implementation of energy efficiency programs as well as adoption of strict emission controls but is still a substantial contributor to the United States (U.S.) emissions inventory total (29). The California Air Resource Board (CARB) compiles GHG inventories for the State of California. Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2018 GHG emissions period, California emitted an average 425.3 million metric tons of CO_2e per year ($MMTCO_2e/yr$) or 425,320 Gg CO_2e (6.37% of the total United States GHG emissions) (30).

2.6 EFFECTS OF CLIMATE CHANGE IN CALIFORNIA

2.6.1 PUBLIC HEALTH

Higher temperatures may increase the frequency, duration, and intensity of conditions conducive to air pollution formation. For example, days with weather conducive to ozone formation could increase from 25 to 35% under the lower warming range to 75 to 85% under the medium warming range. In addition, if global background ozone levels increase as predicted in some scenarios, it may become impossible to meet local air quality standards. Air quality could be further compromised by increases in wildfires, which emit fine particulate matter that can travel long distances, depending on wind conditions. Based on *Our Changing Climate Assessing the Risks to California by the California Climate Change Center*, large wildfires could become up to 55% more frequent if GHG emissions are not significantly reduced (31).

In addition, under the higher warming range scenario, there could be up to 100 more days per year with temperatures above 90°F in Los Angeles and 95°F in Sacramento by 2100. This is a large

[2] Used http://unfccc.int data for Annex I countries. Consulted the CAIT Climate Data Explorer in https://www.climatewatchdata.org site to reference Non-Annex I countries of China and India.

increase over historical patterns and approximately twice the increase projected if temperatures remain within or below the lower warming range. Rising temperatures could increase the risk of death from dehydration, heat stroke/exhaustion, heart attack, stroke, and respiratory distress caused by extreme heat.

2.6.2 WATER RESOURCES

A vast network of man-made reservoirs and aqueducts captures and transports water throughout the state from northern California rivers and the Colorado River. The current distribution system relies on Sierra Nevada snowpack to supply water during the dry spring and summer months. Rising temperatures, potentially compounded by decreases in precipitation, could severely reduce spring snowpack, increasing the risk of summer water shortages.

If temperatures continue to increase, more precipitation could fall as rain instead of snow, and the snow that does fall could melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90%. Under the lower warming range scenario, snowpack losses could be only half as large as those possible if temperatures were to rise to the higher warming range. How much snowpack could be lost depends in part on future precipitation patterns, the projections for which remain uncertain. However, even under the wetter climate projections, the loss of snowpack could pose challenges to water managers and hamper hydropower generation. It could also adversely affect winter tourism. Under the lower warming range, the ski season at lower elevations could be reduced by as much as a month. If temperatures reach the higher warming range and precipitation declines, there might be many years with insufficient snow for skiing and snowboarding.

The State's water supplies are also at risk from rising sea levels. An influx of saltwater could degrade California's estuaries, wetlands, and groundwater aquifers. Saltwater intrusion caused by rising sea levels is a major threat to the quality and reliability of water within the southern edge of the Sacramento/San Joaquin River Delta – a major fresh water supply.

2.6.3 AGRICULTURE

Increased temperatures could cause widespread changes to the agriculture industry reducing the quantity and quality of agricultural products statewide. First, California farmers could possibly lose as much as 25% of the water supply needed. Although higher CO_2 levels can stimulate plant production and increase plant water-use efficiency, California's farmers could face greater water demand for crops and a less reliable water supply as temperatures rise. Crop growth and development could change, as could the intensity and frequency of pest and disease outbreaks. Rising temperatures could aggravate ozone pollution, which makes plants more susceptible to disease and pests and interferes with plant growth.

Plant growth tends to be slow at low temperatures, increasing with rising temperatures up to a threshold. However, faster growth can result in less-than-optimal development for many crops, so rising temperatures could worsen the quantity and quality of yield for a number of California's agricultural products. Products likely to be most affected include wine grapes, fruits and nuts.

In addition, continued GCC could shift the ranges of existing invasive plants and weeds and alter competition patterns with native plants. Range expansion could occur in many species while range contractions may be less likely in rapidly evolving species with significant populations already established. Should range contractions occur, new or different weed species could fill the emerging gaps. Continued GCC could alter the abundance and types of many pests, lengthen pests' breeding season, and increase pathogen growth rates.

2.6.4 FORESTS AND LANDSCAPES

GCC has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, the risk of large wildfires in California could increase by as much as 55%, which is almost twice the increase expected if temperatures stay in the lower warming range. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state. In contrast, wildfires in northern California could increase by up to 90% due to decreased precipitation.

Moreover, continued GCC has the potential to alter natural ecosystems and biological diversity within the state. For example, alpine and subalpine ecosystems could decline by as much as 60 to 80% by the end of the century as a result of increasing temperatures. The productivity of the state's forests has the potential to decrease as a result of GCC.

2.6.5 RISING SEA LEVELS

Rising sea levels, more intense coastal storms, and warmer water temperatures could increasingly threaten the state's coastal regions. Under the higher warming range scenario, sea level is anticipated to rise 22 to 35 inches by 2100. Elevations of this magnitude would inundate low-lying coastal areas with saltwater, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. Under the lower warming range scenario, sea level could rise 12-14 inches.

2.7 REGULATORY SETTING

2.7.1 INTERNATIONAL

Climate change is a global issue involving GHG emissions from all around the world; therefore, countries such as the ones discussed below have made an effort to reduce GHGs.

IPCC

In 1988, the United Nations (U.N.) and the World Meteorological Organization established the IPCC to assess the scientific, technical and socioeconomic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

UNITED NATION'S FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)

On March 21, 1994, the U.S. joined a number of countries around the world in signing the Convention. Under the UNFCCC, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

INTERNATIONAL CLIMATE CHANGE TREATIES

The Kyoto Protocol is an international agreement linked to the UNFCCC. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at an average of 5% against 1990 levels over the five-year period 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the UN Climate Change Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2 degrees Celsius (°C) above pre-industrial levels, subject to a review in 2015. The Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings gradually gained consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 Heads of State and Government and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the U.N. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the UNFCCC reached a landmark agreement on December 12, 2015 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties (COP) 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2°C, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a) (32).

On November 4, 2019, the Trump administration formally notified the U.N. that the United States would withdraw from the Paris Agreement. This withdrawal was effective one year after notification in 2020.

2.7.2 NATIONAL

Prior to the last decade, there have been no concrete federal regulations of GHGs or major planning for climate change adaptation. The following are actions regarding the federal government, GHGs, and fuel efficiency.

GHG ENDANGERMENT

In *Massachusetts v. Environmental Protection Agency* 549 U.S. 497 (2007), decided on April 2, 2007, the United States Supreme Court (Supreme Court) found that four GHGs, including CO_2, are air pollutants subject to regulation under Section 202(a)(1) of the Clean Air Act (CAA). The Supreme Court held that the EPA Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the CAA:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed GHGs— CO2, CH4, N2O, HFCs, PFCs, and SF6—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the Supreme Court declined to review an Appeals Court ruling that upheld the EPA Administrator's findings (33).

CLEAN VEHICLES

Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the U.S. On April 1, 2010, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the U.S.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty (MD) passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon (mpg) if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the NHTSA issued final rules on a second-phase joint rulemaking establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012. The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and MD passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 mpg if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks (HDT) and buses on September 15, 2011, effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that begin in the 2014 model year and achieve up to a 20% reduction in CO_2 emissions and fuel consumption by the 2018 model year. For HDT and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10% reduction for gasoline vehicles and a 15% reduction for diesel vehicles by the 2018 model year (12 and 17% respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle

standards would achieve up to a 10% reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

On April 2, 2018, the EPA signed the Mid-term Evaluation Final Determination, which declared that the MY 2022-2025 GHG standards are not appropriate and should be revised (34). This Final Determination serves to initiate a notice to further consider appropriate standards for MY 2022-2025 light-duty vehicles. On August 2, 2018, the NHTSA in conjunction with the EPA, released a notice of proposed rulemaking, the *Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule for Model Years 2021-2026 Passenger Cars and Light Trucks* (SAFE Vehicles Rule). The SAFE Vehicles Rule was proposed to amend exiting Corporate Average Fuel Economy (CAFE) and tailpipe CO_2 standards for passenger cars and light trucks and to establish new standards covering model years 2021 through 2026. As of March 31, 2020, the NHTSA and EPA finalized the SAFE Vehicle Rule which increased stringency of CAFE and CO_2 emissions standards by 1.5% each year through model year 2026 (35).

MANDATORY REPORTING OF GHGS

The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of GHGs Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the U.S. and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons per year (MT/yr) or more of GHG emissions are required to submit annual reports to the EPA.

NEW SOURCE REVIEW

The EPA issued a final rule on May 13, 2010, that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these CAA permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the Federal Code of Regulations, the EPA states:

> *"This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the CAA, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to GHG sources, starting with the largest GHG emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources but excludes certain smaller sources from Prevention of Significant*

Deterioration and Title V permitting for GHG emissions until at least April 30, 2016."

The EPA estimates that facilities responsible for nearly 70% of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

STANDARDS OF PERFORMANCE FOR GHG EMISSIONS FOR NEW STATIONARY SOURCES: ELECTRIC UTILITY GENERATING UNITS

As required by a settlement agreement, the EPA proposed new performance standards for emissions of CO_2 for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatts (MW) would be required to meet an output-based standard of 1,000 pounds (lbs) of CO_2 per MW-hour (MWh), based on the performance of widely used natural gas combined cycle technology. It should be noted that on February 9, 2016, the Supreme Court issued a stay of this regulation pending litigation. Additionally, the current EPA Administrator has also signed a measure to repeal the Clean Power Plan, including the CO_2 standards. The Clean Power Plan was officially repealed on June 19, 2019, when the EPA issued the final Affordable Clean Energy rule (ACE). Under ACE, new state emission guidelines were established that provided existing coal-fired electric utility generating units with achievable standards.

CAP-AND-TRADE

Cap-and-trade refers to a policy tool where emissions are limited to a certain amount and can be traded or provides flexibility on how the emitter can comply. Successful examples in the U.S. include the Acid Rain Program and the N_2O Budget Trading Program and Clean Air Interstate Rule in the northeast. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap-and-trade.

The Regional GHG Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps CO_2 emissions from power plants, auctions CO_2 emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008 and in 2020 has retained all participating states.

The Western Climate Initiative (WCI) partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15% below 2005 levels by 2020. The partners were originally California, British Columbia, Manitoba, Ontario, and Quebec. However, Manitoba and Ontario are not currently participating. California linked with Quebec's cap-and-trade system January 1, 2014, and joint offset auctions took place in 2015. While the WCI has yet to publish whether it has successfully reached the 2020 emissions goal initiative set in 2007, SB 32 requires that California, a major partner in the WCI, adopt the goal of reducing statewide GHG emissions to 40% below the 1990 level by 2030.

SMARTWAY PROGRAM

The SmartWay Program is a public-private initiative between the EPA, large and small trucking companies, rail carriers, logistics companies, commercial manufacturers, retailers, and other federal and state agencies. Its purpose is to improve fuel efficiency and the environmental performance (reduction of both GHG emissions and air pollution) of the goods movement supply chains. SmartWay is comprised of four components (36):

1. SmartWay Transport Partnership: A partnership in which freight carriers and shippers commit to benchmark operations, track fuel consumption, and improve performance annually.
2. SmartWay Technology Program: A testing, verification, and designation program to help freight companies identify equipment, technologies, and strategies that save fuel and lower emissions.
3. SmartWay Vehicles: A program that ranks light-duty cars and small trucks and identifies superior environmental performers with the SmartWay logo.
4. SmartWay International Interests: Guidance and resources for countries seeking to develop freight sustainability programs modeled after SmartWay.

SmartWay effectively refers to requirements geared towards reducing fuel consumption. Most large trucking fleets driving newer vehicles are compliant with SmartWay design requirements. Moreover, over time, all HDTs will have to comply with the CARB GHG Regulation that is designed with the SmartWay Program in mind, to reduce GHG emissions by making them more fuel-efficient. For instance, in 2015, 53 foot or longer dry vans or refrigerated trailers equipped with a combination of SmartWay-verified low-rolling resistance tires and SmartWay-verified aerodynamic devices would obtain a total of 10% or more fuel savings over traditional trailers.

Through the SmartWay Technology Program, the EPA has evaluated the fuel saving benefits of various devices through grants, cooperative agreements, emissions and fuel economy testing, demonstration projects and technical literature review. As a result, the EPA has determined the following types of technologies provide fuel saving and/or emission reducing benefits when used properly in their designed applications, and has verified certain products:

- Idle reduction technologies – less idling of the engine when it is not needed would reduce fuel consumption.
- Aerodynamic technologies minimize drag and improve airflow over the entire tractor-trailer vehicle. Aerodynamic technologies include gap fairings that reduce turbulence between the tractor and trailer, side skirts that minimize wind under the trailer, and rear fairings that reduce turbulence and pressure drop at the rear of the trailer.
- Low rolling resistance tires can roll longer without slowing down, thereby reducing the amount of fuel used. Rolling resistance (or rolling friction or rolling drag) is the force resisting the motion when a tire rolls on a surface. The wheel will eventually slow down because of this resistance.
- Retrofit technologies include things such as diesel particulate filters, emissions upgrades (to a higher tier), etc., which would reduce emissions.
- Federal excise tax exemptions.

2.7.3 CALIFORNIA

2.7.3.1 LEGISLATIVE ACTIONS TO REDUCE GHGS

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32

The California State Legislature enacted AB 32, which required that GHGs emitted in California be reduced to 1990 levels by the year 2020 (this goal has been met[3]). GHGs as defined under AB 32 include CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6. Since AB 32 was enacted, a seventh chemical, NF_3, has also been added to the list of GHGs. CARB is the state agency charged with monitoring and regulating sources of GHGs. Pursuant to AB 32, CARB adopted regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 states the following:

> *"Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems."*

SB 375

On September 30, 2008, SB 375 was signed by Governor Schwarzenegger. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40% of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: it (1) requires metropolitan planning organizations (MPOs) to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

SB 375 requires MPOs to prepare a Sustainable Communities Strategy (SCS) within the Regional Transportation Plan (RTP) that guides growth while taking into account the transportation, housing, environmental, and economic needs of the region. SB 375 uses CEQA streamlining as an incentive to encourage residential projects, which help achieve AB 32 goals to reduce GHG

[3] Based upon the 2019 GHG inventory data (i.e., the latest year for which data are available) for the 2000-2017 GHG emissions period, California emitted an average 424.1 $MMTCO_2e$ (29). This is less than the 2020 emissions target of 431 $MMTCO_2e$.

emissions. Although SB 375 does not prevent CARB from adopting additional regulations, such actions are not anticipated in the foreseeable future.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts, or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network, if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that CARB accepts as achieving the GHG emission reduction targets.
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies).
3. Incorporates the MMs required by an applicable prior environmental document.

AB 1493 - Pavley Fuel Efficiency Standards

Enacted on July 22, 2002, California AB 1493, also known as the Pavley Fuel Efficiency Standards, required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the U.S. District Court for the District of Columbia in 2011.

The standards phase in during the 2009 through 2016 MY. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant.

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program (LEV III) or the Advanced Clean Cars (ACC) program. The ACC program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for MY 2017 through 2025. The regulation will reduce GHGs from new cars by 34% from 2016 levels by 2025. The new rules will clean up gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles (EV) and hydrogen fuel cell cars. The package will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California.

CLEAN ENERGY AND POLLUTION REDUCTION ACT OF 2015 (SB 350)

In October 2015, the legislature approved, and Governor Jerry Brown signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the RPS, higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for EV charging stations. Provisions for a 50% reduction in the use of petroleum statewide were removed from

the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33% to 50% by 2030, with interim targets of 40% by 2024, and 25% by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utilities Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States.

SB 32

On September 8, 2016, Governor Brown signed SB 32 and its companion bill, AB 197. SB 32 requires the state to reduce statewide GHG emissions to 40% below 1990 levels by 2030, a reduction target that was first introduced in Executive Order B-30-15. The new legislation builds upon the AB 32 goal and provides an intermediate goal to achieving S-3-05, which sets a statewide GHG reduction target of 80% below 1990 levels by 2050. AB 197 creates a legislative committee to oversee regulators to ensure that CARB not only responds to the Governor, but also the Legislature (11).

CARB SCOPING PLAN UPDATE

In November 2017, CARB released the *Final 2017 Scoping Plan Update* (*2017 Scoping Plan*), which identifies the State's post-2020 reduction strategy. The *2017 Scoping Plan* reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Key programs that the proposed Second Update builds upon include the Cap-and-Trade Regulation, the LCFS, and much cleaner cars, trucks and freight movement, utilizing cleaner, renewable energy, and strategies to reduce CH_4 emissions from agricultural and other wastes.

The *2017 Scoping Plan* establishes a new emissions limit of 260 $MMTCO_2e$ for the year 2030, which corresponds to a 40% decrease in 1990 levels by 2030 (37).

California's climate strategy will require contributions from all sectors of the economy, including the land base, and will include enhanced focus on zero and near-zero emission (ZE/NZE) vehicle technologies; continued investment in renewables, including solar roofs, wind, and other distributed generation; greater use of low carbon fuels; integrated land conservation and development strategies; coordinated efforts to reduce emissions of short-lived climate pollutants (CH_4, black carbon, and fluorinated gases); and an increased focus on integrated land use planning to support livable, transit-connected communities and conservation of agricultural and other lands. Requirements for direct GHG reductions at refineries will further support air quality co-benefits in neighborhoods, including in disadvantaged communities historically located adjacent to these large stationary sources, as well as efforts with California's local air pollution control and air quality management districts (air districts) to tighten emission limits on a broad spectrum of industrial sources. Major elements of the *2017 Scoping Plan* framework include:

- Implementing and/or increasing the standards of the Mobile Source Strategy, which include increasing zero-emission vehicles (ZEV) buses and trucks.
- LCFS, with an increased stringency (18% by 2030).
- Implementing SB 350, which expands the RPS to 50% RPS and doubles energy efficiency savings by 2030.
- California Sustainable Freight Action Plan, which improves freight system efficiency, utilizes near-zero emissions technology, and deployment of ZEV trucks.
- Implementing the proposed Short-Lived Climate Pollutant Strategy (SLPS), which focuses on reducing CH_4 and HCF emissions by 40% and anthropogenic black carbon emissions by 50% by year 2030.
- Continued implementation of SB 375.
- Post-2020 Cap-and-Trade Program that includes declining caps.
- 20% reduction in GHG emissions from refineries by 2030.
- Development of a Natural and Working Lands Action Plan to secure California's land base as a net carbon sink.

Note, however, that the *2017 Scoping Plan* acknowledges that:

> *"[a]chieving net zero increases in GHG emissions, resulting in no contribution to GHG impacts, may not be feasible or appropriate for every project, however, and the inability of a project to mitigate its GHG emissions to net zero does not imply the project results in a substantial contribution to the cumulatively significant environmental impact of climate change under CEQA."*

In addition to the statewide strategies listed above, the *2017 Scoping Plan* also identifies local governments as essential partners in achieving the State's long-term GHG reduction goals and identifies local actions to reduce GHG emissions. As part of the recommended actions, CARB recommends that local governments achieve a community-wide goal to achieve emissions of no more than 6 metric tons of CO_2e ($MTCO_2e$) or less per capita by 2030 and 2 $MTCO_2e$ or less per capita by 2050. For CEQA projects, CARB states that lead agencies may develop evidence-based bright-line numeric thresholds—consistent with the *2017 Scoping Plan* and the State's long-term GHG goals—and projects with emissions over that amount may be required to incorporate on-site design features and MMs that avoid or minimize project emissions to the degree feasible; or, a performance-based metric using a CAP or other plan to reduce GHG emissions is appropriate.

According to research conducted by the Lawrence Berkeley National Laboratory (LBNL) and supported by CARB, California, under its existing and proposed GHG reduction policies, could achieve the 2030 goals under SB 32. The research utilized a new, validated model known as the California LBNL GHG Analysis of Policies Spreadsheet (CALGAPS), which simulates GHG and criteria pollutant emissions in California from 2010 to 2050 in accordance to existing and future GHG-reducing policies. The CALGAPS model showed that by 2030, emissions could range from 211 to 428 $MTCO_2e$ per year ($MTCO_2e$/yr), indicating that "even if all modeled policies are not implemented, reductions could be sufficient to reduce emissions 40% below the 1990 level [of SB 32]." CALGAPS analyzed emissions through 2050 even though it did not generally account for

policies that might be put in place after 2030. Although the research indicated that the emissions would not meet the State's 80% reduction goal by 2050, various combinations of policies could allow California's cumulative emissions to remain very low through 2050 (38) (39).

CAP-AND-TRADE PROGRAM

The *2017 Scoping Plan* identifies a Cap-and-Trade Program as one of the key strategies for California to reduce GHG emissions. According to CARB, a cap-and-trade program will help put California on the path to meet its goal of achieving a 40% reduction in GHG emissions from 1990 levels by 2030. Under cap-and-trade, an overall limit on GHG emissions from capped sectors is established, and facilities subject to the cap will be able to trade permits to emit GHGs within the overall limit.

CARB adopted a California Cap-and-Trade Program pursuant to its authority under AB 32. The Cap-and-Trade Program is designed to reduce GHG emissions from regulated entities by more than 16% between 2013 and 2020, and by an additional 40% by 2030. The statewide cap for GHG emissions from the capped sectors (e.g., electricity generation, petroleum refining, and cement production) commenced in 2013 and will decline over time, achieving GHG emission reductions throughout the program's duration.

Covered entities that emit more than 25,000 $MTCO_2e$/yr must comply with the Cap-and-Trade Program. Triggering of the 25,000 $MTCO_2e$/yr "inclusion threshold" is measured against a subset of emissions reported and verified under the California Regulation for the Mandatory Reporting of GHG Emissions (Mandatory Reporting Rule or "MRR").

Under the Cap-and-Trade Program, CARB issues allowances equal to the total amount of allowable emissions over a given compliance period and distributes these to regulated entities. Covered entities are allocated free allowances in whole or part (if eligible), and may buy allowances at auction, purchase allowances from others, or purchase offset credits. Each covered entity with a compliance obligation is required to surrender "compliance instruments" for each $MTCO_2e$ of GHG they emit. There also are requirements to surrender compliance instruments covering 30% of the prior year's compliance obligation by November of each year (40).

The Cap-and-Trade Program provides a firm cap, which provides the highest certainty of achieving the 2030 target. An inherent feature of the Cap-and-Trade program is that it does not guarantee GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by CARB in the *First Update to the Climate Change Scoping Plan*:

> *"The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions*

is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative." (41)

The Cap-and-Trade Program covers approximately 80% of California's GHG emissions (37). The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the Program's first compliance period. The Cap-and-Trade Program covers the GHG emissions associated with the combustion of transportation fuels in California, whether refined in-state or imported.

2.7.3.2 EXECUTIVE ORDERS RELATED TO GHG EMISSIONS

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the state and guide the actions of state agencies.

EXECUTIVE ORDER S-3-05

California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce GHG emissions to 2000 levels.
- By 2020, reduce GHG emissions to 1990 levels.
- By 2050, reduce GHG emissions to 80% below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

EXECUTIVE ORDER S-01-07 (LCFS)

Governor Schwarzenegger signed Executive Order S-01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10% by 2020. CARB adopted the LCFS on April 23, 2009.

The LCFS was challenged in the U.S. District Court in Fresno in 2011. The court's ruling issued on December 29, 2011, included a preliminary injunction against CARB's implementation of the rule. The Ninth Circuit Court of Appeals stayed the injunction on April 23, 2012, pending final ruling on appeal, allowing CARB to continue to implement and enforce the regulation. The Ninth Circuit Court's decision, filed September 18, 2013, vacated the preliminary injunction. In essence, the court held that LCFS adopted by CARB were not in conflict with federal law. On August 8, 2013, the Fifth District Court of Appeal (California) ruled CARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for LCFS. In a partially published opinion, the Court of Appeal reversed the trial court's judgment and directed issuance of a writ

of mandate setting aside Resolution 09-31 and two executive orders of CARB approving LCFS regulations promulgated to reduce GHG emissions. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while CARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, CARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon intensity fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. On November 16, 2015, the Office of Administrative Law (OAL) approved the Final Rulemaking Package. The new LCFS regulation became effective on January 1, 2016.

In 2018, CARB approved amendments to the regulation, which included strengthening the carbon intensity benchmarks through 2030 in compliance with the SB 32 GHG emissions reduction target for 2030. The amendments included crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector (42).

EXECUTIVE ORDER S-13-08

Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the Order, the *2009 California Climate Adaptation Strategy* (*CNRA 2009*) was adopted, which is the "…first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

EXECUTIVE ORDER B-30-15

On April 29, 2015, Governor Brown issued an executive order to establish a California GHG reduction target of 40% below 1990 levels by 2030. The Governor's executive order aligned California's GHG reduction targets with those of leading international governments ahead of the U.N. Climate Change Conference in Paris late 2015. The Order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40% below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80% below 1990 levels by 2050 and directs CARB to update the *2017 Scoping Plan* to express the 2030 target in terms of $MMTCO_2e$. The Order also requires the state's climate adaptation plan to be updated every three years, and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this Order is not legally enforceable as to local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

- **EXECUTIVE ORDER B-55-18 AND SB 100**

- SB 100 and Executive Order B-55-18 were signed by Governor Brown on September 10, 2018. Under the existing RPS, 25% of retail sales of electricity are required to be from renewable sources by December 31, 2016, 33% by December 31, 2020, 40% by December 31, 2024, 45% by December 31, 2027, and 50% by December 31, 2030. SB 100 raises California's RPS requirement to 50% renewable resources target by December 31, 2026, and to achieve a 60% target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours (kWh) of those products sold to their retail end-use customers achieve 44% of retail sales by December 31, 2024, 52% by December 31, 2027, and 60% by December 31, 2030. In addition to targets under AB 32 and SB 32, Executive Order B-55-18 establishes a carbon neutrality goal for the state of California by 2045; and sets a goal to maintain net negative emissions thereafter. The Executive Order directs the California Natural Resources Agency (CNRA), California EPA (CalEPA), the California Department of Food and Agriculture (CDFA), and CARB to include sequestration targets in the Natural and Working Lands Climate Change Implementation Plan consistent with the carbon neutrality goal.

2.7.3.3 California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 CCR Sections 1601 et seq. – Appliance Efficiency Regulations

The Appliance Efficiency Regulations regulate the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. 23 categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles (RV) or other mobile equipment (CEC 2012).

Title 24 CCR Part 6 – California Energy Code

The California Energy Code was first adopted in 1978 in response to a legislative mandate to reduce California's energy consumption.

The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods.

Title 24 CCR Part 11 – California Green Building Standards Code

The California Green Building Standards Code (CALGreen) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect on January 1, 2009, and is administered by the California Building Standards Commission (CBSC).

CALGreen is updated on a regular basis, with the most recent approved update consisting of the 2019 California Green Building Code Standards that became effective January 1, 2020.

Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. CALGreen recognizes that many jurisdictions have developed existing construction waste and demolition ordinances and defers to them as the ruling guidance provided they establish a minimum 65% diversion requirement.

The code also provides exemptions for areas not served by construction waste and demolition recycling infrastructure. The State Building Code provides the minimum standard that buildings must meet in order to be certified for occupancy, which is generally enforced by the local building official.

Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas (GHG) emissions. The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020.

The 2019 Title 24 standards will result in less energy use, thereby reducing air pollutant emissions associated with energy consumption in the SCAB and across the State of California. For example, the 2019 Title 24 standards will require solar photovoltaic systems for new homes, establish requirements for newly constructed healthcare facilities, encourage demand responsive technologies for residential buildings, and update indoor and outdoor lighting requirements for nonresidential buildings.

The CEC anticipates that single-family homes built with the 2019 standards will use approximately 7% less energy compared to the residential homes built under the 2016 standards. Additionally, after implementation of solar photovoltaic systems, homes built under the 2019 standards will use about 53% less energy than homes built under the 2016 standards. Nonresidential buildings (such as the Project) will use approximately 30% less energy due to lighting upgrade requirements (19).

Because the Project will be constructed after January 1, 2020, the 2019 CALGreen standards are applicable to the Project and require, among other items (20):

- Short-term bicycle parking. If the new project or an additional alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5% of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility (5.106.4.1.2).
- Designated parking for clean air vehicles. In new projects or additions to alterations that add 10 or more vehicular parking spaces, provide designated parking for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).

- Electric vehicle (EV) charging stations. New construction shall facilitate the future installation of EV supply equipment. The compliance requires empty raceways for future conduit and documentation that the electrical system has adequate capacity for the future load. The number of spaces to be provided for is contained in Table 5.106. 5.3.3 (5.106.5.3).
- Outdoor light pollution reduction. Outdoor lighting systems shall be designed to meet the backlight, uplight and glare ratings per Table 5.106.8 (5.106.8).
- Construction waste management. Recycle and/or salvage for reuse a minimum of 65% of the nonhazardous construction and demolition waste in accordance with Section 5.408.1.1. 5.405.1.2, or 5.408.1.3; or meet a local construction and demolition waste management ordinance, whichever is more stringent (5.408.1).
- Excavated soil and land clearing debris. 100% of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed (5.408.3).
- Recycling by Occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive (5.410.1).
- Water conserving plumbing fixtures and fittings. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:
  - Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush (5.303.3.1)
  - Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush (5.303.3.2.1). The effective flush volume of floor- mounted or other urinals shall not exceed 0.5 gallons per flush (5.303.3.2.2).
  - Showerheads. Single showerheads shall have a minimum flow rate of not more than 1.8 gallons per minute and 80 psi (5.303.3.3.1). When a shower is served by more than one showerhead, the combine flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi (5.303.3.3.2).
  - Faucets and fountains. Nonresidential lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi (5.303.3.4.1). Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute of 60 psi (5.303.3.4.2). Wash fountains shall have a maximum flow rate of not more than 1.8 gallons per minute (5.303.3.4.3). Metering faucets shall not deliver more than 0.20 gallons per cycle (5.303.3.4.4). Metering faucets for wash fountains shall have a maximum flow rate not more than 0.20 gallons per cycle (5.303.3.4.5).
- Outdoor potable water use in landscaped areas. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent (5.304.1).

- Water meters. Separate submeters or metering devices shall be installed for new buildings or additions in excess of 50,000 sf or for excess consumption where any tenant within a new building or within an addition that is project to consume more than 1,000 gallons per day (GPD) (5.303.1.1 and 5.303.1.2).
- Outdoor water use in rehabilitated landscape projects equal or greater than 2,500 sf. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 2,500 sf requiring a building or landscape permit (5.304.3).
- Commissioning. For new buildings 10,000 sf and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements (5.410.2).

CARB REFRIGERANT MANAGEMENT PROGRAM

CARB adopted a regulation in 2009 to reduce refrigerant GHG emissions from stationary sources through refrigerant leak detection and monitoring, leak repair, system retirement and retrofitting, reporting and recordkeeping, and proper refrigerant cylinder use, sale, and disposal. The regulation is set forth in sections 95380 to 95398 of Title 17, CCR. The rules implementing the regulation establish a limit on statewide GHG emissions from stationary facilities with refrigeration systems with more than 50 lbs of a high GWP refrigerant. The refrigerant management program is designed to (1) reduce emissions of high-GWP GHG refrigerants from leaky stationary, non-residential refrigeration equipment; (2) reduce emissions from the installation and servicing of refrigeration and air-conditioning appliances using high-GWP refrigerants; and (3) verify GHG emission reductions.

TRACTOR-TRAILER GHG REGULATION

The tractors and trailers subject to this regulation must either use EPA SmartWay certified tractors and trailers or retrofit their existing fleet with SmartWay verified technologies. The regulation applies primarily to owners of 53-foot or longer box-type trailers, including both dry-van and refrigerated-van trailers, and owners of the HD tractors that pull them on California highways. These owners are responsible for replacing or retrofitting their affected vehicles with compliant aerodynamic technologies and low rolling resistance tires. Sleeper cab tractors MY 2011 and later must be SmartWay certified. All other tractors must use SmartWay verified low rolling resistance tires. There are also requirements for trailers to have low rolling resistance tires and aerodynamic devices.

PHASE I AND 2 HEAVY-DUTY VEHICLE GHG STANDARDS

In September 2011, CARB has adopted a regulation for GHG emissions from HDTs and engines sold in California. It establishes GHG emission limits on truck and engine manufacturers and harmonizes with the EPA rule for new trucks and engines nationally. Existing HD vehicle regulations in California include engine criteria emission standards, tractor-trailer GHG requirements to implement SmartWay strategies (i.e., the Heavy-Duty Tractor-Trailer GHG Regulation), and in-use fleet retrofit requirements such as the Truck and Bus Regulation. The EPA rule has compliance requirements for new compression and spark ignition engines, as well as trucks from Class 2b through Class 8. Compliance requirements began with MY 2014 with

stringency levels increasing through MY 2018. The rule organizes truck compliance into three groupings, which include a) HD pickups and vans; b) vocational vehicles; and c) combination tractors. The EPA rule does not regulate trailers.

CARB staff has worked jointly with the EPA and the NHTSA on the next phase of federal GHG emission standards for medium-duty trucks (MDT) and HDT vehicles, called federal Phase 2. The federal Phase 2 standards were built on the improvements in engine and vehicle efficiency required by the Phase 1 emission standards and represent a significant opportunity to achieve further GHG reductions for 2018 and later MY HDT vehicles, including trailers. The EPA and NHTSA have proposed to roll back GHG and fuel economy standards for cars and light-duty trucks, which suggests a similar rollback of Phase 2 standards for MDT and HDT vehicles may be pursued.

SB 97 AND THE CEQA GUIDELINES UPDATE

Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research (OPR) shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the OPR pursuant to subdivision (a)."

In 2012, Public Resources Code Section 21083.05 was amended to state:

> *"The Office of Planning and Research and the Natural Resources Agency shall periodically update the guidelines for the mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption, to incorporate new information or criteria established by the State Air Resources Board pursuant to Division 25.5 (commencing with Section 38500) of the Health and Safety Code."*

On December 28, 2018, the Natural Resources Agency announced the OAL approved the amendments to the *CEQA Guidelines* for implementing CEQA. The CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing *CEQA Guidelines* to reference climate change.

Section 15064.4 was added the *CEQA Guidelines* and states that in determining the significance of a project's GHG emissions, the lead agency should focus its analysis on the reasonably foreseeable incremental contribution of the project's emissions to the effects of climate change. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national or global emissions. The agency's analysis should consider a timeframe that is appropriate for the project. The agency's analysis also must reasonably reflect evolving scientific knowledge and state regulatory schemes. Additionally, a lead agency may use a model or methodology to estimate GHG emissions resulting from a project. The lead agency has 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. The lead agency must support its selection of a model or methodology with substantial evidence. The lead agency should explain the limitations of the particular model or methodology selected for use (43).

2.7.4 REGIONAL

The project is within the SCAB, which is under the jurisdiction of the SCAQMD.

SCAQMD

SCAQMD is the agency responsible for air quality planning and regulation in the SCAB. The SCAQMD addresses the impacts to climate change of projects subject to SCAQMD permit as a lead agency if they are the only agency having discretionary approval for the project and acts as a responsible agency when a land use agency must also approve discretionary permits for the project. The SCAQMD acts as an expert commenting agency for impacts to air quality. This expertise carries over to GHG emissions, so the agency helps local land use agencies through the development of models and emission thresholds that can be used to address GHG emissions.

In 2008, SCAQMD formed a Working Group to identify GHG emissions thresholds for land use projects that could be used by local lead agencies in the SCAB. The Working Group developed several different options that are contained in the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, that could be applied by lead agencies. The working group has not provided additional guidance since release of the interim guidance in 2008. The SCAQMD Board has not approved the thresholds; however, the Guidance Document provides substantial evidence supporting the approaches to significance of GHG emissions that can be considered by the lead agency in adopting its own threshold. The current interim thresholds consist of the following tiered approach:

- Tier 1 consists of evaluating whether or not the project qualifies for any applicable exemption under CEQA.
- Tier 2 consists of determining whether the project is consistent with a GHG reduction plan. If a project is consistent with a qualifying local GHG reduction plan, it does not have significant GHG emissions.
- Tier 3 consists of screening values, which the lead agency can choose, but must be consistent with all projects within its jurisdiction. A project's construction emissions are averaged over 30 years and are added to the project's operational emissions. If a project's emissions are below one of the following screening thresholds, then the project is less than significant:
    - Residential and commercial land use: 3,000 $MTCO_2e/yr$
    - Industrial land use: 10,000 $MTCO_2e/yr$
    - Based on land use type: residential: 3,500 $MTCO_2e/yr$; commercial: 1,400 $MTCO_2e/yr$; or mixed use: 3,000 $MTCO_2e/yr$
- Tier 4 has the following options:
    - Option 1: Reduce Business-as-Usual (BAU) emissions by a certain percentage; this percentage is currently undefined.

  - Option 2: Early implementation of applicable AB 32 Scoping Plan measures
  - Option 3: 2020 target for service populations (SP), which includes residents and employees: 4.8 $MTCO_2e$ per SP per year for projects and 6.6 $MTCO_2e$ per SP per year for plans;
  - Option 3, 2035 target: 3.0 $MTCO_2e$ per SP per year for projects and 4.1 $MTCO_2e$ per SP per year for plans
- Tier 5 involves mitigation offsets to achieve target significance threshold.

The SCAQMD's interim thresholds used the Executive Order S-3-05-year 2050 goal as the basis for the Tier 3 screening level. Achieving the Executive Order's objective would contribute to worldwide efforts to cap CO_2 concentrations at 450 ppm, thus stabilizing global climate.

SCAQMD only has authority over GHG emissions from development projects that include air quality permits. At this time, it is unknown if the project would include stationary sources of emissions subject to SCAQMD permits. Notwithstanding, if the Project requires a stationary permit, it would be subject to the applicable SCAQMD regulations.

SCAQMD Regulation XXVII, adopted in 2009 includes the following rules:

- Rule 2700 defines terms and post global warming potentials.
- Rule 2701, SoCal Climate Solutions Exchange, establishes a voluntary program to encourage, quantify, and certify voluntary, high quality certified GHG emission reductions in the SCAQMD.
- Rule 2702, GHG Reduction Program created a program to produce GHG emission reductions within the SCAQMD. The SCAQMD will fund projects through contracts in response to requests for proposals or purchase reductions from other parties.

WESTERN RIVERSIDE COUNCIL OF GOVERNMENTS

The City of Wildomar is a participant in the Western Riverside Council of Government's (WRCOG) Climate Action Plan (CAP). In order to aggressively address the threats of global climate change, the WRCOG has prepared a CAP, which provides a framework for reducing GHG emissions and managing resources to best prepare for a changing climate (44). The CAP establishes a community-wide emissions reduction target of 15% below 2010, based on guidance from CARB and OPR. The CAP recommends GHG emissions targets that are consistent to the reduction targets of the State of California and presents a number of strategies that will make it possible for the City to meet the recommended targets. Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the CAP would have a less than significant impact on climate change.

It should be noted that the WRCOG will be providing an update to the CAP. The CAP Update will include a comprehensive update to GHG inventories and GHG emissions reduction strategies for all sectors and establishes GHG targets for the years 2030 and 2050 for all WRCOG member jurisdictions. It is anticipated that the CAP Update will be complete by June 2021.

2.8 DISCUSSION ON ESTABLISHMENT OF SIGNIFICANCE THRESHOLDS

The City of Wildomar has not adopted its own numeric threshold of significance for determining impacts with respect to GHG emissions. A screening threshold of 3,000 $MTCO_2e$/yr to determine if additional analysis is required is an acceptable approach for small projects. This approach is a widely accepted screening threshold used by the City of Riverside and numerous cities in the SCAB and is based on the SCAQMD staff's proposed GHG screening threshold for stationary source emissions for non-industrial projects, as described in the SCAQMD's *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans* ("SCAQMD Interim GHG Threshold"). The SCAQMD Interim GHG Threshold identifies a screening threshold to determine whether additional analysis is required (45). As noted by the SCAQMD:

> *"…the…screening level for stationary sources is based on an emission capture rate of 90 percent for all new or modified projects...the policy objective of [SCAQMD's] recommended interim GHG significance threshold proposal is to achieve an emission capture rate of 90 percent of all new or modified stationary source projects. A GHG significance threshold based on a 90 percent emission capture rate may be more appropriate to address the long-term adverse impacts associated with global climate change because most projects will be required to implement GHG reduction measures. Further, a 90 percent emission capture rate sets the emission threshold low enough to capture a substantial fraction of future stationary source projects that will be constructed to accommodate future statewide population and economic growth, while setting the emission threshold high enough to exclude small projects that will in aggregate contribute a relatively small fraction of the cumulative statewide GHG emissions. This assertion is based on the fact that [SCAQMD] staff estimates that these GHG emissions would account for slightly less than one percent of future 2050 statewide GHG emissions target (85 [$MMTCO_2e$/yr]). In addition, these small projects may be subject to future applicable GHG control regulations that would further reduce their overall future contribution to the statewide GHG inventory. Finally, these small sources are already subject to [Best Available Control Technology] (BACT) for criteria pollutants and are more likely to be single-permit facilities, so they are more likely to have few opportunities readily available to reduce GHG emissions from other parts of their facility."* (45)

Thus, and based on guidance from the SCAQMD, if a non-industrial project would emit GHGs less than 3,000 $MTCO_2e$/yr, the project is not considered a substantial GHG emitter and the GHG impact is less than significant, requiring no additional analysis and no mitigation. On the other hand, if a non-industrial project would emit GHGs in excess of 3,000 $MTCO_2e$/yr, then the project could be considered a substantial GHG emitter, requiring additional analysis and potential mitigation.

As previously discussed, a screening threshold of 3,000 $MTCO_2e$/yr is an acceptable approach for small projects to determine if additional analysis is required and is therefore applied for this Project.

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3 PROJECT GHG IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will result in a significant GHG impact. The significance of these potential impacts is described in the following sections.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related GHG impacts are taken from the Initial Study Checklist in Appendix G of the State *CEQA Guidelines* (14 CCR of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to GHG if it would (1):

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?

3.3 MODELS EMPLOYED TO ANALYZE GHGS

3.3.1 CALIFORNIA EMISSIONS ESTIMATOR MODEL (CALEEMOD)

On October 17, 2017, the SCAQMD, in conjunction with the California Air Pollution Control Officers Association (CAPCOA) and other California air districts, released the latest version of the CalEEMod Version 2016.3.2. The purpose of this model is to calculate construction-source and operational-source criteria pollutants and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (46). Accordingly, the latest version of CalEEMod has been used for this Project to determine GHG emissions. Output from the model runs for construction and operational activity are provided in Appendix 3.1. CalEEMod includes GHG emissions from the following source categories: construction, area, energy, mobile, waste, water.

3.3.2 EMFAC2017 EMISSION RATES

On August 19, 2019, the EPA approved the 2017 version of the EMissions FACtor model (EMFAC) web database for use in State Implementation Plan and transportation conformity analyses. EMFAC2017 is a mathematical model that was developed to calculate emission rates, fuel consumption, VMT from motor vehicles that operate on highways, freeways, and local roads in California and is commonly used by CARB to project changes in future emissions from on-road mobile sources (47). This GHGA utilizes annual EMFAC2017 emission factors in order to derive vehicle emissions associated with Project operational activities.

Because the EMFAC2017 emission rates are associated with vehicle fuel types while CalEEMod vehicle emission factors are aggregated to include all fuel types for each individual vehicle class, the EMFAC2017 emission rates for different fuel types of a vehicle class are averaged by activity

or by population and activity to derive CalEEMod emission factors. The equations applied to obtain CalEEMod vehicle emission factors for each emission type are detailed in CalEEMod User's Guide *Appendix A: Calculation Details for CalEEMod* (48).

3.4 LIFE-CYCLE ANALYSIS NOT REQUIRED

A full life-cycle analysis (LCA) for construction and operational activity is not included in this analysis due to the lack of consensus guidance on LCA methodology at this time (49). Life-cycle analysis (i.e., assessing economy-wide GHG emissions from the processes in manufacturing and transporting all raw materials used in the Project development, infrastructure and on-going operations) depends on emission factors or econometric factors that are not well established for all processes. At this time, an LCA would be extremely speculative and thus has not been prepared.

Additionally, the SCAQMD recommends analyzing direct and indirect project GHG emissions generated within California and not life-cycle emissions because the life-cycle effects from a project could occur outside of California, might not be very well understood or documented, and would be challenging to mitigate (50). Additionally, the science to calculate life cycle emissions is not yet established or well defined; therefore, SCAQMD has not recommended, and is not requiring, life-cycle emissions analysis.

3.5 CONSTRUCTION EMISSIONS

Project construction actvities would generate CO_2 and CH_4 emissions The report *Monte Vista Ranch Air Quality Impact Analysis Report* (AQIA) contains detailed information regarding Project construction activities (51). As discussed in the AQIA, Construction related emissions are expected from the following construction activities:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

3.5.1 CONSTRUCTION DURATION

Construction is expected to commence in July 2021 and will last through July 2022. The construction schedule utilized in the analysis, shown in Table 3-1, represents a "worst-case" analysis scenario should construction occur any time after the respective dates since emission factors for construction decrease as time passes and the analysis year increases due to emission regulations becoming more stringent[4]. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per *CEQA Guidelines* (52).

[4] As shown in the CalEEMod User's Guide Version 2016.3.2, Section 4.3 "OFFROAD Equipment" as the analysis year increases, emission factors for the same equipment pieces decrease due to the natural turnover of older equipment being replaced by newer less polluting equipment and new regulatory requirements.

TABLE 3-1: CONSTRUCTION DURATION

Phase Name	Start Date	End Date	Days
Site Preparation	07/01/2021	07/07/2021	5
Grading	07/08/2021	07/19/2021	8
Building Construction	07/20/2021	06/06/2022	230
Paving	06/07/2022	06/30/2022	18
Architectural Coating	07/01/2022	07/26/2022	18

3.5.2 CONSTRUCTION EQUIPMENT

The construction equipment fleet was based on CalEEMod defaults and confirmed with the Project Applicant. A summary of construction equipment assumptions by phase is provided at Table 3-2.

Consistent with industry standards and typical construction practices, each piece of equipment listed in Table 3-2 will operate up to a total of eight (8) hours per day, or more than two-thirds of the period during which construction activities are allowed pursuant to the code.

TABLE 3-2: CONSTRUCTION EQUIPMENT ASSUMPTIONS

Phase Name	Equipment	Amount	Hours Per Day
Site Preparation	Crawler Tractors	4	8
	Rubber Tired Dozers	3	8
Grading	Crawler Tractors	3	8
	Excavators	1	8
	Graders	1	8
	Rubber Tired Dozers	1	8
Building Construction	Cranes	1	8
	Forklifts	3	8
	Generator Sets	1	8
	Tractors/Loaders/Backhoes	3	8
	Welders	1	8
Paving	Pavers	2	8
	Paving Equipment	2	8
	Rollers	2	8
Architectural Coating	Air Compressors	1	8

3.5.3 CONSTRUCTION EMISSIONS SUMMARY

For construction phase Project emissions, GHGs are quantified and amortized over the life of the Project. To amortize the emissions over the life of the Project, the SCAQMD recommends calculating the total GHG emissions for the construction activities, dividing it by a 30-year Project life then adding that number to the annual operational phase GHG emissions (53). As such, construction emissions were amortized over a 30-year period and added to the annual operational phase GHG emissions. The amortized construction emissions are presented in Table 3-3.

TABLE 3-3: AMORTIZED ANNUAL CONSTRUCTION EMISSIONS

Year	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e[5]
2021	253.36	0.05	0.00	254.58
2022	231.94	0.04	0.00	233.01
Total GHG Emissions	485.30	0.09	0.00	487.59
Amortized Construction Emissions ($MTCO_2e$)	**16.18**	**0.00**	**0.00**	**16.25**

Source CalEEMod annual construction-source emissions is presented in Appendix 3.1.

3.6 OPERATIONAL EMISSIONS

Operational activities associated with the Project will result in emissions of CO_2, CH_4, and N_2O from the following primary sources:

- Area Source Emissions
- Energy Source Emissions
- Mobile Source Emissions
- Water Supply, Treatment, and Distribution
- Solid Waste

3.6.1 AREA SOURCE EMISSIONS

LANDSCAPE MAINTENANCE EQUIPMENT

Landscape maintenance equipment would generate emissions from fuel combustion and evaporation of unburned fuel. Equipment in this category would include lawnmowers, shedders/grinders, blowers, trimmers, chain saws, and hedge trimmers used to maintain the landscaping of the Project. The emissions associated with landscape maintenance equipment were calculated based on assumptions provided in CalEEMod.

[5] CalEEMod reports the most common GHGs emitted which include CO_2, CH_4, and N_2O. These GHGs are then converted into the CO_2e by multiplying the individual GHG by the GWP.

3.6.2 ENERGY SOURCE EMISSIONS

Electricity and natural gas are used by almost every project. Criteria pollutant emissions are emitted through the generation of electricity and consumption of natural gas.

INTEGRATED ENERGY POLICY REPORT

Project building operations and Project site maintenance activities would result in the consumption of natural gas and electricity. Natural gas would be supplied to the Project by Southern California Gas and electricity would be supplied to the Project by Southern California Edison (SCE).

The intensity factors for CO_2, CH_4, and N_2O used for the Project were modified to account for the RPS requirement for 2020. The emissions factors presented herein has been calculated using linear trajectory to reach the 50% project RPS consistent with SB 32 and SB 350 for 2023.

TITLE 24 ENERGY EFFICIENCY STANDARDS

The 2019 version of Title 24 was adopted by the CEC and became effective on January 1, 2020. As such, the analysis herein assumes compliance with the 2019 Title 24 Standards because the Project will be constructed after January 1, 2020. The CalEEMod defaults for Title 24 – Electricity and Lighting Energy were reduced by 53% in order to reflect consistency with the 2019 Title 24 standard.

3.6.3 MOBILE SOURCE EMISSIONS

The Project related operational GHG emissions derive primarily from vehicle trips generated by the Project. Trip characteristics available from the TA report were utilized in this analysis. Per the TA, the Project would generate a total of approximately 476 two-way vehicular trips per day (238 trips inbound and 238 trips outbound) (13).

It should be noted that CalEEMod has different trip rates for different days of the week. In order to accurately determine mobile-source emission from vehicle activity generated by the proposed Project, the CalEEMod default trip rates were adjusted for weekday, Saturday, and Sunday utilizing the trip rates used in this analysis are based on the trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition, 2017) (54).

3.6.4 WATER SUPPLY, TREATMENT AND DISTRIBUTION

Indirect GHG emissions result from the production of electricity used to convey, treat and distribute water and wastewater. The amount of electricity required to convey, treat and distribute water depends on the volume of water as well as the sources of the water. Unless otherwise noted, CalEEMod default parameters were used.

3.6.5 SOLID WASTE

The proposed Project would result in the generation and disposal of solid waste. A percentage of this waste will be diverted from landfills by a variety of means, such as reducing the amount of

waste generated, recycling, and/or composting. The remainder of the waste not diverted will be disposed of at a landfill. GHG emissions from landfills are associated with the anaerobic breakdown of material. GHG emissions associated with the disposal of solid waste associated with the proposed Project were calculated by CalEEMod using default parameters.

3.6.6 EMISSIONS SUMMARY

The annual GHG emissions associated with the operation of the proposed Project are summarized in Table 3-4. As shown in Table 3-4, construction and operation of the Project would generate a net total of approximately 813.05 $MTCO_2e$/yr.

TABLE 3-4: PROJECT GHG EMISSIONS

Emission Source	Emissions (MT/yr)			
	CO_2	CH_4	N_2O	Total CO_2e
Annual construction-related emissions amortized over 30 years	16.18	0.00	0.00	16.25
Area Source	16.71	1.36E-03	2.90E-04	16.83
Energy Source	106.41	3.62E-03	1.30E-03	106.89
Mobile Source	630.41	0.02	0.00	631.01
Waste	6.07	0.36	0.00	15.04
Water Usage	22.53	0.14	3.45E-03	27.03
Total CO_2e (All Sources)	**813.05**			

Source CalEEMod annual operational-source emissions is presented in Appendix 3.1.

3.7 GHG EMISSIONS FINDINGS AND RECOMMENDATIONS

3.7.1 GHG IMPACT 1

Potential to generate direct or indirect GHG emissions that would result in a significant impact on the environment.

As shown on Table 3-4, the Project will result in a net total of approximately 813.05 $MTCO_2$/yr; the proposed Project would not exceed the SCAQMD/City's screening threshold of 3,000 $MTCO_2e$/yr. Thus, the Project would not have the potential to result in a cumulatively considerable impact with respect to GHG emissions. As such, a less than significant impact is expected.

The Project would not have the potential generate GHG emissions either directly or indirectly that would result in a significant impact on the environment.

3.7.2 GHG IMPACT 2

The Project would have the potential to conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

As previously stated, pursuant to 15604.4 of the CEQA Guidelines, a lead agency may rely on qualitative analysis or performance-based standards to determine the significance of impacts from GHG emissions (43). As such, the Project's consistency with SB 32 (2017 Scoping Plan), is discussed below. It should be noted that the Project's consistency with the 2017 Scoping Plan also satisfies consistency with AB 32 since the 2017 Scoping Plan is based on the overall targets established by AB 32. Consistency with the 2008 Scoping Plan is not necessary, since the target year for the 2008 Scoping Plan was 2020, and the Project's buildout year is anticipated to be after 2020, the 2008 Scoping Plan does not apply and consistency with the 2017 Scoping Plan is relevant.

SB 32/2017 SCOPING PLAN CONSISTENCY

The 2017 Scoping Plan Update reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. Table 3-5 summarizes the Project's consistency with the 2017 Scoping Plan. As summarized, the Project will not conflict with any of the provisions of the Scoping Plan and in fact supports seven of the action categories.

TABLE 3-5: 2017 SCOPING PLAN CONSISTENCY SUMMARY[6]

Action	Responsible Parties	Consistency
Implement SB 350 by 2030		
Increase the Renewables Portfolio Standard to 50% of retail sales by 2030 and ensure grid reliability.	CPUC, CEC, CARB	Consistent. The Project would use energy from Southern California Edison (SCE). SCE has committed to diversify its portfolio of energy sources by increasing energy from wind and solar sources. The Project would not interfere with or obstruct SCE energy source diversification efforts.
Establish annual targets for statewide energy efficiency savings and demand reduction that will achieve a cumulative doubling of statewide energy efficiency savings in electricity and natural gas end uses by 2030.		Consistent. The Project would be constructed in compliance with current California Building Code requirements. Specifically, new buildings must achieve compliance with 2019 Building and Energy Efficiency Standards and the 2019 California Green Building Standards requirements. The proposed Project includes energy efficient field lighting and fixtures that meet the current Title 24 Standards throughout the Project Site and would be a modern development with energy efficient boilers, heaters, and air conditioning systems.

[6] Measures can be found at the following link: https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf.

Action	Responsible Parties	Consistency
Reduce GHG emissions in the electricity sector through the implementation of the above measures and other actions as modeled in Integrated Resource Planning (IRP) to meet GHG emissions reductions planning targets in the IRP process. Load-serving entities and publicly- owned utilities meet GHG emissions reductions planning targets through a combination of measures as described in IRPs.		Consistent. The Project would be constructed in compliance with current California Building Code requirements. Specifically, new buildings must achieve compliance with 2019 Building and Energy Efficiency Standards and the 2019 California Green Building Standards requirements. The proposed Project includes energy efficient field lighting and fixtures that meet the current Title 24 Standards throughout the Project Site and would be a modern development with energy efficient boilers, heaters, and air conditioning systems.
Implement Mobile Source Strategy (Cleaner Technology and Fuels)		
At least 1.5 million zero emission and plug-in hybrid light-duty EV by 2025.	CARB, California State Transportation Agency (CalSTA), Strategic Growth Council (SGC), California Department of Transportation (Caltrans), CEC, OPR, Local Agencies	Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB zero emission and plug-in hybrid light-duty EV 2025 targets. As this is a CARB enforced standard, vehicles that access the Project are required to comply with the standards and will therefore comply with the strategy.
At least 4.2 million zero emission and plug-in hybrid light-duty EV by 2030.		Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB zero emission and plug-in hybrid light-duty EV 2030 targets. As this is a CARB enforced standard, vehicles that access the Project are required to comply with the standards and will therefore comply with the strategy.
Further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean cars regulations.		Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB efforts to further increase GHG stringency on all light-duty vehicles beyond existing Advanced Clean cars regulations. As this is a CARB enforced standard, vehicles that access the Project are required to comply with the standards and will therefore comply with the strategy.

Action	Responsible Parties	Consistency
Medium- and Heavy-Duty GHG Phase 2.		Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB efforts to implement Medium- and Heavy-Duty GHG Phase 2. As this is a CARB enforced standard, vehicles that access the Project are required to comply with the standards and will therefore comply with the strategy.
Innovative Clean Transit: Transition to a suite of to-be-determined innovative clean transit options. Assumed 20% of new urban buses purchased beginning in 2018 will be zero emission buses with the penetration of zero-emission technology ramped up to 100% of new sales in 2030. Also, new natural gas buses, starting in 2018, and diesel buses, starting in 2020, meet the optional heavy-duty low-NO_X standard.		Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB efforts improve transit-source emissions.
Last Mile Delivery: New regulation that would result in the use of low NO_X or cleaner engines and the deployment of increasing numbers of zero-emission trucks primarily for class 3-7 last mile delivery trucks in California. This measure assumes ZEVs comprise 2.5% of new Class 3–7 truck sales in local fleets starting in 2020, increasing to 10% in 2025 and remaining flat through 2030.		Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB efforts to improve last mile delivery emissions.
Further reduce VMT through continued implementation of SB 375 and regional Sustainable Communities Strategies; forthcoming statewide implementation of SB 743; and potential additional VMT reduction strategies not specified in the Mobile Source Strategy but included in the document "Potential VMT Reduction Strategies for Discussion."		Consistent. This Project would not obstruct or interfere with implementation of SB 375 and would therefore not conflict with this measure.
Increase stringency of SB 375 Sustainable Communities Strategy (2035 targets).	CARB	Consistent. This is a CARB Mobile Source Strategy. The Project would not obstruct or interfere with CARB efforts to Increase

Action	Responsible Parties	Consistency
		stringency of SB 375 Sustainable Communities Strategy (2035 targets).
Harmonize project performance with emissions reductions and increase competitiveness of transit and active transportation modes (e.g. via guideline documents, funding programs, project selection, etc.).	CalSTA, SGC, OPR, CARB, Governor's Office of Business and Economic Development (GO-Biz), California Infrastructure and Economic Development Bank (IBank), Department of Finance (DOF), California Transportation Commission (CTC), Caltrans	Consistent. Although this is directed towards CARB and Caltrans, the proposed Project would be designed to promote and support pedestrian activity on-site and in the Project Site area.
By 2019, develop pricing policies to support low-GHG transportation (e.g. low-emission vehicle zones for heavy duty, road user, parking pricing, transit discounts).	CalSTA, Caltrans, CTC, OPR, SGC, CARB	Consistent. The Project would not obstruct or interfere with agency efforts to develop pricing policies to support low-GHG transportation.
Implement California Sustainable Freight Action Plan		
Improve freight system efficiency.	CalSTA, CalEPA, CNRA, CARB, Caltrans, CEC, GO-Biz	Consistent. This measure would apply to all trucks accessing the Project site, this may include existing trucks or new trucks that are part of the statewide goods movement sector.
Deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize both zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.		Consistent. The Project would not obstruct or interfere with agency efforts to deploy over 100,000 freight vehicles and equipment capable of zero emission operation and maximize both zero and near-zero emission freight vehicles and equipment powered by renewable energy by 2030.

Action	Responsible Parties	Consistency
Adopt a Low Carbon Fuel Standard with a Carbon Intensity reduction of 18%.	CARB	Consistent. When adopted, this measure would apply to all fuel purchased and used by the Project in the state. The Project would not obstruct or interfere with agency efforts to adopt a Low Carbon Fuel Standard with a Carbon Intensity reduction of 18%.
Implement the Short-Lived Climate Pollutant Strategy (SLPS) by 2030		
40% reduction in CH_4 and hydrofluorocarbon emissions below 2013 levels.	CARB, CalRecycle, CDFA, SWRCB, Local Air Districts	Consistent. The Project would be required to comply with this measure and reduce any Project-source SLPS emissions accordingly. The Project would not obstruct or interfere agency efforts to reduce SLPS emissions.
50% reduction in black carbon emissions below 2013 levels.		
By 2019, develop regulations and programs to support organic waste landfill reduction goals in the SLCP and SB 1383.	CARB, CalRecycle, CDFA SWRCB, Local Air Districts	Consistent. The Project would implement waste reduction and recycling measures consistent with State and County requirements. The Project would not obstruct or interfere agency efforts to support organic waste landfill reduction goals in the SLCP and SB 1383.
Implement the post-2020 Cap-and-Trade Program with declining annual caps.	CARB	Consistent. The Project would be required to comply with any applicable Cap-and-Trade Program provisions. The Project would not obstruct or interfere agency efforts to implement the post-2020 Cap-and-Trade Program.
By 2018, develop Integrated Natural and Working Lands Implementation Plan to secure California's land base as a net carbon sink		
Protect land from conversion through conservation easements and other incentives.	CNRA, Departments Within CDFA, CalEPA, CARB	Consistent. The Project would not obstruct or interfere agency efforts to protect land from conversion through conservation easements and other incentives.

Action	Responsible Parties	Consistency
Increase the long-term resilience of carbon storage in the land base and enhance sequestration capacity.		Consistent. The Project site is vacant disturbed property and does not comprise an area that would effectively provide for carbon sequestration. The Project would not obstruct or interfere agency efforts to increase the long-term resilience of carbon storage in the land base and enhance sequestration capacity.
Utilize wood and agricultural products to increase the amount of carbon stored in the natural and built environments.		Consistent. Where appropriate, Project designs will incorporate wood or wood products. The Project would not obstruct or interfere agency efforts to encourage use of wood and agricultural products to increase the amount of carbon stored in the natural and built environments.
Establish scenario projections to serve as the foundation for the Implementation Plan.		Consistent. The Project would not obstruct or interfere agency efforts to establish scenario projections to serve as the foundation for the Implementation Plan.
Establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018.	CARB	Consistent. The Project would not obstruct or interfere agency efforts to establish a carbon accounting framework for natural and working lands as described in SB 859 by 2018.
Implement Forest Carbon Plan	CNRA, California Department of Forestry and Fire Protection (CAL FIRE), CalEPA and Departments Within	Consistent. The Project would not obstruct or interfere agency efforts to implement the Forest Carbon Plan.
Identify and expand funding and financing mechanisms to support GHG reductions across all sectors.	State Agencies & Local Agencies	Consistent. The Project would not obstruct or interfere agency efforts to identify and expand funding and financing mechanisms to support GHG reductions across all sectors.

As shown above, the Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly to the Project. Further, recent studies show that the State's existing and proposed regulatory framework will allow the State to reduce its GHG emissions level to 40% below 1990 levels by 2030 (38).

CONSISTENCY WITH WRCOG SUBREGIONAL CAP

The City of Wildomar is a participant in the WRCOG Subregional CAP. The specific goals and actions that are applicable to the proposed Project include those pertaining to energy and water use reduction, promotion of green building measures, waste reduction, and reduction in vehicle miles traveled. Projects that demonstrate consistency with the strategies, actions, and emission reduction targets contained in the CAP would have a less than significant impact on climate change. The proposed Project would be required to include all mandatory green building measures for new developments under the CALGreen Code, which would require that the new buildings reduce water consumption, employ building commissioning to increase building system materials. In addition, the City's requires that all landscaping comply with water efficient landscaping requirements. The implementation of these stricter building and appliance standards would result in water, energy, and construction waste reductions for the proposed Project. The proposed Project will be compliant with the goal and objectives set forth in the WRCOG's Subregional CAP with implementation of applicable requirements of California building Code Title 24 and the CALGreen Code.

The Project would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

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5 CERTIFICATIONS

The contents of this GHG study report represent an accurate depiction of the GHG impacts associated with the proposed Monte Vista Ranch Project. The information contained in this GHG report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at hqureshi@urbanxroads.com.

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EDUCATION

Master of Science in Environmental Studies
California State University, Fullerton • May, 2010

Bachelor of Arts in Environmental Analysis and Design
University of California, Irvine • June, 2006

PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Planned Communities and Urban Infill – Urban Land Institute • June 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April 2008
Principles of Ambient Air Monitoring – CARB • August 2007
AB2588 Regulatory Standards – Trinity Consultants • November 2006
Air Dispersion Modeling – Lakes Environmental • June 2006

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APPENDIX 3.1:

CALEEMOD PROJECT CONSTRUCTION AND OPERATIONAL EMISSIONS MODEL OUTPUTS

Monte Vista Ranch

Riverside-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	39.93	1000sqft	0.92	39,932.00	0
Parking Lot	158.00	Space	1.42	63,200.00	0
Apartments Low Rise	65.00	Dwelling Unit	2.66	65,000.00	186

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.4	**Precipitation Freq (Days)**	28
Climate Zone	10			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	550.81	**CH4 Intensity (lb/MWhr)**	0.023	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Intensity factors adjusted to reflect the RPS for the 2023 Opening Year

Land Use - Total Project Area is +/- 5 acres

Construction Phase -

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Hours are based on an 8-hour workday

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Off-road Equipment -

Off-road Equipment - Crawler Tractors used in lieu of Tractors/Loaders/Backhoes

Trips and VMT - CalEEMod only assumes Vendor Trips during Building Construction. The CalEEMod default trips were ratioed and rounded up between each phase based on the number of days.

Grading - It is assumed that up to 5 acres will be disturbed per day

Architectural Coating -

Vehicle Trips - Trip rates based on information provided in the Traffic Analysis

Woodstoves - Rule 445

Energy Use - The Project will design building shells and building components to meet 2019 Title 24 Standards which expects 53% less energy for residential uses

Construction Off-road Equipment Mitigation - Rule 403

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Vehicle Emission Factors - EMFAC2017

Table Name	Column Name	Default Value	New Value
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tblFireplaces	NumberNoFireplace	6.50	0.00
tblFireplaces	NumberWood	3.25	0.00

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tblGrading	AcresOfGrading	10.00	25.00
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tblOffRoadEquipment	UsageHours	7.00	8.00
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tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT1	2.9680e-003	2.9210e-003
tblVehicleEF	LDT1	7.3100e-004	6.2300e-004
tblVehicleEF	LDT1	0.18	0.16
tblVehicleEF	LDT1	0.30	0.23
tblVehicleEF	LDT1	0.12	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.18	0.74
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT1	0.01	6.4140e-003
tblVehicleEF	LDT1	0.01	0.06
tblVehicleEF	LDT1	1.43	1.44
tblVehicleEF	LDT1	2.40	1.91
tblVehicleEF	LDT1	320.93	320.06
tblVehicleEF	LDT1	68.37	62.93

tblVehicleEF	LDT1	0.11	0.09
tblVehicleEF	LDT1	0.16	0.24
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.16	0.31
tblVehicleEF	LDT1	3.2270e-003	3.1280e-003
tblVehicleEF	LDT1	7.2500e-004	6.1500e-004
tblVehicleEF	LDT1	0.36	0.30
tblVehicleEF	LDT1	0.37	0.26
tblVehicleEF	LDT1	0.24	0.22
tblVehicleEF	LDT1	0.04	0.04
tblVehicleEF	LDT1	0.18	0.72
tblVehicleEF	LDT1	0.18	0.34
tblVehicleEF	LDT1	8.9360e-003	5.6560e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	1.11	1.18
tblVehicleEF	LDT1	2.78	2.26
tblVehicleEF	LDT1	287.77	295.29
tblVehicleEF	LDT1	68.37	63.68
tblVehicleEF	LDT1	0.11	0.10

tblVehicleEF	LDT1	0.17	0.26
tblVehicleEF	LDT1	2.2770e-003	1.8930e-003
tblVehicleEF	LDT1	3.3510e-003	2.5560e-003
tblVehicleEF	LDT1	2.0960e-003	1.7420e-003
tblVehicleEF	LDT1	3.0820e-003	2.3500e-003
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.19	0.36
tblVehicleEF	LDT1	2.8910e-003	2.8860e-003
tblVehicleEF	LDT1	7.3200e-004	6.2200e-004
tblVehicleEF	LDT1	0.16	0.16
tblVehicleEF	LDT1	0.33	0.26
tblVehicleEF	LDT1	0.10	0.11
tblVehicleEF	LDT1	0.03	0.04
tblVehicleEF	LDT1	0.21	0.86
tblVehicleEF	LDT1	0.21	0.40
tblVehicleEF	LDT2	4.7540e-003	3.1840e-003
tblVehicleEF	LDT2	5.7630e-003	0.06
tblVehicleEF	LDT2	0.68	0.79
tblVehicleEF	LDT2	1.27	2.59
tblVehicleEF	LDT2	330.23	314.22
tblVehicleEF	LDT2	76.02	67.26
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.26

tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.3070e-003	3.0700e-003
tblVehicleEF	LDT2	7.8100e-004	6.5700e-004
tblVehicleEF	LDT2	0.06	0.08
tblVehicleEF	LDT2	0.10	0.12
tblVehicleEF	LDT2	0.05	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LDT2	5.3890e-003	3.5750e-003
tblVehicleEF	LDT2	5.0030e-003	0.05
tblVehicleEF	LDT2	0.83	0.94
tblVehicleEF	LDT2	1.13	2.16
tblVehicleEF	LDT2	359.32	334.38
tblVehicleEF	LDT2	76.02	66.44
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.24
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003

tblVehicleEF	LDT2	2.3660e-003	1.7950e-003
tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.24
tblVehicleEF	LDT2	3.6000e-003	3.2670e-003
tblVehicleEF	LDT2	7.7900e-004	6.4900e-004
tblVehicleEF	LDT2	0.12	0.15
tblVehicleEF	LDT2	0.12	0.14
tblVehicleEF	LDT2	0.10	0.13
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.39
tblVehicleEF	LDT2	0.07	0.27
tblVehicleEF	LDT2	4.5710e-003	3.1320e-003
tblVehicleEF	LDT2	5.9350e-003	0.06
tblVehicleEF	LDT2	0.63	0.76
tblVehicleEF	LDT2	1.30	2.57
tblVehicleEF	LDT2	321.50	310.81
tblVehicleEF	LDT2	76.02	67.23
tblVehicleEF	LDT2	0.06	0.06
tblVehicleEF	LDT2	0.10	0.25
tblVehicleEF	LDT2	1.6020e-003	1.3480e-003
tblVehicleEF	LDT2	2.3660e-003	1.7950e-003

tblVehicleEF	LDT2	1.4730e-003	1.2410e-003
tblVehicleEF	LDT2	2.1760e-003	1.6510e-003
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.08	0.28
tblVehicleEF	LDT2	3.2190e-003	3.0370e-003
tblVehicleEF	LDT2	7.8200e-004	6.5700e-004
tblVehicleEF	LDT2	0.05	0.08
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.07
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.07	0.46
tblVehicleEF	LDT2	0.09	0.31
tblVehicleEF	LHD1	4.9950e-003	4.5410e-003
tblVehicleEF	LHD1	8.5970e-003	4.4200e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.89
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.99
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.91	1.39

tblVehicleEF	LHD1	0.93	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.6750e-003	2.3920e-003
tblVehicleEF	LHD1	0.10	0.07
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.8430e-003	1.2620e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.31	0.44
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5540e-003

tblVehicleEF	LHD1	8.7610e-003	4.4900e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.82	0.61
tblVehicleEF	LHD1	2.04	0.84
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.98
tblVehicleEF	LHD1	29.33	9.91
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.80	1.31
tblVehicleEF	LHD1	0.90	0.27
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003
tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.22	0.06
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005

tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3200e-004	9.8000e-005
tblVehicleEF	LHD1	6.8550e-003	4.2440e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	3.4810e-003	2.4050e-003
tblVehicleEF	LHD1	0.09	0.07
tblVehicleEF	LHD1	0.32	0.44
tblVehicleEF	LHD1	0.24	0.07
tblVehicleEF	LHD1	4.9950e-003	4.5430e-003
tblVehicleEF	LHD1	8.5850e-003	4.4280e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	0.14	0.17
tblVehicleEF	LHD1	0.81	0.60
tblVehicleEF	LHD1	2.14	0.88
tblVehicleEF	LHD1	9.25	9.36
tblVehicleEF	LHD1	596.36	619.96
tblVehicleEF	LHD1	29.33	9.98
tblVehicleEF	LHD1	0.09	0.08
tblVehicleEF	LHD1	1.89	1.37
tblVehicleEF	LHD1	0.92	0.28
tblVehicleEF	LHD1	9.6600e-004	1.0130e-003
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	0.01	0.01
tblVehicleEF	LHD1	7.9000e-004	2.1100e-004
tblVehicleEF	LHD1	9.2400e-004	9.6900e-004
tblVehicleEF	LHD1	2.5590e-003	2.5170e-003

tblVehicleEF	LHD1	0.01	9.8330e-003
tblVehicleEF	LHD1	7.2700e-004	1.9400e-004
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.07	0.05
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.23	0.07
tblVehicleEF	LHD1	9.2000e-005	9.0000e-005
tblVehicleEF	LHD1	5.8420e-003	6.0260e-003
tblVehicleEF	LHD1	3.3400e-004	9.9000e-005
tblVehicleEF	LHD1	3.2380e-003	2.4970e-003
tblVehicleEF	LHD1	0.11	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.6810e-003	1.3210e-003
tblVehicleEF	LHD1	0.08	0.07
tblVehicleEF	LHD1	0.33	0.47
tblVehicleEF	LHD1	0.25	0.07
tblVehicleEF	LHD2	3.3070e-003	2.7700e-003
tblVehicleEF	LHD2	3.5370e-003	3.2640e-003
tblVehicleEF	LHD2	6.6670e-003	7.1780e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.48
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92

tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.29	1.52
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.09	0.04
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.4000e-005
tblVehicleEF	LHD2	1.3090e-003	1.1190e-003
tblVehicleEF	LHD2	0.03	0.03
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	7.0300e-004	6.1300e-004
tblVehicleEF	LHD2	0.06	0.06

tblVehicleEF	LHD2	0.07	0.19
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7770e-003
tblVehicleEF	LHD2	3.5730e-003	3.2860e-003
tblVehicleEF	LHD2	6.4430e-003	6.9030e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.45
tblVehicleEF	LHD2	0.98	0.45
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.93
tblVehicleEF	LHD2	22.93	6.38
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.22	1.43
tblVehicleEF	LHD2	0.45	0.15
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.05	0.06

tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
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tblVehicleEF	LHD2	2.4680e-003	1.9920e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	1.3130e-003	1.1680e-003
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.07	0.20
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	LHD2	3.3070e-003	2.7710e-003
tblVehicleEF	LHD2	3.5300e-003	3.2670e-003
tblVehicleEF	LHD2	6.7050e-003	7.1290e-003
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.40	0.44
tblVehicleEF	LHD2	1.03	0.47
tblVehicleEF	LHD2	14.34	14.92
tblVehicleEF	LHD2	592.89	614.92
tblVehicleEF	LHD2	22.93	6.42
tblVehicleEF	LHD2	0.11	0.12
tblVehicleEF	LHD2	1.28	1.49
tblVehicleEF	LHD2	0.46	0.16
tblVehicleEF	LHD2	1.2850e-003	1.5130e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01

tblVehicleEF	LHD2	3.5700e-004	9.8000e-005
tblVehicleEF	LHD2	1.2290e-003	1.4470e-003
tblVehicleEF	LHD2	2.7020e-003	2.7370e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.2800e-004	9.1000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.05	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.09	0.03
tblVehicleEF	LHD2	1.4000e-004	1.4200e-004
tblVehicleEF	LHD2	5.7620e-003	5.9160e-003
tblVehicleEF	LHD2	2.4800e-004	6.3000e-005
tblVehicleEF	LHD2	1.0230e-003	1.1350e-003
tblVehicleEF	LHD2	0.04	0.04
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	5.9800e-004	6.3500e-004
tblVehicleEF	LHD2	0.06	0.06
tblVehicleEF	LHD2	0.08	0.21
tblVehicleEF	LHD2	0.10	0.04
tblVehicleEF	MCY	0.43	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.81	18.85
tblVehicleEF	MCY	9.70	8.64
tblVehicleEF	MCY	166.71	207.60

tblVehicleEF	MCY	45.36	60.36
tblVehicleEF	MCY	1.12	1.13
tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.11	2.11
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.05	1.83
tblVehicleEF	MCY	2.0360e-003	2.0540e-003
tblVehicleEF	MCY	6.7200e-004	5.9700e-004
tblVehicleEF	MCY	1.69	1.43
tblVehicleEF	MCY	0.83	0.79
tblVehicleEF	MCY	0.92	0.76
tblVehicleEF	MCY	2.61	2.61
tblVehicleEF	MCY	0.55	1.77
tblVehicleEF	MCY	2.23	2.00
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.13	0.21
tblVehicleEF	MCY	19.51	18.83
tblVehicleEF	MCY	9.10	7.90
tblVehicleEF	MCY	166.71	207.41
tblVehicleEF	MCY	45.36	58.44

tblVehicleEF	MCY	0.97	0.97
tblVehicleEF	MCY	0.29	0.25
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	3.35	2.75
tblVehicleEF	MCY	1.23	1.09
tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.09	2.07
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	1.84	1.61
tblVehicleEF	MCY	2.0460e-003	2.0530e-003
tblVehicleEF	MCY	6.5600e-004	5.7800e-004
tblVehicleEF	MCY	3.35	2.75
tblVehicleEF	MCY	1.23	1.09
tblVehicleEF	MCY	2.09	1.72
tblVehicleEF	MCY	2.59	2.56
tblVehicleEF	MCY	0.55	1.74
tblVehicleEF	MCY	2.00	1.75
tblVehicleEF	MCY	0.42	0.31
tblVehicleEF	MCY	0.15	0.24
tblVehicleEF	MCY	18.37	18.30
tblVehicleEF	MCY	9.67	8.43
tblVehicleEF	MCY	166.71	206.64
tblVehicleEF	MCY	45.36	59.88
tblVehicleEF	MCY	1.12	1.09

tblVehicleEF	MCY	0.31	0.26
tblVehicleEF	MCY	1.8630e-003	1.7970e-003
tblVehicleEF	MCY	3.2830e-003	2.7750e-003
tblVehicleEF	MCY	1.7410e-003	1.6800e-003
tblVehicleEF	MCY	3.0870e-003	2.6090e-003
tblVehicleEF	MCY	1.59	1.64
tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.11	2.09
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.06	1.79
tblVehicleEF	MCY	2.0290e-003	2.0450e-003
tblVehicleEF	MCY	6.7200e-004	5.9300e-004
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tblVehicleEF	MCY	1.02	1.05
tblVehicleEF	MCY	0.73	0.76
tblVehicleEF	MCY	2.61	2.59
tblVehicleEF	MCY	0.63	2.02
tblVehicleEF	MCY	2.24	1.95
tblVehicleEF	MDV	9.8990e-003	4.1640e-003
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tblVehicleEF	MDV	1.15	0.92
tblVehicleEF	MDV	2.62	2.99
tblVehicleEF	MDV	458.82	396.16
tblVehicleEF	MDV	104.21	84.06
tblVehicleEF	MDV	0.13	0.09
tblVehicleEF	MDV	0.25	0.33

tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.20	0.38
tblVehicleEF	MDV	4.5960e-003	3.8690e-003
tblVehicleEF	MDV	1.0880e-003	8.2200e-004
tblVehicleEF	MDV	0.11	0.10
tblVehicleEF	MDV	0.19	0.15
tblVehicleEF	MDV	0.09	0.09
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.11	0.46
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MDV	0.01	4.6800e-003
tblVehicleEF	MDV	0.01	0.07
tblVehicleEF	MDV	1.41	1.09
tblVehicleEF	MDV	2.31	2.49
tblVehicleEF	MDV	498.05	417.66
tblVehicleEF	MDV	104.21	83.09
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.24	0.31
tblVehicleEF	MDV	1.6580e-003	1.4100e-003

tblVehicleEF	MDV	2.3780e-003	1.8510e-003
tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
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tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
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tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.17	0.32
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tblVehicleEF	MDV	1.0820e-003	8.1200e-004
tblVehicleEF	MDV	0.21	0.19
tblVehicleEF	MDV	0.22	0.17
tblVehicleEF	MDV	0.16	0.17
tblVehicleEF	MDV	0.04	0.03
tblVehicleEF	MDV	0.11	0.45
tblVehicleEF	MDV	0.19	0.35
tblVehicleEF	MDV	9.5100e-003	4.0920e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.08	0.88
tblVehicleEF	MDV	2.68	2.97
tblVehicleEF	MDV	447.05	392.53
tblVehicleEF	MDV	104.21	84.03
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.25	0.33
tblVehicleEF	MDV	1.6580e-003	1.4100e-003
tblVehicleEF	MDV	2.3780e-003	1.8510e-003

tblVehicleEF	MDV	1.5280e-003	1.3010e-003
tblVehicleEF	MDV	2.1870e-003	1.7020e-003
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.13	0.52
tblVehicleEF	MDV	0.20	0.38
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tblVehicleEF	MDV	1.0890e-003	8.2100e-004
tblVehicleEF	MDV	0.08	0.10
tblVehicleEF	MDV	0.20	0.16
tblVehicleEF	MDV	0.08	0.09
tblVehicleEF	MDV	0.03	0.02
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tblVehicleEF	MDV	0.22	0.41
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tblVehicleEF	MH	0.04	0.14
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tblVehicleEF	MH	0.04	0.13
tblVehicleEF	MH	8.9900e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.08	0.00
tblVehicleEF	MH	0.49	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
tblVehicleEF	MH	0.34	0.00
tblVehicleEF	MH	0.02	3.2740e-003
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tblVehicleEF	MH	0.04	0.14

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tblVehicleEF	MH	0.09	0.00
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tblVehicleEF	MH	2.52	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.94	0.00
tblVehicleEF	MH	0.10	0.08
tblVehicleEF	MH	0.02	0.00
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tblVehicleEF	MH	0.01	0.02

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tblVehicleEF	MH	3.2460e-003	4.0000e-003
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tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.07	0.07
tblVehicleEF	MH	0.03	0.00
tblVehicleEF	MH	0.31	0.00
tblVehicleEF	MH	9.8680e-003	8.7850e-003
tblVehicleEF	MH	6.6300e-004	0.00
tblVehicleEF	MH	1.38	0.00
tblVehicleEF	MH	0.09	0.00
tblVehicleEF	MH	0.47	0.00
tblVehicleEF	MH	0.10	0.08
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tblVehicleEF	MHD	0.34	0.04

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tblVehicleEF	MHD	0.02	0.07
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tblVehicleEF	MHD	0.02	0.07
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tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
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tblVehicleEF	OBUS	2.0910e-003	2.6670e-003
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tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
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tblVehicleEF	OBUS	0.25	0.49
tblVehicleEF	OBUS	0.39	0.70
tblVehicleEF	OBUS	5.57	2.67
tblVehicleEF	OBUS	64.36	65.29
tblVehicleEF	OBUS	1,085.33	1,335.50
tblVehicleEF	OBUS	69.49	21.26
tblVehicleEF	OBUS	0.13	0.24
tblVehicleEF	OBUS	0.35	0.89
tblVehicleEF	OBUS	2.06	0.68
tblVehicleEF	OBUS	1.5000e-005	8.7000e-005
tblVehicleEF	OBUS	1.9500e-003	8.4680e-003
tblVehicleEF	OBUS	8.7100e-004	2.1800e-004
tblVehicleEF	OBUS	1.4000e-005	8.3000e-005
tblVehicleEF	OBUS	1.8490e-003	8.0880e-003
tblVehicleEF	OBUS	8.0000e-004	2.0100e-004
tblVehicleEF	OBUS	1.7990e-003	2.7830e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	8.3400e-004	1.2510e-003

tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.35	0.13
tblVehicleEF	OBUS	6.2600e-004	6.2400e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.9300e-004	2.1000e-004
tblVehicleEF	OBUS	1.7990e-003	2.7830e-003
tblVehicleEF	OBUS	0.02	0.03
tblVehicleEF	OBUS	0.05	0.06
tblVehicleEF	OBUS	8.3400e-004	1.2510e-003
tblVehicleEF	OBUS	0.03	0.04
tblVehicleEF	OBUS	0.05	0.31
tblVehicleEF	OBUS	0.38	0.14
tblVehicleEF	SBUS	0.82	0.09
tblVehicleEF	SBUS	9.5650e-003	6.6030e-003
tblVehicleEF	SBUS	0.06	8.0990e-003
tblVehicleEF	SBUS	7.84	3.43
tblVehicleEF	SBUS	0.57	0.55
tblVehicleEF	SBUS	6.44	1.08
tblVehicleEF	SBUS	1,128.57	369.74
tblVehicleEF	SBUS	1,093.03	1,096.55
tblVehicleEF	SBUS	55.12	6.92
tblVehicleEF	SBUS	8.81	3.32
tblVehicleEF	SBUS	3.97	4.42
tblVehicleEF	SBUS	12.20	0.78
tblVehicleEF	SBUS	8.4250e-003	3.3040e-003
tblVehicleEF	SBUS	0.01	0.01

tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	8.0610e-003	3.1610e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	5.0680e-003	1.5760e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.93	0.41
tblVehicleEF	SBUS	2.4310e-003	7.9200e-004
tblVehicleEF	SBUS	0.10	0.09
tblVehicleEF	SBUS	0.02	0.07
tblVehicleEF	SBUS	0.36	0.05
tblVehicleEF	SBUS	0.01	3.5360e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6300e-004	6.9000e-005
tblVehicleEF	SBUS	5.0680e-003	1.5760e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	2.4310e-003	7.9200e-004
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.07
tblVehicleEF	SBUS	0.39	0.05
tblVehicleEF	SBUS	0.82	0.09
tblVehicleEF	SBUS	9.7050e-003	6.6870e-003
tblVehicleEF	SBUS	0.05	6.7520e-003
tblVehicleEF	SBUS	7.74	3.39

tblVehicleEF	SBUS	0.58	0.56
tblVehicleEF	SBUS	4.67	0.77
tblVehicleEF	SBUS	1,179.47	378.98
tblVehicleEF	SBUS	1,093.03	1,096.56
tblVehicleEF	SBUS	55.12	6.42
tblVehicleEF	SBUS	9.10	3.40
tblVehicleEF	SBUS	3.73	4.16
tblVehicleEF	SBUS	12.17	0.77
tblVehicleEF	SBUS	7.1020e-003	2.7930e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	6.7950e-003	2.6720e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	9.1290e-003	2.7600e-003
tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	0.92	0.41
tblVehicleEF	SBUS	4.4980e-003	1.4670e-003
tblVehicleEF	SBUS	0.10	0.09
tblVehicleEF	SBUS	0.02	0.06
tblVehicleEF	SBUS	0.30	0.04
tblVehicleEF	SBUS	0.01	3.6240e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.3300e-004	6.3000e-005
tblVehicleEF	SBUS	9.1290e-003	2.7600e-003

tblVehicleEF	SBUS	0.04	0.01
tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	4.4980e-003	1.4670e-003
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.06
tblVehicleEF	SBUS	0.33	0.04
tblVehicleEF	SBUS	0.82	0.09
tblVehicleEF	SBUS	9.5210e-003	6.6020e-003
tblVehicleEF	SBUS	0.06	8.2440e-003
tblVehicleEF	SBUS	8.00	3.48
tblVehicleEF	SBUS	0.57	0.55
tblVehicleEF	SBUS	6.79	1.10
tblVehicleEF	SBUS	1,058.28	356.98
tblVehicleEF	SBUS	1,093.03	1,096.55
tblVehicleEF	SBUS	55.12	6.96
tblVehicleEF	SBUS	8.43	3.21
tblVehicleEF	SBUS	3.93	4.35
tblVehicleEF	SBUS	12.21	0.78
tblVehicleEF	SBUS	0.01	4.0110e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	0.02	0.03
tblVehicleEF	SBUS	5.0000e-004	4.8000e-005
tblVehicleEF	SBUS	9.8080e-003	3.8370e-003
tblVehicleEF	SBUS	2.6870e-003	2.6500e-003
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	4.6000e-004	4.4000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003

tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	0.93	0.41
tblVehicleEF	SBUS	2.3310e-003	8.1800e-004
tblVehicleEF	SBUS	0.10	0.09
tblVehicleEF	SBUS	0.02	0.08
tblVehicleEF	SBUS	0.37	0.05
tblVehicleEF	SBUS	0.01	3.4160e-003
tblVehicleEF	SBUS	0.01	0.01
tblVehicleEF	SBUS	6.6900e-004	6.9000e-005
tblVehicleEF	SBUS	4.3640e-003	1.4840e-003
tblVehicleEF	SBUS	0.03	0.01
tblVehicleEF	SBUS	1.34	0.59
tblVehicleEF	SBUS	2.3310e-003	8.1800e-004
tblVehicleEF	SBUS	0.12	0.11
tblVehicleEF	SBUS	0.02	0.08
tblVehicleEF	SBUS	0.40	0.05
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.52	23.60
tblVehicleEF	UBUS	13.83	1.86
tblVehicleEF	UBUS	1,788.21	1,635.62
tblVehicleEF	UBUS	153.17	22.96
tblVehicleEF	UBUS	3.79	0.30
tblVehicleEF	UBUS	12.24	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003

tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.09	0.10
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7820e-003	2.2700e-004
tblVehicleEF	UBUS	9.0420e-003	2.8050e-003
tblVehicleEF	UBUS	0.10	0.02
tblVehicleEF	UBUS	4.5390e-003	1.1470e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.02	0.08
tblVehicleEF	UBUS	1.19	0.10
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.07	0.02
tblVehicleEF	UBUS	7.58	23.60
tblVehicleEF	UBUS	11.85	1.58
tblVehicleEF	UBUS	1,788.21	1,635.63
tblVehicleEF	UBUS	153.17	22.49
tblVehicleEF	UBUS	3.53	0.30
tblVehicleEF	UBUS	12.16	0.21

tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	0.43	0.05
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	0.99	0.09
tblVehicleEF	UBUS	9.5110e-003	6.3200e-003
tblVehicleEF	UBUS	1.7480e-003	2.2300e-004
tblVehicleEF	UBUS	0.02	4.9810e-003
tblVehicleEF	UBUS	0.13	0.02
tblVehicleEF	UBUS	9.0520e-003	2.2660e-003
tblVehicleEF	UBUS	1.83	3.11
tblVehicleEF	UBUS	0.02	0.07
tblVehicleEF	UBUS	1.09	0.09
tblVehicleEF	UBUS	1.36	3.04
tblVehicleEF	UBUS	0.08	0.02
tblVehicleEF	UBUS	7.51	23.60
tblVehicleEF	UBUS	14.02	1.85
tblVehicleEF	UBUS	1,788.21	1,635.62

tblVehicleEF	UBUS	153.17	22.93
tblVehicleEF	UBUS	3.75	0.30
tblVehicleEF	UBUS	12.25	0.22
tblVehicleEF	UBUS	0.49	0.09
tblVehicleEF	UBUS	0.01	0.02
tblVehicleEF	UBUS	0.04	2.1820e-003
tblVehicleEF	UBUS	1.4880e-003	2.2400e-004
tblVehicleEF	UBUS	0.21	0.04
tblVehicleEF	UBUS	3.0000e-003	5.0570e-003
tblVehicleEF	UBUS	0.04	2.0670e-003
tblVehicleEF	UBUS	1.3680e-003	2.0600e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	0.42	0.05
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.10	0.09
tblVehicleEF	UBUS	9.5090e-003	6.3200e-003
tblVehicleEF	UBUS	1.7850e-003	2.2700e-004
tblVehicleEF	UBUS	8.1990e-003	2.8430e-003
tblVehicleEF	UBUS	0.12	0.02
tblVehicleEF	UBUS	4.1400e-003	1.2010e-003
tblVehicleEF	UBUS	1.82	3.11
tblVehicleEF	UBUS	0.03	0.09
tblVehicleEF	UBUS	1.20	0.10
tblVehicleTrips	ST_TR	7.16	8.14
tblVehicleTrips	SU_TR	6.07	6.28

tblVehicleTrips	WD_TR	6.59	7.32
tblWoodstoves	NumberCatalytic	3.25	0.00
tblWoodstoves	NumberNoncatalytic	3.25	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					
2021	0.1735	1.5547	1.3649	2.8700e-003	0.1713	0.0746	0.2459	0.0599	0.0698	0.1297	0.0000	253.3576	253.3576	0.0488	0.0000	254.5785
2022	0.3565	1.1620	1.2935	2.6300e-003	0.0654	0.0546	0.1200	0.0175	0.0512	0.0688	0.0000	231.9410	231.9410	0.0428	0.0000	233.0116
Maximum	**0.3565**	**1.5547**	**1.3649**	**2.8700e-003**	**0.1713**	**0.0746**	**0.2459**	**0.0599**	**0.0698**	**0.1297**	**0.0000**	**253.3576**	**253.3576**	**0.0488**	**0.0000**	**254.5785**

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					
2021	0.1735	1.5547	1.3649	2.8700e-003	0.1080	0.0746	0.1827	0.0344	0.0698	0.1042	0.0000	253.3574	253.3574	0.0488	0.0000	254.5783
2022	0.3565	1.1620	1.2935	2.6300e-003	0.0654	0.0546	0.1200	0.0175	0.0512	0.0688	0.0000	231.9408	231.9408	0.0428	0.0000	233.0114
Maximum	**0.3565**	**1.5547**	**1.3649**	**2.8700e-003**	**0.1080**	**0.0746**	**0.1827**	**0.0344**	**0.0698**	**0.1042**	**0.0000**	**253.3574**	**253.3574**	**0.0488**	**0.0000**	**254.5783**

	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**	**26.73**	**0.00**	**17.29**	**32.93**	**0.00**	**12.84**	**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)
1	7-1-2021	9-30-2021	0.9610	0.9610
2	10-1-2021	12-31-2021	0.7664	0.7664
3	1-1-2022	3-31-2022	0.6742	0.6742
4	4-1-2022	6-30-2022	0.6112	0.6112
5	7-1-2022	9-30-2022	0.2474	0.2474
		Highest	0.9610	0.9610

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	0.2853	0.0212	0.6787	1.2000e-004		4.8100e-003	4.8100e-003		4.8100e-003	4.8100e-003	0.0000	16.7088	16.7088	1.3600e-003	2.9000e-004	16.8282
Energy	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	106.4079	106.4079	3.6200e-003	1.3000e-003	106.8868
Mobile	0.1808	0.5724	1.8146	6.6800e-003	0.6173	6.4800e-003	0.6238	0.1652	6.1100e-003	0.1713	0.0000	630.4148	630.4148	0.0238	0.0000	631.0099
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.3436	21.1884	22.5319	0.1389	3.4500e-003	27.0323
Total	**0.4698**	**0.6252**	**2.5068**	**7.0000e-003**	**0.6173**	**0.0138**	**0.6312**	**0.1652**	**0.0135**	**0.1787**	**7.4130**	**774.7198**	**782.1328**	**0.5264**	**5.0400e-003**	**796.7940**

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	0.2853	0.0212	0.6787	1.2000e-004		4.8100e-003	4.8100e-003		4.8100e-003	4.8100e-003	0.0000	16.7088	16.7088	1.3600e-003	2.9000e-004	16.8282
Energy	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	106.4079	106.4079	3.6200e-003	1.3000e-003	106.8868
Mobile	0.1808	0.5724	1.8146	6.6800e-003	0.6173	6.4800e-003	0.6238	0.1652	6.1100e-003	0.1713	0.0000	630.4148	630.4148	0.0238	0.0000	631.0099
Waste						0.0000	0.0000		0.0000	0.0000	6.0694	0.0000	6.0694	0.3587	0.0000	15.0368
Water						0.0000	0.0000		0.0000	0.0000	1.3436	21.1884	22.5319	0.1389	3.4500e-003	27.0323
Total	**0.4698**	**0.6252**	**2.5068**	**7.0000e-003**	**0.6173**	**0.0138**	**0.6312**	**0.1652**	**0.0135**	**0.1787**	**7.4130**	**774.7198**	**782.1328**	**0.5264**	**5.0400e-003**	**796.7940**

	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	Site Preparation	7/1/2021	7/7/2021	5	5	
2	Grading	Grading	7/8/2021	7/19/2021	5	8	
3	Building Construction	Building Construction	7/20/2021	6/6/2022	5	230	
4	Paving	Paving	6/7/2022	6/30/2022	5	18	
5	Architectural Coating	Architectural Coating	7/1/2022	7/26/2022	5	18	

Acres of Grading (Site Preparation Phase): 25

Acres of Grading (Grading Phase): 40

Acres of Paving: 2.34

Residential Indoor: 131,625; Residential Outdoor: 43,875; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 6,188 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Crawler Tractors	4	8.00	212	0.43
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Crawler Tractors	3	8.00	212	0.43
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	8.00	78	0.48

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
Site Preparation	7	18.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	1.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	90.00	20.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2021

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					0.0584	0.0000	0.0584	0.0263	0.0000	0.0263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.1520	0.0546	1.4000e-004		6.6100e-003	6.6100e-003		6.0900e-003	6.0900e-003	0.0000	12.5271	12.5271	4.0500e-003	0.0000	12.6284
Total	**0.0134**	**0.1520**	**0.0546**	**1.4000e-004**	**0.0584**	**6.6100e-003**	**0.0650**	**0.0263**	**6.0900e-003**	**0.0324**	**0.0000**	**12.5271**	**12.5271**	**4.0500e-003**	**0.0000**	**12.6284**

3.2 Site Preparation - 2021

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	1.0000e-005	2.3000e-004	4.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0610	0.0610	0.0000	0.0000	0.0611
Worker	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4000	0.4000	1.0000e-005	0.0000	0.4002
Total	**2.0000e-004**	**3.6000e-004**	**1.4600e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4610**	**0.4610**	**1.0000e-005**	**0.0000**	**0.4613**

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					0.0228	0.0000	0.0228	0.0102	0.0000	0.0102	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0134	0.1520	0.0546	1.4000e-004		6.6100e-003	6.6100e-003		6.0900e-003	6.0900e-003	0.0000	12.5271	12.5271	4.0500e-003	0.0000	12.6284
Total	**0.0134**	**0.1520**	**0.0546**	**1.4000e-004**	**0.0228**	**6.6100e-003**	**0.0294**	**0.0102**	**6.0900e-003**	**0.0163**	**0.0000**	**12.5271**	**12.5271**	**4.0500e-003**	**0.0000**	**12.6284**

3.2 Site Preparation - 2021

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	1.0000e-005	2.3000e-004	4.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0610	0.0610	0.0000	0.0000	0.0611
Worker	1.9000e-004	1.3000e-004	1.4200e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4000	0.4000	1.0000e-005	0.0000	0.4002
Total	**2.0000e-004**	**3.6000e-004**	**1.4600e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4610**	**0.4610**	**1.0000e-005**	**0.0000**	**0.4613**

3.3 Grading - 2021

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					0.0453	0.0000	0.0453	0.0155	0.0000	0.0155	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1598	0.0655	1.8000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	15.4233	15.4233	4.9900e-003	0.0000	15.5480
Total	**0.0135**	**0.1598**	**0.0655**	**1.8000e-004**	**0.0453**	**6.4400e-003**	**0.0517**	**0.0155**	**5.9300e-003**	**0.0215**	**0.0000**	**15.4233**	**15.4233**	**4.9900e-003**	**0.0000**	**15.5480**

3.3 Grading - 2021

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	1.0000e-005	3.7000e-004	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0976	0.0976	1.0000e-005	0.0000	0.0978
Worker	2.6000e-004	1.7000e-004	1.8900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5333	0.5333	1.0000e-005	0.0000	0.5336
Total	**2.7000e-004**	**5.4000e-004**	**1.9600e-003**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**6.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6309**	**0.6309**	**2.0000e-005**	**0.0000**	**0.6314**

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					0.0177	0.0000	0.0177	6.0600e-003	0.0000	6.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1598	0.0655	1.8000e-004		6.4400e-003	6.4400e-003		5.9300e-003	5.9300e-003	0.0000	15.4233	15.4233	4.9900e-003	0.0000	15.5480
Total	**0.0135**	**0.1598**	**0.0655**	**1.8000e-004**	**0.0177**	**6.4400e-003**	**0.0241**	**6.0600e-003**	**5.9300e-003**	**0.0120**	**0.0000**	**15.4233**	**15.4233**	**4.9900e-003**	**0.0000**	**15.5480**

3.3 Grading - 2021

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	1.0000e-005	3.7000e-004	7.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0976	0.0976	1.0000e-005	0.0000	0.0978
Worker	2.6000e-004	1.7000e-004	1.8900e-003	1.0000e-005	6.6000e-004	0.0000	6.6000e-004	1.8000e-004	0.0000	1.8000e-004	0.0000	0.5333	0.5333	1.0000e-005	0.0000	0.5336
Total	**2.7000e-004**	**5.4000e-004**	**1.9600e-003**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**6.9000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.6309**	**0.6309**	**2.0000e-005**	**0.0000**	**0.6314**

3.4 Building Construction - 2021

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	0.1204	1.1156	1.0514	1.7100e-003		0.0610	0.0610		0.0573	0.0573	0.0000	147.6848	147.6848	0.0364	0.0000	148.5958
Total	**0.1204**	**1.1156**	**1.0514**	**1.7100e-003**		**0.0610**	**0.0610**		**0.0573**	**0.0573**	**0.0000**	**147.6848**	**147.6848**	**0.0364**	**0.0000**	**148.5958**

3.4 Building Construction - 2021

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	2.8400e-003	0.1110	0.0214	3.0000e-004	7.5200e-003	2.1000e-004	7.7300e-003	2.1700e-003	2.0000e-004	2.3700e-003	0.0000	29.0328	29.0328	2.2100e-003	0.0000	29.0882
Worker	0.0230	0.0155	0.1686	5.3000e-004	0.0589	3.5000e-004	0.0592	0.0156	3.2000e-004	0.0160	0.0000	47.5977	47.5977	1.1100e-003	0.0000	47.6254
Total	**0.0258**	**0.1264**	**0.1899**	**8.3000e-004**	**0.0664**	**5.6000e-004**	**0.0669**	**0.0178**	**5.2000e-004**	**0.0183**	**0.0000**	**76.6305**	**76.6305**	**3.3200e-003**	**0.0000**	**76.7136**

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	0.1204	1.1156	1.0514	1.7100e-003		0.0610	0.0610		0.0573	0.0573	0.0000	147.6846	147.6846	0.0364	0.0000	148.5956
Total	**0.1204**	**1.1156**	**1.0514**	**1.7100e-003**		**0.0610**	**0.0610**		**0.0573**	**0.0573**	**0.0000**	**147.6846**	**147.6846**	**0.0364**	**0.0000**	**148.5956**

3.4 Building Construction - 2021

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	2.8400e-003	0.1110	0.0214	3.0000e-004	7.5200e-003	2.1000e-004	7.7300e-003	2.1700e-003	2.0000e-004	2.3700e-003	0.0000	29.0328	29.0328	2.2100e-003	0.0000	29.0882
Worker	0.0230	0.0155	0.1686	5.3000e-004	0.0589	3.5000e-004	0.0592	0.0156	3.2000e-004	0.0160	0.0000	47.5977	47.5977	1.1100e-003	0.0000	47.6254
Total	**0.0258**	**0.1264**	**0.1899**	**8.3000e-004**	**0.0664**	**5.6000e-004**	**0.0669**	**0.0178**	**5.2000e-004**	**0.0183**	**0.0000**	**76.6305**	**76.6305**	**3.3200e-003**	**0.0000**	**76.7136**

3.4 Building Construction - 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	0.1007	0.9306	0.9679	1.6000e-003		0.0480	0.0480		0.0451	0.0451	0.0000	137.8122	137.8122	0.0338	0.0000	138.6569
Total	**0.1007**	**0.9306**	**0.9679**	**1.6000e-003**		**0.0480**	**0.0480**		**0.0451**	**0.0451**	**0.0000**	**137.8122**	**137.8122**	**0.0338**	**0.0000**	**138.6569**

3.4 Building Construction - 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	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	2.4700e-003	0.0975	0.0186	2.8000e-004	7.0100e-003	1.7000e-004	7.1800e-003	2.0200e-003	1.6000e-004	2.1800e-003	0.0000	26.8481	26.8481	1.9600e-003	0.0000	26.8970
Worker	0.0201	0.0130	0.1449	4.7000e-004	0.0549	3.2000e-004	0.0552	0.0146	2.9000e-004	0.0149	0.0000	42.7777	42.7777	9.3000e-004	0.0000	42.8010
Total	**0.0225**	**0.1105**	**0.1634**	**7.5000e-004**	**0.0619**	**4.9000e-004**	**0.0624**	**0.0166**	**4.5000e-004**	**0.0171**	**0.0000**	**69.6258**	**69.6258**	**2.8900e-003**	**0.0000**	**69.6980**

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	0.1007	0.9306	0.9679	1.6000e-003		0.0480	0.0480		0.0451	0.0451	0.0000	137.8120	137.8120	0.0338	0.0000	138.6567
Total	**0.1007**	**0.9306**	**0.9679**	**1.6000e-003**		**0.0480**	**0.0480**		**0.0451**	**0.0451**	**0.0000**	**137.8120**	**137.8120**	**0.0338**	**0.0000**	**138.6567**

3.4 Building Construction - 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	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	2.4700e-003	0.0975	0.0186	2.8000e-004	7.0100e-003	1.7000e-004	7.1800e-003	2.0200e-003	1.6000e-004	2.1800e-003	0.0000	26.8481	26.8481	1.9600e-003	0.0000	26.8970
Worker	0.0201	0.0130	0.1449	4.7000e-004	0.0549	3.2000e-004	0.0552	0.0146	2.9000e-004	0.0149	0.0000	42.7777	42.7777	9.3000e-004	0.0000	42.8010
Total	**0.0225**	**0.1105**	**0.1634**	**7.5000e-004**	**0.0619**	**4.9000e-004**	**0.0624**	**0.0166**	**4.5000e-004**	**0.0171**	**0.0000**	**69.6258**	**69.6258**	**2.8900e-003**	**0.0000**	**69.6980**

3.5 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	9.9300e-003	0.1001	0.1312	2.1000e-004		5.1100e-003	5.1100e-003		4.7000e-003	4.7000e-003	0.0000	18.0248	18.0248	5.8300e-003	0.0000	18.1705
Paving	1.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**0.1001**	**0.1312**	**2.1000e-004**		**5.1100e-003**	**5.1100e-003**		**4.7000e-003**	**4.7000e-003**	**0.0000**	**18.0248**	**18.0248**	**5.8300e-003**	**0.0000**	**18.1705**

3.5 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	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	4.0000e-005	1.5800e-003	3.0000e-004	0.0000	1.1000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4354	0.4354	3.0000e-005	0.0000	0.4362
Worker	5.4000e-004	3.5000e-004	3.9100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.1562	1.1562	3.0000e-005	0.0000	1.1568
Total	**5.8000e-004**	**1.9300e-003**	**4.2100e-003**	**1.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.5915**	**1.5915**	**6.0000e-005**	**0.0000**	**1.5930**

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	9.9300e-003	0.1001	0.1312	2.1000e-004		5.1100e-003	5.1100e-003		4.7000e-003	4.7000e-003	0.0000	18.0248	18.0248	5.8300e-003	0.0000	18.1705
Paving	1.8600e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0118**	**0.1001**	**0.1312**	**2.1000e-004**		**5.1100e-003**	**5.1100e-003**		**4.7000e-003**	**4.7000e-003**	**0.0000**	**18.0248**	**18.0248**	**5.8300e-003**	**0.0000**	**18.1705**

3.5 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	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	4.0000e-005	1.5800e-003	3.0000e-004	0.0000	1.1000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4354	0.4354	3.0000e-005	0.0000	0.4362
Worker	5.4000e-004	3.5000e-004	3.9100e-003	1.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.1562	1.1562	3.0000e-005	0.0000	1.1568
Total	**5.8000e-004**	**1.9300e-003**	**4.2100e-003**	**1.0000e-005**	**1.5900e-003**	**1.0000e-005**	**1.6100e-003**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.5915**	**1.5915**	**6.0000e-005**	**0.0000**	**1.5930**

3.6 Architectural Coating - 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					
Archit. Coating	0.2177					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4500e-003	0.0169	0.0218	4.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	3.0639	3.0639	2.0000e-004	0.0000	3.0689
Total	**0.2202**	**0.0169**	**0.0218**	**4.0000e-005**		**9.8000e-004**	**9.8000e-004**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**3.0639**	**3.0639**	**2.0000e-004**	**0.0000**	**3.0689**

3.6 Architectural Coating - 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	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	4.0000e-005	1.5800e-003	3.0000e-004	0.0000	1.1000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4354	0.4354	3.0000e-005	0.0000	0.4362
Worker	6.5000e-004	4.2000e-004	4.7000e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.3874	1.3874	3.0000e-005	0.0000	1.3881
Total	**6.9000e-004**	**2.0000e-003**	**5.0000e-003**	**2.0000e-005**	**1.8900e-003**	**1.0000e-005**	**1.9100e-003**	**5.0000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.8228**	**1.8228**	**6.0000e-005**	**0.0000**	**1.8243**

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					
Archit. Coating	0.2177					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4500e-003	0.0169	0.0218	4.0000e-005		9.8000e-004	9.8000e-004		9.8000e-004	9.8000e-004	0.0000	3.0639	3.0639	2.0000e-004	0.0000	3.0689
Total	**0.2202**	**0.0169**	**0.0218**	**4.0000e-005**		**9.8000e-004**	**9.8000e-004**		**9.8000e-004**	**9.8000e-004**	**0.0000**	**3.0639**	**3.0639**	**2.0000e-004**	**0.0000**	**3.0689**

3.6 Architectural Coating - 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	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	4.0000e-005	1.5800e-003	3.0000e-004	0.0000	1.1000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	4.0000e-005	0.0000	0.4354	0.4354	3.0000e-005	0.0000	0.4362
Worker	6.5000e-004	4.2000e-004	4.7000e-003	2.0000e-005	1.7800e-003	1.0000e-005	1.7900e-003	4.7000e-004	1.0000e-005	4.8000e-004	0.0000	1.3874	1.3874	3.0000e-005	0.0000	1.3881
Total	**6.9000e-004**	**2.0000e-003**	**5.0000e-003**	**2.0000e-005**	**1.8900e-003**	**1.0000e-005**	**1.9100e-003**	**5.0000e-004**	**1.0000e-005**	**5.2000e-004**	**0.0000**	**1.8228**	**1.8228**	**6.0000e-005**	**0.0000**	**1.8243**

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	0.1808	0.5724	1.8146	6.6800e-003	0.6173	6.4800e-003	0.6238	0.1652	6.1100e-003	0.1713	0.0000	630.4148	630.4148	0.0238	0.0000	631.0099
Unmitigated	0.1808	0.5724	1.8146	6.6800e-003	0.6173	6.4800e-003	0.6238	0.1652	6.1100e-003	0.1713	0.0000	630.4148	630.4148	0.0238	0.0000	631.0099

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	476.00	529.10	408.20	1,619,392	1,619,392
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	476.00	529.10	408.20	1,619,392	1,619,392

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
Apartments Low Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Parking Lot	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
Apartments Low Rise	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Other Non-Asphalt Surfaces	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898
Parking Lot	0.548600	0.036250	0.186898	0.112544	0.014284	0.004806	0.017604	0.070134	0.001409	0.001147	0.004508	0.000918	0.000898

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	69.9318	69.9318	2.9200e-003	6.3000e-004	70.1940
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	69.9318	69.9318	2.9200e-003	6.3000e-004	70.1940
NaturalGas Mitigated	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	36.4760	36.4760	7.0000e-004	6.7000e-004	36.6928
NaturalGas Unmitigated	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	36.4760	36.4760	7.0000e-004	6.7000e-004	36.6928

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					
Apartments Low Rise	683535	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	36.4760	36.4760	7.0000e-004	6.7000e-004	36.6928
Other Non-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
Parking Lot	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		**3.6900e-003**	**0.0315**	**0.0134**	**2.0000e-004**		**2.5500e-003**	**2.5500e-003**		**2.5500e-003**	**2.5500e-003**	**0.0000**	**36.4760**	**36.4760**	**7.0000e-004**	**6.7000e-004**	**36.6928**

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					
Apartments Low Rise	683535	3.6900e-003	0.0315	0.0134	2.0000e-004		2.5500e-003	2.5500e-003		2.5500e-003	2.5500e-003	0.0000	36.4760	36.4760	7.0000e-004	6.7000e-004	36.6928
Other Non-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
Parking Lot	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		**3.6900e-003**	**0.0315**	**0.0134**	**2.0000e-004**		**2.5500e-003**	**2.5500e-003**		**2.5500e-003**	**2.5500e-003**	**0.0000**	**36.4760**	**36.4760**	**7.0000e-004**	**6.7000e-004**	**36.6928**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	257783	64.4053	2.6900e-003	5.8000e-004	64.6468
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	22120	5.5265	2.3000e-004	5.0000e-005	5.5473
Total		**69.9318**	**2.9200e-003**	**6.3000e-004**	**70.1940**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Low Rise	257783	64.4053	2.6900e-003	5.8000e-004	64.6468
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	22120	5.5265	2.3000e-004	5.0000e-005	5.5473
Total		**69.9318**	**2.9200e-003**	**6.3000e-004**	**70.1940**

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	0.2853	0.0212	0.6787	1.2000e-004		4.8100e-003	4.8100e-003		4.8100e-003	4.8100e-003	0.0000	16.7088	16.7088	1.3600e-003	2.9000e-004	16.8282
Unmitigated	0.2853	0.0212	0.6787	1.2000e-004		4.8100e-003	4.8100e-003		4.8100e-003	4.8100e-003	0.0000	16.7088	16.7088	1.3600e-003	2.9000e-004	16.8282

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	0.0218					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5800e-003	0.0135	5.7400e-003	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.6089	15.6089	3.0000e-004	2.9000e-004	15.7017
Landscaping	0.0204	7.7500e-003	0.6730	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0999	1.0999	1.0700e-003	0.0000	1.1265
Total	**0.2853**	**0.0212**	**0.6787**	**1.3000e-004**		**4.8100e-003**	**4.8100e-003**		**4.8100e-003**	**4.8100e-003**	**0.0000**	**16.7088**	**16.7088**	**1.3700e-003**	**2.9000e-004**	**16.8282**

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	0.0218					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2415					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.5800e-003	0.0135	5.7400e-003	9.0000e-005		1.0900e-003	1.0900e-003		1.0900e-003	1.0900e-003	0.0000	15.6089	15.6089	3.0000e-004	2.9000e-004	15.7017
Landscaping	0.0204	7.7500e-003	0.6730	4.0000e-005		3.7200e-003	3.7200e-003		3.7200e-003	3.7200e-003	0.0000	1.0999	1.0999	1.0700e-003	0.0000	1.1265
Total	**0.2853**	**0.0212**	**0.6787**	**1.3000e-004**		**4.8100e-003**	**4.8100e-003**		**4.8100e-003**	**4.8100e-003**	**0.0000**	**16.7088**	**16.7088**	**1.3700e-003**	**2.9000e-004**	**16.8282**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	22.5319	0.1389	3.4500e-003	27.0323
Unmitigated	22.5319	0.1389	3.4500e-003	27.0323

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.23501 / 2.6699	22.5319	0.1389	3.4500e-003	27.0323
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**22.5319**	**0.1389**	**3.4500e-003**	**27.0323**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Low Rise	4.23501 / 2.6699	22.5319	0.1389	3.4500e-003	27.0323
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**22.5319**	**0.1389**	**3.4500e-003**	**27.0323**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0694	0.3587	0.0000	15.0368
Unmitigated	6.0694	0.3587	0.0000	15.0368

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.9	6.0694	0.3587	0.0000	15.0368
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Low Rise	29.9	6.0694	0.3587	0.0000	15.0368
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**6.0694**	**0.3587**	**0.0000**	**15.0368**

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

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APPENDIX 3.2:

EMFAC2017 OUTPUT

EMFAC2017 Derived CalEEMod Annual Emission Rates: Year 2023[1,2]

Season	Pollutant	LDA	LDT1	LDT2	MDV	LHDT1	LHDT2	MHDT	HHDT	OBUS	UBUS	MCY	SBUS	MH
Annual	CH4_IDLEX	0	0	0	0	0.0045407	0.00276992	0.002755155	0.022399945	0.008522	0	0	0.0872051	0
Annual	CH4_RUNEX	0.0018869	0.0057489	0.0031844	0.0041642	0.0044198	0.003263925	0.00087349	0.027816115	0.0054045	3.0424882	0.3131324	0.0066033	0.0032743
Annual	CH4_STREX	0.0448692	0.0733726	0.0629169	0.0781102	0.0134844	0.007177894	0.007030234	2.14182E-07	0.0240057	0.0246221	0.2420258	0.008099	0
Annual	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.328949805	6.433638207	0.4864641	0	0	3.4287623	0
Annual	CO_RUNEX	0.560021	1.2218976	0.7892313	0.9170107	0.5983104	0.443005373	0.121131478	0.238528941	0.7023385	23.596827	18.854788	0.5536067	0.3331045
Annual	CO_STREX	2.0291591	2.2798463	2.5854594	2.9900286	0.8884942	0.47818962	0.809250221	0.004385463	2.6752142	1.8623285	8.642447	1.078573	0
Annual	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.2854915	1065.923835	64.367009	0	0	369.73833	0
Annual	CO2_NBIO_RUNEX	251.70403	298.86564	314.21685	396.16171	619.96277	614.9225059	911.0199741	1272.829483	1335.493	1635.6231	207.59836	1096.5469	929.32761
Annual	CO2_NBIO_STREX	52.262945	63.705824	67.25728	84.063345	9.9909554	6.424441145	7.214801684	0.03594404	21.276475	22.961833	60.360049	6.9242759	0
Annual	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.397207898	5.312422425	0.2257829	0	0	3.3195995	0
Annual	NOX_RUNEX	0.0309022	0.1047964	0.0645781	0.0871858	1.3894798	1.517354389	0.908191511	1.955483692	0.905988	0.3035805	1.125469	4.420865	4.2679083
Annual	NOX_STREX[3]	0.1657278	0.2618108	0.2551235	0.3291257	0.2837258	0.159545375	1.799471753	2.495253007	0.6856266	0.2242227	0.2630249	0.7800028	0
Annual	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000433919	0.002365147	7.511E-05	0	0	0.0033043	0
Annual	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060417566	0.13034	0.0918981	0.01176	0.7448002	0.13034
Annual	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035225137	0.012	0.0202294	0.004	0.0105986	0.016
Annual	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024179126	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Annual	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Annual	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000415148	0.002262832	7.186E-05	0	0	0.0031614	0
Annual	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025893242	0.05586	0.0393849	0.00504	0.3192001	0.05586
Annual	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008806284	0.003	0.0050573	0.001	0.0026497	0.004
Annual	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023133139	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Annual	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Annual	ROG_DIURN	0.0499353	0.1617031	0.0834193	0.1040066	0.0023924	0.001119316	0.00041816	2.61104E-06	0.0026672	0.0028048	1.4319645	0.0015764	0
Annual	ROG_HTSK	0.0863623	0.224901	0.1201124	0.1521245	0.0693882	0.033771174	0.014777615	9.67852E-05	0.0265187	0.0159707	0.7872755	0.0114418	0
Annual	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.015150214	0.435555976	0.0456612	0	0	0.4072026	0
Annual	ROG_RESTL	0.0401253	0.1141391	0.0708635	0.09308	0.0012616	0.000613159	0.000227643	1.60287E-06	0.0011772	0.0011467	0.7584722	0.0007923	0
Annual	ROG_RUNEX	0.0069514	0.0249376	0.0126	0.0170823	0.0538669	0.055274928	0.009544935	0.018413033	0.0303843	0.0485813	2.1137636	0.0924064	0.070494
Annual	ROG_RUNLS	0.1934756	0.7345866	0.3938448	0.4562317	0.4372965	0.194951955	0.073961783	0.000443814	0.2925608	0.0762512	1.766858	0.0695237	0
Annual	ROG_STREX	0.1913074	0.3650898	0.2841172	0.3772633	0.0668598	0.035024058	0.037511191	1.09632E-06	0.1278709	0.0951018	1.8332332	0.0473665	0
Annual	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.00063797	0.010008431	0.0006149	0	0	0.0035362	0
Annual	SO2_RUNEX	0.0024592	0.0029207	0.0030702	0.0038688	0.0060263	0.005916347	0.00865572	0.011844363	0.0129659	0.0063195	0.0020544	0.0104989	0.0087855
Annual	SO2_STREX	0.0005107	0.0006226	0.0006573	0.0008215	9.887E-05	6.35751E-05	7.13963E-05	3.55695E-07	0.0002105	0.0002272	0.0005973	6.852E-05	0
Annual	TOG_DIURN	0.0499652	0.1618001	0.0834693	0.104069	0.0023924	0.001119316	0.00041816	2.61104E-06	0.0026672	0.0028048	1.4319645	0.0015764	0
Annual	TOG_HTSK	0.086414	0.225036	0.1201844	0.1522157	0.0693882	0.033771174	0.014777615	9.67852E-05	0.0265187	0.0159707	0.7872755	0.0114418	0
Annual	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.020335748	0.498029629	0.0615992	0	0	0.5877605	0
Annual	TOG_RESTL	0.0401494	0.1142076	0.070906	0.0931359	0.0012616	0.000613159	0.000227643	1.60287E-06	0.0011772	0.0011467	0.7584722	0.0007923	0
Annual	TOG_RUNEX	0.0101114	0.0363937	0.0183641	0.0248389	0.0650001	0.064111366	0.011716585	0.048106314	0.042616	3.1108101	2.6116906	0.1099741	0.0802528
Annual	TOG_RUNLS	0.1935917	0.7350273	0.3940811	0.4565054	0.4372965	0.194951955	0.073961783	0.000443814	0.2925608	0.0762512	1.766858	0.0695237	0
Annual	TOG_STREX	0.2096036	0.4000067	0.31129	0.4133425	0.0732031	0.038346935	0.041070033	1.20033E-06	0.1400025	0.1041245	1.995157	0.0518603	0
Summer	CH4_IDLEX	0	0	0	0	0.0045537	0.002777346	0.002627006	0.023685478	0.0085919	0	0	0.087323	0
Summer	CH4_RUNEX	0.0021288	0.0064142	0.0035754	0.00468	0.0044899	0.003286251	0.00088813	0.027816513	0.0055394	3.0425325	0.3087008	0.0066875	0.0032743
Summer	CH4_STREX	0.0389698	0.0632511	0.0545439	0.0676753	0.0129677	0.00690337	0.006757077	2.04342E-07	0.0229107	0.0223864	0.2137359	0.0067519	0
Summer	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.286623132	6.346404591	0.4831512	0	0	3.3921972	0
Summer	CO_RUNEX	0.6718832	1.444288	0.9408609	1.0908713	0.6064749	0.44537467	0.122787353	0.238667787	0.7182675	23.599015	18.832855	0.5628972	0.3331045
Summer	CO_STREX	1.7035307	1.9077361	2.1628263	2.4949482	0.8424303	0.453635343	0.76370611	0.004138722	2.4874475	1.5837573	7.9028329	0.7742141	0
Summer	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.23807783	1052.827751	63.701705	0	0	378.97922	0
Summer	CO2_NBIO_RUNEX	272.11086	320.05904	334.37657	417.65631	619.97723	614.9266661	911.022875	1272.829712	1335.521	1635.6271	207.41131	1096.5634	929.32761
Summer	CO2_NBIO_STREX	51.649898	62.92991	66.443304	83.08804	9.9086217	6.380643186	7.137174571	0.035552778	20.958077	22.490884	58.436811	6.4152164	0
Summer	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.389589606	5.06332578	0.2145979	0	0	3.3986484	0
Summer	NOX_RUNEX	0.0280097	0.0940928	0.0582614	0.0787008	1.3091179	1.433264131	0.855681654	1.848376656	0.8404265	0.2953035	0.9735285	4.1579413	4.0281165
Summer	NOX_STREX[3]	0.1544099	0.2438047	0.2376668	0.3065529	0.2725695	0.153283811	1.796581904	2.495247894	0.67484	0.2132216	0.2477416	0.7742504	0
Summer	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000368743	0.002078293	6.674E-05	0	0	0.0027928	0
Summer	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060417566	0.13034	0.0918981	0.01176	0.7448002	0.13034
Summer	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035225137	0.012	0.0202294	0.004	0.0105986	0.016
Summer	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024179126	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Summer	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Summer	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000352791	0.001988387	6.385E-05	0	0	0.0026719	0
Summer	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.025893242	0.05586	0.0393849	0.00504	0.3192001	0.05586
Summer	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008806284	0.003	0.0050573	0.001	0.0026497	0.004
Summer	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023133139	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Summer	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Summer	ROG_DIURN	0.092411	0.3004602	0.1538291	0.1910835	0.0042442	0.001991577	0.000750934	4.90319E-06	0.0046974	0.0049809	2.749938	0.0027601	0
Summer	ROG_HTSK	0.0964851	0.2626975	0.1350376	0.1681545	0.0783689	0.038223824	0.016691363	0.000106277	0.02873	0.0185244	1.093855	0.0118519	0
Summer	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.014777375	0.461157561	0.046602	0	0	0.4069309	0
Summer	ROG_RESTL	0.074744	0.2153647	0.1301545	0.1692383	0.0024046	0.001167999	0.000445854	3.30486E-06	0.0022654	0.0022658	1.7203704	0.0014667	0
Summer	ROG_RUNEX	0.0077545	0.027671	0.0140193	0.0190131	0.0542184	0.055368784	0.009608999	0.018415253	0.0310306	0.0487059	2.0708739	0.0928205	0.070494
Summer	ROG_RUNLS	0.19018	0.7222288	0.3867896	0.4487595	0.4382743	0.195546185	0.074182136	0.000449203	0.292559	0.0739941	1.737429	0.0635263	0
Summer	ROG_STREX	0.1642963	0.3120517	0.243675	0.3234745	0.0640835	0.033570914	0.035891613	1.04898E-06	0.121682	0.0863448	1.6073261	0.0394336	0
Summer	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.000637618	0.009885111	0.0006086	0	0	0.0036235	0
Summer	SO2_RUNEX	0.0026586	0.0031278	0.0032672	0.0040789	0.0060265	0.005916388	0.008655749	0.011844366	0.0129662	0.0063196	0.0020525	0.0104991	0.0087855
Summer	SO2_STREX	0.0005048	0.000615	0.0006493	0.000812	9.805E-05	6.31416E-05	7.06281E-05	3.51824E-07	0.0002074	0.0002226	0.0005783	6.348E-05	0
Summer	TOG_DIURN	0.0924663	0.3006404	0.1539213	0.1911981	0.0042442	0.001991577	0.000750934	4.90319E-06	0.0046974	0.0049809	2.749938	0.0027601	0
Summer	TOG_HTSK	0.0965429	0.2628551	0.1351186	0.1682553	0.0783689	0.038223824	0.016691363	0.000106277	0.02873	0.0185244	1.093855	0.0118519	0
Summer	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.019726007	0.527271847	0.0626703	0	0	0.5874511	0
Summer	TOG_RESTL	0.0747888	0.2154939	0.1302326	0.1693398	0.0024046	0.001167999	0.000445854	3.30486E-06	0.0022654	0.0022658	1.7203704	0.0014667	0
Summer	TOG_RUNEX	0.0112836	0.0403843	0.0204362	0.0276549	0.065513	0.064248322	0.011810066	0.048109554	0.0435591	3.1109919	2.5604951	0.1105783	0.0802528
Summer	TOG_RUNLS	0.1902941	0.7226621	0.3870217	0.4490288	0.4382743	0.195546185	0.074182136	0.000449203	0.292559	0.0739941	1.737429	0.0635263	0
Summer	TOG_STREX	0.1800093	0.3418961	0.26698	0.3544098	0.0701634	0.036755925	0.039296798	1.14851E-06	0.1332265	0.0945367	1.7493542	0.0431748	0

Winter	CH4_IDLEX	0	0	0	0	0.004543	0.002771192	0.002945617	0.018584837	0.0084633	0	0	0.0872067	0
Winter	CH4_RUNEX	0.0018546	0.0056563	0.0031317	0.0040923	0.0044277	0.003266732	0.000874173	0.000819608	0.0054162	3.0424922	0.3105787	0.006602	0.0032743
Winter	CH4_STREX	0.0448619	0.0733484	0.06291	0.0781049	0.0133912	0.007129132	0.006964358	2.12516E-07	0.0239298	0.0244988	0.2370663	0.0082436	0
Winter	CO_IDLEX	0	0	0	0	0.1678772	0.126758625	0.388116692	6.514513971	0.4910392	0	0	3.4792571	0
Winter	CO_RUNEX	0.539678	1.180697	0.7614855	0.884759	0.5991695	0.443274557	0.121271705	0.153089453	0.703653	23.59702	18.300696	0.5534118	0.3331045
Winter	CO_STREX	2.0132412	2.2625156	2.5675453	2.9698032	0.8802741	0.47392663	0.800617995	0.004338734	2.6656906	1.8457548	8.4278924	1.1017425	0
Winter	CO2_NBIO_IDLEX	0	0	0	0	9.3581592	14.92008755	67.34688641	1077.398907	65.285763	0	0	356.97711	0
Winter	CO2_NBIO_RUNEX	248.26101	295.28652	310.81441	392.53295	619.96429	614.9229798	911.0202216	1253.680895	1335.4953	1635.6235	206.64372	1096.5466	929.32761
Winter	CO2_NBIO_STREX	52.236878	63.676368	67.227734	84.02981	9.9762095	6.416799952	7.200173203	0.035869944	21.259945	22.933868	59.88215	6.9638689	0
Winter	NOX_IDLEX	0	0	0	0	0.0826802	0.121917702	0.40772782	5.618352499	0.2412289	0	0	3.2104368	0
Winter	NOX_RUNEX	0.029509	0.100183	0.0616871	0.0832989	1.3670637	1.49381553	0.892924017	1.918074232	0.8881268	0.3014555	1.0889414	4.3545929	4.1977547
Winter	NOX_STREX[3]	0.164118	0.2593714	0.2526727	0.3259915	0.2794792	0.157150746	1.798611157	2.495251484	0.6823205	0.2222737	0.2604454	0.7802853	0
Winter	PM10_IDLEX	0	0	0	0	0.0010129	0.001512805	0.000523924	0.002699758	8.667E-05	0	0	0.0040108	0
Winter	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.089180026	0.130340037	0.060043994	0.13034	0.0918981	0.01176	0.7448002	0.13034
Winter	PM10_PMTW	0.008	0.008	0.008	0.008	0.0100668	0.010946027	0.012000003	0.035007311	0.012	0.0202294	0.004	0.0105986	0.016
Winter	PM10_RUNEX	0.0013047	0.0018934	0.0013477	0.0014102	0.0102968	0.013566467	0.009466862	0.024151342	0.0084683	0.0021823	0.0017969	0.0257095	0.1361859
Winter	PM10_STREX	0.0017588	0.0025559	0.0017952	0.0018512	0.0002106	9.84354E-05	8.28075E-05	4.71852E-07	0.0002181	0.0002239	0.0027747	4.794E-05	0
Winter	PM25_IDLEX	0	0	0	0	0.0009691	0.001447362	0.000501259	0.002582967	8.292E-05	0	0	0.0038373	0
Winter	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.038220011	0.055860016	0.02573314	0.05586	0.0393849	0.00504	0.3192001	0.05586
Winter	PM25_PMTW	0.002	0.002	0.002	0.002	0.0025167	0.002736507	0.003000001	0.008751828	0.003	0.0050573	0.001	0.0026497	0.004
Winter	PM25_RUNEX	0.0012018	0.0017423	0.0012406	0.0013009	0.0098328	0.012970752	0.009054989	0.023106557	0.0080878	0.0020674	0.0016796	0.0245874	0.1302946
Winter	PM25_STREX	0.0016172	0.0023502	0.0016506	0.0017022	0.0001937	9.05077E-05	7.61385E-05	4.33851E-07	0.0002005	0.0002059	0.0026088	4.408E-05	0
Winter	ROG_DIURN	0.0488148	0.1633364	0.0798345	0.0974958	0.0024967	0.001135244	0.000435792	2.68249E-06	0.0027829	0.0028434	1.6393559	0.0014837	0
Winter	ROG_HTSK	0.0944738	0.2576047	0.1320133	0.1644796	0.0804822	0.03841713	0.016334791	0.000107927	0.028432	0.0178481	1.0540129	0.0117059	0
Winter	ROG_IDLEX	0	0	0	0	0.0196433	0.014878453	0.015676089	0.400126443	0.0443619	0	0	0.4075779	0
Winter	ROG_RESTL	0.0401785	0.1138154	0.071025	0.0934274	0.0013209	0.000634648	0.000238868	1.72859E-06	0.0012515	0.0012014	0.7628485	0.0008183	0
Winter	ROG_RUNEX	0.0068278	0.0245071	0.0123808	0.0167676	0.0539028	0.055285876	0.009550806	0.017311118	0.0304402	0.0485932	2.0925849	0.0924026	0.070494
Winter	ROG_RUNLS	0.2190298	0.8575349	0.4555568	0.5238872	0.4706234	0.210639325	0.08059738	0.000472322	0.3114386	0.0890146	2.0230662	0.0843655	0
Winter	ROG_STREX	0.1911347	0.3645853	0.2838611	0.376922	0.0663485	0.034760684	0.037229432	1.08808E-06	0.1274435	0.0945968	1.7917479	0.0482208	0
Winter	SO2_IDLEX	0	0	0	0	9.037E-05	0.000142292	0.000638416	0.010178731	0.0006236	0	0	0.0034157	0
Winter	SO2_RUNEX	0.0024256	0.0028857	0.0030369	0.0038333	0.0060263	0.005916352	0.008655723	0.011844363	0.0129659	0.0063195	0.0020449	0.0104989	0.0087855
Winter	SO2_STREX	0.0005105	0.0006223	0.000657	0.0008212	9.872E-05	6.34994E-05	7.12516E-05	3.54962E-07	0.0002104	0.0002269	0.0005926	6.891E-05	0
Winter	TOG_DIURN	0.0488441	0.1634344	0.0798823	0.0975543	0.0024967	0.001135244	0.000435792	2.68249E-06	0.0027829	0.0028434	1.6393559	0.0014837	0
Winter	TOG_HTSK	0.0945304	0.2577593	0.1320924	0.1645782	0.0804822	0.03841713	0.016334791	0.000107927	0.028432	0.0178481	1.0540129	0.0117059	0
Winter	TOG_IDLEX	0	0	0	0	0.0273519	0.019755884	0.021193826	0.455513497	0.0601201	0	0	0.5881877	0
Winter	TOG_RESTL	0.0402026	0.1138837	0.0710676	0.0934835	0.0013209	0.000634648	0.000238868	1.72859E-06	0.0012515	0.0012014	0.7628485	0.0008183	0
Winter	TOG_RUNEX	0.0099311	0.0357655	0.0180442	0.0243809	0.0650526	0.064127342	0.011725152	0.019738418	0.0426976	3.1108276	2.5860036	0.1099684	0.0802528
Winter	TOG_RUNLS	0.2191612	0.8580494	0.4558302	0.5242015	0.4706234	0.210639325	0.08059738	0.000472322	0.3114386	0.0890146	2.0230662	0.0843655	0
Winter	TOG_STREX	0.2094144	0.3994539	0.3110094	0.4129687	0.0726433	0.038058574	0.040761542	1.19131E-06	0.1395346	0.1035715	1.9500346	0.0527957	0

1 Source: California Air Resources Board. EMFAC2017 Web Database. https://www.arb.ca.gov/emfac/2017/; California Air Pollution Control Officers Association (CAPCOA). 2017, November. California Emissions Estimator Model User's Guide, Version 2016.3.2, Appendix A.

2 Unless otherwise noted, per CalEEMod methodology, the calculated CalEEMod emission rates are derived from the emission rates obtained using the EMFAC2017 Web Database for the Riverside (SC) region .

3 Because EMFAC2017 provides vehicle trips data for MHDT and HHDT diesel trucks, the formula provided in Appendix A of the CalEEMod User's Guide in calculating the NO_x STREX emission rates are utilized.

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Appendix 9

Phase I Environmental Site Assessment

PHASE I ENVIRONMENTAL SITE ASSESSMENT
TRACT NO. 38155
WILDOMAR, RIVERSIDE COUNTY, CALIFORNIA 92595

June 10, 2021
Project No. 2778-CR

Prepared For:

Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220
Newport Beach, California 92660

GEOTEK

GeoTek, Inc.
1548 North Maple Street, Corona, California 92878
(951) 710-1160 Office (951) 710-1167 Fax www.geotekusa.com

June 10, 2021
Project No. 2778-CR

Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220
Newport Beach, California 92660

Attention: Mr. Erik Lunde

Subject: Phase I Environmental Site Assessment
Tract No. 38155, APN's 367-502-001, -002, -003 and -004
Wildomar, Riverside County, California 92595

Dear Mr. Lunde:

GEOTEK, INC. (GEOTEK) is pleased to present this Phase I Environmental Site Assessment for the above-referenced subject Site. Services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials E 1527-13, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,*" which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEOTEK'S Proposal No. P-0504621-CR, dated May 17, 2021.

This Phase I Environmental Site Assessment has not revealed evidence of an environmental condition in connection with the Site. No further testing is recommended.

We appreciate this opportunity to be of service. If you have any questions, or if we can be of further service, please contact us at (951) 710-1160.

Sincerely,
GEOTEK, INC.



Edward H. LaMont
Principal Geologist, CEG 1892
Expires 07/31/2022

J. Michael Batten, CEM, REPA
Environmental Services Manager
Registered Environmental Property
Assessor No. 113162
Expires 06/15/2021

Franklin Sullivan
Staff Environmentalist

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EXECUTIVE SUMMARY

GEOTEK, INC. (GEOTEK) has performed a Phase I Environmental Site Assessment (ESA) for the subject property: Tract No. 38155 (the "Site"), located in the city of Wildomar, Riverside County, California. Our services were conducted in substantial conformance with the scope and limitations of the American Society of Testing and Materials (ASTM) E 1527-13, "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*", which is approved to meet the requirements of the federal All Appropriate Inquiries (AAI) standards as set forth in the Code of Federal Regulations, Title 40, Section 312 (40 CFR 312), and GEOTEK Proposal No. P-0504621-CR, dated May 17, 2021. Any additions or deletions from our scope of services are discussed in the appropriate sections of this assessment.

A representative of GEOTEK conducted a Site reconnaissance on June 2, 2021. The weather was warm and the sky was clear. The irregular shaped Site is comprised of four (4) parcels of land (Riverside County APNs 367-502-001, -002, -003 and -004) and encompasses a total of approximately 9.0 acres. The Site can generally be accessed from Sunny Sage Way to the south.

The Site is currently being utilized as a soil stockpile area that was generated during grading for an adjacent residential development to the east. The stockpiled material currently on the Site is now being actively exported – as observed during our recent Site reconnaissance. GeoTek observed the grading for the adjacent project that the existing Site stockpile soil was imported from, which occurred approximately two years ago. The soils observed to have been stockpiled on the Site consist of "clean" predominantly silts, sands and cobble size materials. No obvious stained or odoriferous soils were observed to have been placed on the Site.

Visual evidence of hazardous substances and wastes were not observed during our Site reconnaissance. No visual indication of spills or leaks were observed. No pungent or acrid odors were observed emanating from the Site.

The Site is in an area largely characterized by residential development and vacant land. The Site is bounded by Monte Vista Drive followed by residential structures and Interstate 15 to the west; Summer Sage way followed by vacant land to the south; Sunnybrook Drive followed by residential development to the east; and vacant land followed by Bundy Canyon Road to the North.

Based on readily available historic information, the Site appears to have been vacant land since at least 1938 until the present day, with the exception of the stockpile of soil that was generated during the grading of the residential project located adjacent to the east of the subject Site, which occurred within the past couple of years. The surrounding properties

generally appear to historically have been vacant land with some sporadic residences or land utilized for agriculture from at least 1938 to 1994. Residential tract development to the northeast of the Site can be observed in the aerial photograph dated 1997.

The Site appears on the environmental database report obtained for this assessment. The Site is listed with the California Integrated Water Quality System (CIWQS) database, the California Environmental Reporting System (CERS) database and the National Pollution Discharge (NPDES) database. All of these listings are associated with the development and construction of the Site and do not represent environmental concerns to the Site. There are no adjacent facilities on the environmental database report obtained for this assessment. There are four (4) facilities listed on the database report within the various search distances specified by ASTM E 1527-13. Due to their status listings, distances, and/or locations it is our opinion that these facilities do not represent an environmental concern to the Site.

This Phase I Environmental Site Assessment has not revealed evidence of an environmental condition in connection with the Site.

This executive summary does not contain all the information that is found in the full report. The report should be read in its entirety to obtain a more complete understanding of the information provided and to aid in any decisions made or actions taken based on this information.

INTRODUCTION

GEOTEK, INC. (GEOTEK) has performed a Phase I Environmental Site Assessment (ESA) for Tract No. 38155 (the "Site"), located in the Wildomar area of Riverside County, California.

1.1 PURPOSE

The purpose of this Phase I ESA was to identify and evaluate actual and potential environmental conditions involving the subject Site. It was not the purpose of this assessment to determine the degree or extent of contamination, if any, but rather the potential for contamination.

1.2 SCOPE OF WORK

The Phase I ESA is a general characterization of environmental concerns based on reasonably ascertainable information and observations. GEOTEK performed the Phase I ESA in substantial accordance with ASTM E 1527-13. The following services were provided for the assessment:

- A reconnaissance of the Site and surrounding properties to visually assess current utilization and indications of potential surface contamination. This was accomplished by driving the Site boundaries, and then traversing the Site until the entire Site had been surveyed.

- A reconnaissance of the surrounding area for approximately one-half mile was conducted, without entering the properties, making observations concerning property uses, conditions, and housekeeping.

- A review of the geologic and hydro-geologic settings was conducted using reasonably ascertainable public records and documents.

- An environmental database report was obtained from a data service provider. This database report compiles and locates documented "hazardous waste" facilities within specific minimum search distances as defined by ASTM E 1527-13. If necessary, additional information on identified facilities was gathered by a file review at the appropriate federal, state, local, and/or tribal regulatory agency.

- A review of reasonably ascertainable historical records (including aerial photographs, topographic maps, building records, environmental liens and activity and use limitations reports and city directories) was conducted to assess the historical land utilization and indications of potential contamination or sources of contamination for the Site.

- This report was prepared, which relates the findings of this study and presents our conclusions and recommendations.

Specific items not included in this Scope of Services are soil analysis, water analysis, asbestos containing materials analysis, radon analysis, lead-based paint analysis, lead in drinking water, wetlands, regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, vapor intrusion testing, high voltage power lines, and other items not within the scope of ASTM E 1527-13.

1.3 SIGNIFICANT ASSUMPTIONS

Specific assumptions by GEOTEK for this assessment include:

- GEOTEK had permission to access the Site grounds;
- The client has provided GEOTEK with available geotechnical or environmental reports for the Site;
- The client has provided GEOTEK with known current or historic uses of hazardous materials at the Site, or with other specialized knowledge of the environmental history of the Site and surrounding area;
- The client is not the sole and absolute source of information;
- Seller has provided proper and complete access to their knowledge, both written and verbal, and GEOTEK can rely on the information.

1.4 LIMITATIONS AND EXCEPTIONS

GEOTEK conducted a Phase I Environmental Site Assessment in substantial accordance with ASTM E 1527-13 and as authorized by Monte Vista Ranch II, LLC. This study does not include sampling of soil, groundwater and/or materials on-site for environmental testing. This report is intended for the use of Monte Vista Ranch II, LLC. The contents should not be relied upon by any party other than the aforementioned without the express written consent of GEOTEK.

The findings, conclusions, and recommendations made in this report are based on the information that was made available to GEOTEK, in most instances from public records. The

information is relevant to the date of our site work and should not be relied on to represent conditions at any later date. The opinions and conclusions expressed herein are based on information obtained during our assessment and on our experience and current standards of technical practice. GEOTEK makes no other warranties, either express or implied, concerning the completeness of the data furnished to us. GEOTEK cannot be responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time our assessment was undertaken. GEOTEK is not responsible, nor liable for work, testing or recommendations performed or provided by others. This Phase I Environmental Site Assessment is not and should not be construed as a warranty or guarantee about the presence or absence of environmental hazards or contaminants, which may affect the subject site. Facts, conditions, and acceptable risk factors change with time; accordingly, this report should be viewed within this context.

Specific limitations to the scope of ASTM E 1527-13 due to contract limitations, availability of resources, and/or encountered Site conditions are discussed in the appropriate section(s) of this report.

1.5 SPECIAL TERMS AND CONDITIONS

This assessment report is presented as fulfilling the standard requirements of most financial institutions, governmental regulatory agencies, ASTM, and generally accepted industry standards and practices. Please refer to GEOTEK Proposal No. P-0504621-CR for complete terms and conditions for this assessment.

1.6 RELIANCE

This assessment has been prepared for the exclusive use and may be relied upon by Monte Vista Ranch II, LLC and their successors and assignees. Third party reliance letters may be issued upon request and upon the payment of the, then current, fee for such letters. All third parties relying on this report, by such reliance, agree to be bound by the General Conditions and Limitations agreed to by Monte Vista Ranch II, LLC. No reliance by any party is permitted without such agreement, regardless of the content of the reliance letter itself.

DESCRIPTION OF SITE AND SURROUNDING AREA

The objective of describing the Site and surrounding area is to document current conditions as observed and to obtain information which would indicate the likelihood of a recognized environmental condition in connection with the Site. A representative of GEOTEK conducted a Site reconnaissance on June 2, 2021. The weather was warm and the sky was clear. The Site can generally be accessed from Summer Sage Way to the south.

1.7 SITE LOCATION AND LEGAL DESCRIPTION

The Site is identified as Tract No. 38155 in the Wildomar area of Riverside County, California. According to the U.S. Geological Survey (USGS) Wildomar, Romoland, Murrieta and Lake Elsinore topographic map sheets (7.5-minute series), the Site is located in Section 26 Township 6 South, Range 4 West, San Bernardino Meridian (see Figure 1 in Appendix A and documents in Appendix B). The Site is also known as Riverside County Assessor's Parcel Numbers (APNs) 367-502-001, -002, -003 and -004.

1.8 SITE AND VICINITY GENERAL CHARACTERISTICS

The Site is currently being utilized as a stockpile for soil material that was generated from the grading of an adjacent residential development to the east. The Site is in an area largely characterized by residential development and vacant land.

1.9 CURRENT PROPERTY USE

The Site is currently being utilized as a stockpile for soil material that was generated from the grading of an adjacent residential development to the east.

1.10 SITE IMPROVEMENTS

The Site is currently being utilized as a stockpile for soil material that was generated from the grading of an adjacent residential development to the east. No improvements were observed on the Site. Site Photographs are included in Appendix C.

1.10.1 HAZARDOUS SUBSTANCES

Visual evidence of hazardous substances and wastes were not observed during our Site reconnaissance. No visual indication of spills or leaks were observed. No pungent or acrid odors were observed emanating from the Site.

1.10.2 Storage Tanks

GeoTek did not observe evidence of underground or above-ground fuel storage tanks (such as vent pipes, fill pipes, regular-shaped depressions, etc.) on the Site.

1.10.3 Poly-Chlorinated Biphenyls (PCBs)

GeoTek did not observe suspect equipment (transformers, elevators, hydraulic lift mechanisms, trash compactors, etc.) which may contain PCBs on the Site.

1.10.4 Controlled Substances

GeoTek consulted the U.S. Drug Enforcement Agency (DEA) website to cross-check the Site address against published facilities subject to DEA enforcement. The Site did not appear on the list of published facilities. A copy of the DEA printout is included in Appendix B.

GeoTek did not observe evidence of illegal or controlled substances being used or manufactured at the Site.

1.10.5 Indications of Solid Waste Disposal

GeoTek did not observe visual indications of waste disposal at the Site. Waste disposal for the Site and Site area is provided by CR & R Environmental Services Incorporated.

1.10.6 Utility Supply

GeoTek observed utility services at the Site and vicinity. Water and sewer services for the Site and area are provided by Elsinore Valley Municipal Water District. Electric services for the Site and area are provided by Southern California Edison. Gas services for the Site and area are provided by Southern California Gas Company.

1.10.7 Drainage

Natural drainage at the Site is generally interpreted to be toward the west-southwest, conforming to the natural topography in the area. Ponded water was not observed during our Site reconnaissance.

1.10.8 Other Conditions of Concern

No visual indication of other conditions of concern (water wells, drywells, cesspools, etc.) that would indicate a recognized environmental condition was observed during the Site reconnaissance.

1.10.9 Interviews

GeoTek interviewed the following individuals while performing this assessment, in the form of completing a *User Questionnaire*:

- Mr. Erik Lunde (a representative for the current Site owner) completed a User Questionnaire.

Information from this interview is incorporated into the appropriate sections of this report.

1.11 Current Adjoining Property Use

The Site is in an area largely characterized by residential development and vacant land. The Site is bounded by Monte Vista Drive followed by residential structures and Interstate 15 to the west; Summer Sage way followed by vacant land to the south; Sunnybrook Drive followed by residential development to the east; and vacant land followed by Bundy Canyon Road to the north.

CLIENT PROVIDED INFORMATION

As a form of interview, Mr. Erik Lunde, a consultant of the Site owner, completed a "User Questionnaire" for the Site in accordance with ASTM E 1527-13. A copy of the completed questionnaire is included in Appendix B.

1.12 ENVIRONMENTAL CLEAN UP LIENS

Mr. Lunde is not aware of any environmental clean-up liens at the Site.

1.13 ACTIVITY AND USE LIMITATIONS

Mr. Lunde is not aware of any activity use limitations at the Site.

1.14 SPECIALIZED KNOWLEDGE

Mr. Lunde is not aware of any specialized knowledge of the Site or nearby properties.

1.15 PURCHASE PRICE

Mr. Lunde states that the purchase price being paid for the property reasonably reflects the fair market value of the property.

1.16 COMMONLY KNOWN INFORMATION

Mr. Lunde states that he is not aware of commonly known or reasonably ascertainable information for the Site.

1.17 OBVIOUS INDICATORS OF CONTAMINATION

Mr. Lunde states that he is not aware of obvious indicators of a likely environmental impact at the Site.

1.18 OWNER, PROPERTY MANAGER AND OCCUPANT INFORMATION

Monte Vista Ranch II, LLC owns and manages the Site. The Site is currently being utilized as a stockpile for soil from the adjacent residential development.

1.19 Reason for Performing Phase I ESA

This Phase I ESA was performed at the request of Monte Vista Ranch II, LLC as part of their due diligence for possible future improvements on the Site.

1.20 Other User Provided Information

GeoTek was not provided with any other information for the Site by Monte Vista Ranch II, LLC.

PROPERTY PHYSICAL SETTING

Surface and subsurface environments are of interest because they control the movement of water-born contaminants, which could be transported to and from the subject Site. GEOTEK reviewed information regarding the physical setting of the subject Site and immediately surrounding area.

1.21 REGIONAL GEOLOGY

The property is situated in the Peninsular Ranges geomorphic province. The Peninsular Ranges province is one of the largest geomorphic units in western North America. Basically, it extends from the point of contact with the Transverse Ranges geomorphic province, southerly to the tip of Baja California. This province varies in width from about 30 to 100 miles. It is bounded on the west by the Pacific Ocean, on the south by the Gulf of California and on the east by the Colorado Desert Province.

The Peninsular Ranges are essentially a series of northwest-southeast oriented fault blocks. Several major fault zones are found in this province. The Elsinore Fault zone and the San Jacinto Fault zone trend northwest-southeast and are found near the middle of the province. The San Andreas Fault zone borders the northeasterly margin of the province.

1.22 LOCAL GEOLOGIC SETTING AND TOPOGRAPHY

The Site and Site area are understood to be underlain by granitic bedrock and alluvium (Morton, D.M and Weber, F.H, 2003). Additional data regarding soil survey information for the Site and Site area is also included in Appendix B.

The Site and Site area can be considered as having gently rolling hillside terrain. Based on the USGS topographic map for the area and other documents reviewed for this report, the elevation of the subject Site is approximately 1,400 to 1,460 feet above mean sea level.

1.23 VICINITY SURFACE DRAINAGE

Natural drainage at the Site is interpreted to be dominantly directed toward the west-southwest, conforming to the natural topography in the area. Storm water runoff does not appear to drain towards the Site from the adjacent properties due to existing streets and/or improvements.

According to the Federal Emergency Management Agency (FEMA), the Site is not in a flood hazard area. (Community Panel Number 06065C-2730G, dated August 28, 2008). A copy of the FEMA map is included in Appendix B.

1.24 HYDROGEOLOGY

According to a review of historical groundwater data (California Department of Water Resources and California State Water Resources Control Board groundwater well data [http://wdl.water.ca.gov and http://geotracker.waterboards.ca.gov]) and in-house information, groundwater is approximated to be greater than 50 feet below ground surface, with a flow estimated to be directed to the west-southwest.

ENVIRONMENTAL REGULATORY RECORDS REVIEW

The records review is conducted to help identify known recognized environmental conditions at the Site and/or on adjacent or nearby properties which may have impacted the subject Site.

1.25 ENVIRONMENTAL DATABASE RECORDS SEARCH

GEOTEK obtained and reviewed an environmental database report of the federal and state environmental records specified by ASTM E 1527-13. The database report was provided by Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut. Additionally, orphan or un-mappable sites listed by EDR were reviewed for the approximate minimum search distances noted and included in our discussion, if applicable. Refer to Appendix D for a copy of the database report.

ENVIRONMENTAL DATABASE	MINIMUM SEARCH DISTANCE	SITE	ADJACENT	TOTAL LISTED
U.S. Environmental Protection Agency (EPA) - National Priorities List (NPL), including delisted NPL	1.0 Mile	No	0	0
EPA – Superfund Enterprise Management System (SEMS), including archived sites (formerly CERCLIS)	0.5 Mile	No	0	0
EPA – Resource Conservation and Recovery Act (RCRA), Corrective Action Facilities (CORRACTS)	1.0 Mile	No	0	0
EPA – RCRA, Transportation, Storage, and Disposal facilities (TSD)	0.5 Mile	No	0	0
EPA - RCRA Generators	Site and Adjacent	No	0	0
EPA – Emergency Response Notification System (ERNS)	Site	No	N/A	0
Federal institutional control/engineering control registries	Site	No	0	0
California Environmental Protection Agency (CEPA) – State Response Sites (Response, formerly Annual Work Plan and Bond Expenditure Plan)	1.0 Mile	No	0	0

ENVIRONMENTAL DATABASE	MINIMUM SEARCH DISTANCE	SITE	ADJACENT	TOTAL LISTED
CEPA – EnviroStor Database (formerly CALSITES)	0.5 Mile	No	0	1
CEPA – CHMIRS - California Hazardous Materials Information Reporting System	Site	No	0	0
CEPA - Solid Waste Fill/Landfill (SWF/LF), Solid Waste Assessment Test (SWAT)/Waste Management Unit Database System (WMUDS) and Recycling Facilities (SWRCY)	0.5 Mile	No	0	1
CEPA – Leaking Underground Storage Tanks (LUST)	0.5 Mile	No	0	0
CEPA – Underground Storage Tanks (UST), including historic USTs	Site and Adjacent	No	0	0
CEPA – Spills, Leaks, Investigations & Cleanup Cost Recovery Listing (SLIC)	0.5 Mile	No	0	0
State institutional control/engineering control registries	Site	No	N/A	0
Local and/or Tribal databases	Up To 1.0 Mile	No	0	0
Drycleaners	0.25 Mile	No	0	0
Other databases	Up to 1.0 Mile	**YES**	0	5
Unmappable facilities	Up to 1.0 Mile	No	0	0

N/A – Not Applicable

1.26 Discussion of Regulatory Records

1.26.1 National Priority List

The National Priority List (NPL) is the EPA's list of confirmed or proposed Superfund sites. Our review of this data includes sites which have been delisted from the NPL. The NPL is searched for a 1.0-mile distance.

The Site does not appear on the NPL. There are no facilities on the NPL within 1.0-mile of the Site.

1.26.2 Superfund Enterprise Management System

The Superfund Enterprise Management System (SEMS, formerly CERCLIS) is a compilation of sites that the EPA has investigated or is currently investigating for a release or threatened release of hazardous substances. Our review of SEMS sites includes archive (no further remedial action planned) facilities. The SEMS list is searched for a 0.5-mile distance.

The Site does not appear on the SEMS list. There are no SEMS facilities within 0.5 mile of the Site.

1.26.3 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act compile selective information on facilities which generate, transport, store, treat and or dispose of hazardous waste. RCRA facilities can be listed on one of three databases:

- *Corrective Action Facilities (CORRACTS)* are facilities undergoing corrective action. A corrective action order is issued pursuant to RCRA Section 3008(h) when there has been a release of hazardous waste or constituents into the environment from a RCRA facility. The CORRACTS list is searched for a 1.0-mile distance.

  The Site does not appear on the CORRACTS list. There are no facilities on the CORRACTS list within 1.0-mile of the Site.

- *Transportation, Storage, and Disposal Facilities (TSD)* includes facilities that transport, store or dispose of hazardous waste and are not listed on the RCRA Generators list. The TSD is searched for a 0.5-mile distance.

  The Site does not appear on the RCRA TSD list. There are no facilities on the RCRA TSD list within 0.5-mile of the Site.

- *Generators List* identifies and tracks hazardous waste from the point of generation to the point of disposal. The RCRA Generators database is a compilation by the EPA of reporting facilities that generate hazardous waste. The RCRA generators list is searched for the Site and adjacent properties.

  The Site does not appear on the RCRA Generators list. There are no adjacent facilities listed as a RCRA Generator.

1.26.4 Emergency Response Notification System

The Emergency Response Notification System (ERNS) is a national database used to collect information on reported releases of oil or hazardous substances. The ERNS list is searched for the Site. The Site does not appear on the ERNS list.

1.26.5 Federal Institutional Control/Engineering Control Registries

The EPA maintains three (3) databases which list sites that have institutional and/or engineering controls in place as part of their operations. These databases are searched for the Site.

The Site does not appear on the Federal Institutional Control/Engineering Control databases.

1.26.6 State Response Sites

The State Response Sites (RESPONSE) records are the state equivalent to the federal National Priorities List (NPL) database. The RESPONSE is searched for a 1.0-mile distance.

The Site does not appear on the on the RESPONSE. There are no RESPONSE facilities listed within a 1.0-mile distance of the Site.

1.26.7 EnviroStor Database

The EnviroStor Database (EnviroStor, formerly CALSITES) records are the state equivalent to the federal SEMS database. EnviroStor is searched for a 0.5-mile distance.

The Site does not appear on the EnviroStor database. There are no EnviroStor facilities within 0.5 mile of the Site.

1.26.8 California Hazardous Material Incident Report System

The California Hazardous Material Incident Report Systems (CHMIRS) is a state database used to collect information on reported hazardous materials incidents (accidental leaks and spills). The CHMIRS list is searched for a 0.25-mile distance.

The Site does not appear on the CHMIRS list. There are no CHMIRS facilities located within 0.25 mile of the Site.

1.26.9 Solid Waste Facilities List

The Solid Waste Fill/Landfill (SWF/LF), Waste Management Unit Database System (WMUDS)/Solid Waste Assessment Test (SWAT), and Solid Waste Recycling Facilities (SWRCY) databases (collectively, the "SWLF databases") includes information pertaining to closed and open solid waste facilities operating in the state of California. The SWLF databases are searched for a 0.5-mile distance.

The Site does not appear on the SWLF databases.

There is one (1) facility on the SWLF databases within 0.5-mile of the Site. The facility is listed as Bundy Canyon and is located at 22800 Bundy Canyon Road. The facility is 0.25 to 0.5 (0.366) mile northeast of the Site. Due to the operational status of this listing being listed as, "Closed", this facility does not represent an environmental concern to the Site.

1.26.10 Leaking Underground Storage Tanks List

The California Leaking Underground Storage Tanks (LUST) list is a compilation of petroleum storage tank sites that have reported a release. The LUST list is searched for a 0.5-mile distance.

The Site does not appear on the LUST list. There are no facilities listed on the LUST list within 0.5-mile of the Site.

1.26.11 Underground Storage Tanks List

The California Underground Storage Tank (UST) list, Historic UST list, and CERES UST list (collectively the "UST lists"), is a compilation of petroleum storage tank sites that are registered with the state of California. The UST lists are searched for the Site and adjacent properties.

The Site does not appear on the UST lists. There are no adjacent facilities listed on the UST lists.

1.26.12 Spills, Leaks, Investigation and Cleanup Cost Recovery Listing (SLIC)

The SLIC database is compiled by the CEPA California Regional Water Quality Control Board, San Ana Region. It is designed to protect and restore water quality from spills, leaks, and similar discharges. The SLIC is searched for a 0.5-mile distance.

The Site does not appear on the SLIC. There are no SLIC facilities adjacent to the Site.

1.26.13 State Institutional Control/Engineering Control Registries

The State of California maintains institutional and engineering control databases or registries. This lists sites with engineering or institutional controls in place. Institutional controls include administrative measures intended to prevent exposure to contaminants remaining on site. Engineering controls include various forms of caps, building foundations, liners, and treatment methods. The State Institutional Control/Engineering Control Registries is searched for the Site.

The subject Site does not appear on the State Institutional Control/Engineering Control Registries.

1.26.14 Tribal Databases

Tribal governments are under the jurisdiction of the EPA for environmental concerns. Currently, the EPA Region 9 publishes LUST and UST information for tribes in Arizona, California, Hawaii, Nevada, and the Pacific Territories. The LUST database is searched for 0.5 mile, and the UST database is searched for 0.25 mile.

The Site does not appear on the Tribal LUST or UST databases. No facilities were identified on the Tribal LUST or UST databases within 0.5 mile of the Site.

1.26.15 Other Databases

EDR compiles information from multiple federal, state, local, and proprietary databases. Most are secondary or tertiary or redundant. Facilities compiled on these other databases are evaluated based on the severity of the listing, distance, and location.

The subject Site is listed with three (3) other databases. These databases being: the California Integrated Water Quality System (CIWQS) database, the California Environmental Reporting System (CERS) database and the National Pollution Discharge (NPDES) database. All of these listings are associated with the development and construction of the Site (likely as a result of the stockpiled soil material previously described) and do not represent environmental concerns to the Site.

There are two (2) facilities within 0.5 mile of the site listed with the Resource Conservation and Recovery Act Non-Generative (RCRA NonGen / NLR) database.

Due to their status listings, distances, and/or locations it is our opinion that these facilities do not represent environmental concerns to the Site.

1.26.16 Dry Cleaners

The DRYCLEANERS list is compiled and provided by EDR. The DRYCLEANER database is searched for a 0.25-mile distance.

The Site does not appear on the DRYCLEANER list. There are no DRYCLEANER facilities listed within 0.25-mile of the Site.

1.26.17 Unmappable Facilities

GeoTek reviewed the listing of "orphan" or unmappable facilities in the database report. There are three (3) unmapped facilities in the report. These facilities are located in the area adjacent to the Site. The facilities are listed with the Enforcement and Compliance History Information (ECHO) database, the Facility Index System (FINDS) database, and the CIWQS database. Each of these listings are associated with construction and residential development and do not represent environmental concerns to the Site.

1.27 Local Regulatory Agency Records

GeoTek contacted Riverside County Fire and Sherriff's Departments regarding underground or above ground storage tanks, hazardous material permits or business plans, emergency responses, spills, inspections, or other information of an environmental or hazardous nature. Neither of these agencies had any information for the Site.

VAPOR ENCROACHMENT SCREENING

The purpose of a Vapor Encroachment Screen (VES) is to identify, to the extent feasible, if a Vapor Encroachment Condition (VEC) exists at the Site.

A Vapor Encroachment Screen Report was generated for the Site and Site area utilizing EDR's Vapor Encroachment Worksheet (see Appendix E).

It was determined that there are no historical dry cleaners or auto stations located within 600 feet and/or up gradient from the Site.

It is our opinion that a VEC is not likely to exist at the subject Site. The Vapor Encroachment Screen report is included in Appendix E.

SITE AND SURROUNDING AREA HISTORY

In order to construct the history of the Site and the surrounding area, GEOTEK reviewed reasonably ascertainable public documents, including aerial photographs, topographic maps, building records, environmental liens and activity use limitations reports, city directories, fire insurance maps, and county assessor history records.

1.28 HISTORICAL SITE USAGE

1.28.1 AERIAL PHOTOGRAPH REVIEW

GEOTEK reviewed aerial photographs dated 1938, 1949, 1953, 1961, 1967, 1974, 1978, 1985, 1989, 1990, 1994, 1997, 2002, 2005, 2009, 2012, 2016 and 2018 (see Appendix B).

The Site appears to be vacant from the aerial photograph dated 1938 until the aerial photograph dated 2016. The Site remains relatively unremarkable throughout the years with only notable changes to the cover vegetation.

In the aerial photograph dated 2018 (see Figure 2 in Appendix A), the Site can be observed to be utilized as an active import site for the adjacent residential grading development.

A 2018 aerial photograph is utilized for Figure 2 (Appendix A).

1.28.2 TOPOGRAPHIC MAP REVIEW

GEOTEK reviewed the Elsinore Quadrangle (30-minute series), dated 1901; the Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1953; the Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1973; the Lake Elsinore Quadrangle (7.5-minute series), dated 1978; the Lake Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1979/1982; the Lake Elsinore and Wildomar Quadrangles (7.5-minute series), dated 1988; the Lake Elsinore and Wildomar (7.5-minute series), dated 1997; and the Lake Elsinore, Murrieta, Romoland and Wildomar Quadrangle (7.5-minute series), dated 2012 (see Appendix B).

The Site appears to be vacant land on the topographic map sheets dated 1901, 1953 and 1973.

The 1978 topographic map sheet does not depict the Site.

The Site appears vacant on the topographic map sheets dated 1979/1982, 1988 and 1997.

The 2012 topographic map sheet shows little detail other than streets in the vicinity.

A 2012 topographic map sheet is utilized for Figure 1 (Appendix A).

1.28.3 Building Department Records

Building department records were not obtained from and not provided by EDR for this assessment as the Site has historically been vacant land.

1.28.4 City Directory Review

GeoTek obtained The EDR – City Directory Image Report, as obtained from and provided by EDR, and included in Appendix B. Due to the Site not having an address, there are no listings for the Site. A copy of the City Directory Image Report is included in Appendix B.

1.28.5 Sanborn Map Review

Sanborn Fire Insurance Maps for the parcel were requested from EDR-Sanborn, which owns and maintains the largest and most complete collection of the maps. Source sheets were not available for the Site. The Sanborn Map Report is included in Appendix B.

1.28.6 Chain of Title

GeoTek has not received Chain-of-Title documents for the Site.

1.29 Historical Immediately Surrounding Property Usage

1.29.1 Aerial Photograph Review

GeoTek reviewed aerial photographs dated 1938, 1949, 1953, 1961, 1967, 1974, 1978, 1985, 1989, 1990, 1994, 1997, 2002, 2005, 2009, 2012, 2016 and 2018 (see Appendix B).

In the aerial photographs dated 1938, 1949 and 1953 the surrounding properties appear to be either vacant or land utilized for agriculture.

The aerial photographs dated 1961 and 1967 depict a highway extending northwest to southeast to the southwest of the Site. The remainder of the surrounding properties appear to be either land utilized for agriculture or vacant.

The aerial photographs dated 1974, 1978 and 1985 depict an increase in residential structures primarily to the west and southwest of the Site. A small number of residential structures can also be observed to the north and southeast of the Site.

In the aerial photograph dated 1989, a residential neighborhood to the west of the Site can be observed. Residential neighborhoods to the north of the Site can be observed to be under construction.

In the aerial photograph dated 1990, the properties to the south of the Site are not depicted. The residential development to the north of the Site appears to have been completed.

The 1994 aerial photograph depicts residential development under construction to the northeast of the Site.

The aerial photographs dated 1997 and 2002 depict completed residential development to the northeast and north of the Site.

The aerial photograph dated 2005 depicts commercial development to the far north of the Site adjacent to a residential neighborhood.

The aerial photographs dated 2009, 2012, and 2016 depict a slight increase in commercial structures to the west of the Site.

The 2018 aerial photograph depicts the current configuration of the surrounding properties.

1.29.2 Topographic Map Review

GeoTek reviewed the Elsinore Quadrangle (30-minute series), dated 1901; the Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1953; the Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1973; the Lake Elsinore Quadrangle (7.5-minute series), dated 1978; the Lake Elsinore, Murrieta, Romoland and Wildomar Quadrangles (7.5-minute series), dated 1979/1982; the Lake Elsinore and Wildomar Quadrangles (7.5-minute series), dated 1988; the Lake Elsinore and Wildomar (7.5-minute series), dated 1997; and the Lake Elsinore, Murrieta, Romoland and Wildomar Quadrangle (7.5-minute series), dated 2012 (see Appendix B).

Structures can be observed to the southwest of the Site with the remainder of the surrounding properties appearing to be vacant land in the topographic map sheet dated 1901.

The 1953 topographic map sheet depicts a sporadic disbursement of structures primarily extending from the northwest to the southwest of the Site.

The 1973 topographic map sheet depicts a residential neighborhood to the far northwest of the Site.

The 1978 topographic map sheet depicts only the properties to the north and northwest of the Site. An abundance of residential structures can be observed within these areas.

The 1979/1982 and 1988 topographic map sheets depicts increased residential development in the properties to the north and west of the Site.

The 1997 topographic map sheet depicts residential neighborhoods to the north, northwest and south of the Site.

The 2012 topographic map sheet shows little detail other than streets in the vicinity.

The 2012 topographic map is presented as Figure 1 in Appendix A.

1.29.3 CITY DIRECTORIES

GEOTEK has reviewed a City Directory Image Report obtained from and provided by EDR for the Site and surrounding property addresses. The City Directory Abstract report provides information on a several nearby property addresses. It is our opinion that the named facilities do not currently represent an environmental concern to the Site. A copy of the City Directory Abstract report is included in Appendix B.

1.29.4 SANBORN MAP REVIEW

Sanborn Maps for the Site were requested from EDR-Sanborn, which owns and maintains the largest and most complete collection of the maps. Source sheets were not available for the Site. The Sanborn Map Report is included in Appendix B.

1.30 HISTORICAL USE SUMMARY

Based on readily available historic information, the Site appears to have been vacant land since at least 1938 until the present day. The surrounding properties appear to historically have been vacant land with some sporadic residences or land utilized for agriculture from at least 1938 to

1994. Residential tract development to the northeast of the Site can be observed in the aerial photograph dated 1997.

Data gaps exist from 1901 to 1938, 1938 to 1949, 1953 to 1961 and 1967 to 1974 due to the limited records which are reasonably ascertainable in the local area. However, it is our opinion that additional historic information, if it were to become available, is not likely to change the conclusions or recommendations of this assessment.

SIGNIFICANT DATA GAPS

No significant data gaps were discovered while performing this Phase I Environmental Site Assessment. Therefore, it is our opinion that sufficient information was obtained to identify current Site conditions and past Site usage.

Minor data gaps include:

- Gaps in the historic records from 1901 to 1938, 1938 to 1949, 1953 to 1961 and 1967 to 1974;

- GEOTEK has not received nor reviewed Chain-of-Title documents for the Site.

It is our opinion that additional information, if it were to become available, is not likely to change the conclusions or recommendations of this assessment.

CONCLUSIONS AND RECOMMENDATIONS

GEOTEK has performed a Phase I Environmental Site Assessment (ESA) for the subject Site in substantial conformance with the scope and limitations of ASTM E 1527-13 and GEOTEK Proposal No. P-0504621-CR, dated May 17, 2021. Any exceptions to, or deletions from, this practice are described in the appropriate sections of this report.

This Phase I Environmental Site Assessment has not revealed evidence of an environmental condition in connection with the Site.

11.0 CERTIFICATIONS

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject Site. I have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR 312.

The qualifications of the Project Team are included in Appendix F.

We appreciate this opportunity to be of service. If you have any questions, or if we can be of further service, please contact us at (951) 710-1160.

Sincerely,
GEOTEK, INC.



Edward H. LaMont
Principal Geologist, CEG 1892
Exp. 07/31/2022

J. Michael Batten, CEM, REPA
Environmental Services Manager
Registered Environmental Property Assessor No. 113162
Expires 06/15/2021

Franklin Sullivan
Staff Environmentalist

12.0 REFERENCES

CALIFORNIA, STATE OF

- Morton, D.M and Weber, F.H. 2003, "Preliminary geologic map of the Elsinore 7.5' quadrangle, Riverside County, California", U.S. Geological Survey, Open-File Report OF-2003-281, scale 1:24,000
- Water Resources, Department of Hydrologic Data

ENVIRONMENTAL DATA RESOURCES, INC.

- Aerial Photo Decade Package, Inquiry No. 6506747.8, dated May 24, 2021
- Certified Sanborn Map Report, Inquiry No. 6506747.3, dated May 24, 2021
- City Directory Image Report, Inquiry No. 6506747.5, dated May 24, 2021
- Historical Topo Map Report, Inquiry No. 6506747.4, dated May 24, 2021
- Radius Map Report, Inquiry No. 6506747.2s, dated May 24, 2021
- Vapor Encroachment Screen Report, Inquiry No. 6506747.2s, dated June 10, 2021

FEDERAL EMERGENCY MANAGEMENT AGENCY

- Flood Insurance Rate Map, Map No. 06065C2730G, dated August 28, 2008, accessed on June 9, 2021

RIVERSIDE, COUNTY OF

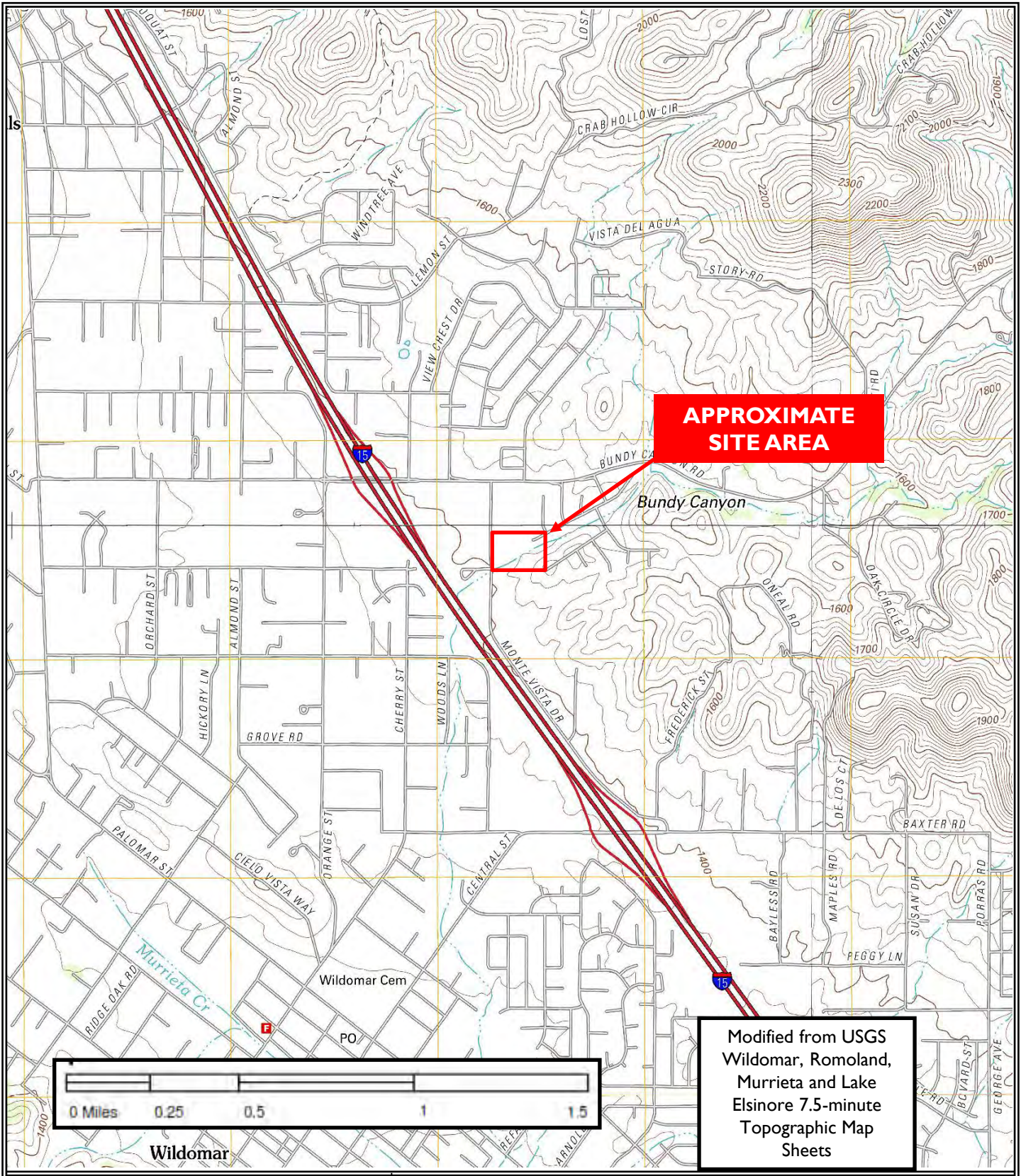
- Assessor's Office, Records Inquiry
- Fire Department, Records Inquiry
- Sherriff's Department, Records Inquiry

U.S. GOVERNMENT

- Drug Enforcement Agency
- Records inquiry, http://www.dea.gov/seizures
- Federal Emergency Management Agency (FEMA)

APPENDIX A

FIGURES



Monte Vista Ranch II, LLC
Tract No. 38155
Wildomar, California 92595

Project No. 2778-CR

NORTH

Figure 1

Site Location and Topography Map

GEOTEK



Monte Vista Ranch II, LLC
Tract No. 38155
Wildomar, California 92595

GeoTek Project No. 2778-CR

GEOTEK

Figure 2

General Site Layout Map

APPENDIX B

SUPPORTING DOCUMENTS

Monte Vista Ranch II

Monte Vista Ranch II

Wildomar, CA 92595

Inquiry Number: 6506747.8

May 24, 2021

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/24/21

Site Name:

Monte Vista Ranch II
Monte Vista Ranch II
Wildomar, CA 92595
EDR Inquiry # 6506747.8

Client Name:

Geotek
1548 North Maple Street
Corona, CA 92880
Contact: Franklin Sullivan

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
2002	1"=500'	Acquisition Date: January 01, 2002	USGS/DOQQ
1997	1"=500'	Acquisition Date: October 16, 1997	USGS/DOQQ
1994	1"=500'	Acquisition Date: January 01, 1994	USGS/DOQQ
1990	1"=500'	Flight Date: September 06, 1990	USDA
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: February 24, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1974	1"=500'	Flight Date: November 06, 1974	USGS
1967	1"=500'	Flight Date: May 15, 1967	USDA
1961	1"=500'	Flight Date: June 17, 1961	USDA
1953	1"=500'	Flight Date: September 22, 1953	USDA
1949	1"=500'	Flight Date: May 06, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

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EDR


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YEAR: 2012
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N
EDR


INQUIRY #: 6506747.8
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 6506747.8
YEAR: 2005
= 500'
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EDR


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YEAR: 2002
= 500'
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EDR

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UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED UNMAPPED



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= 500'

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EDR


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EDR
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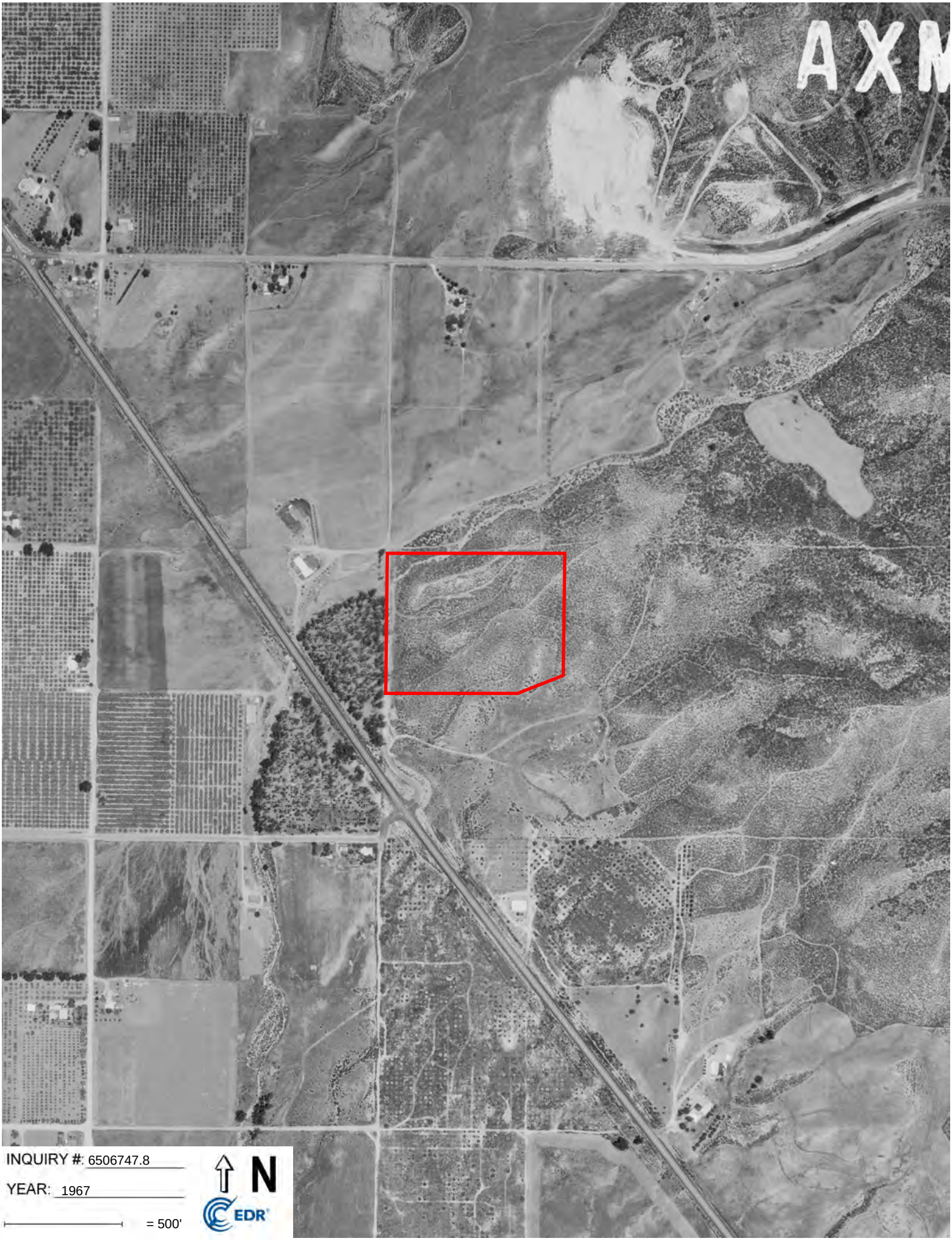
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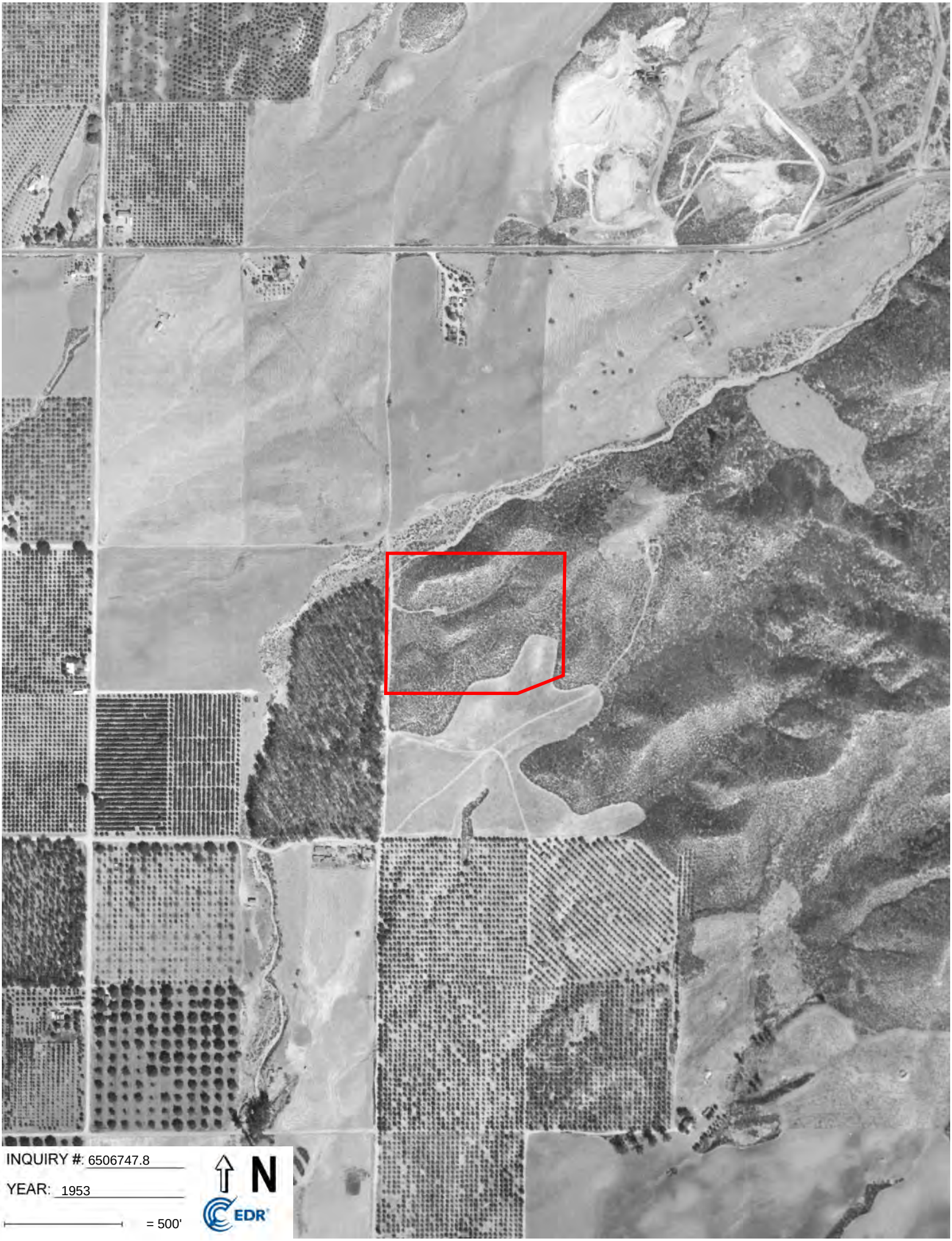

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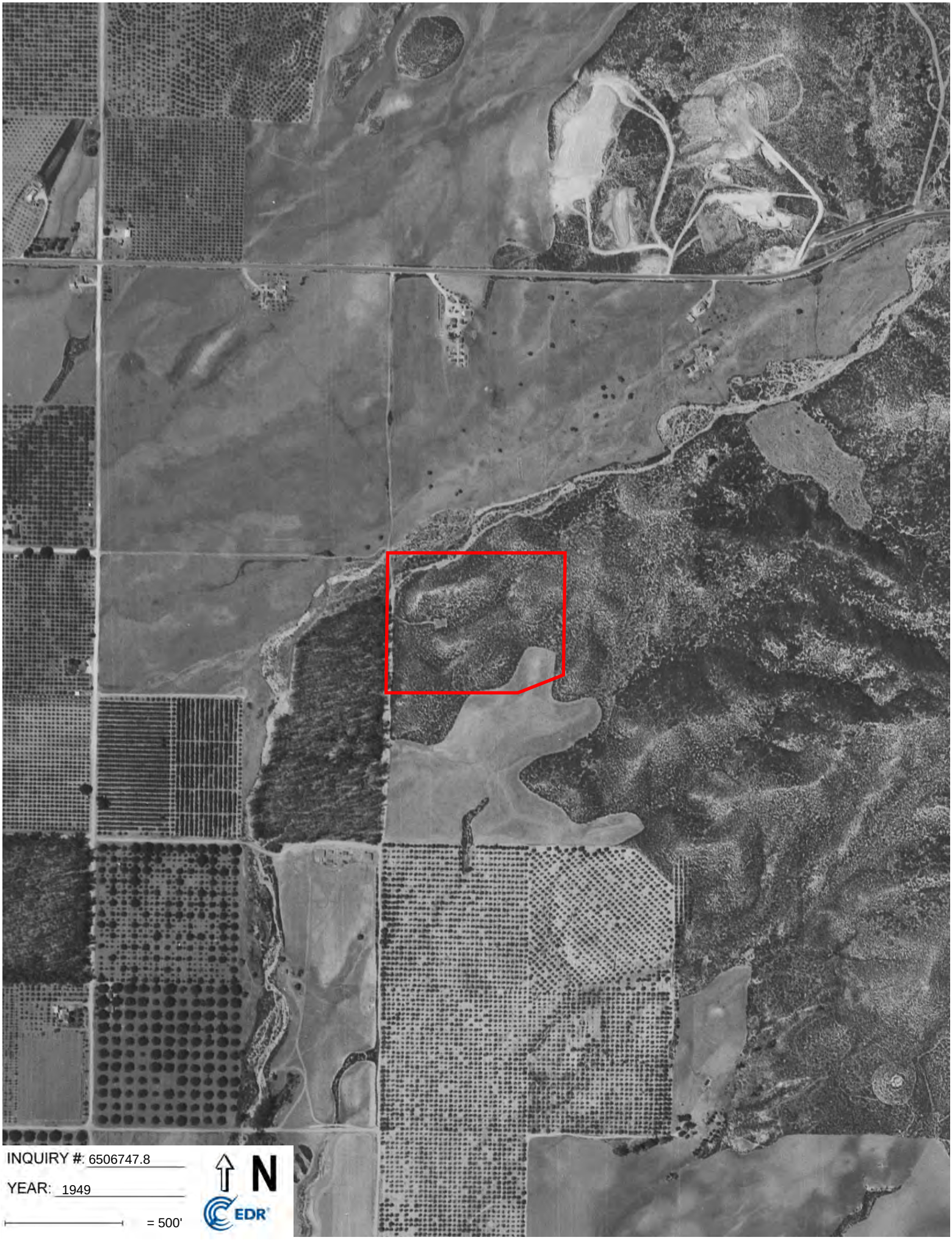

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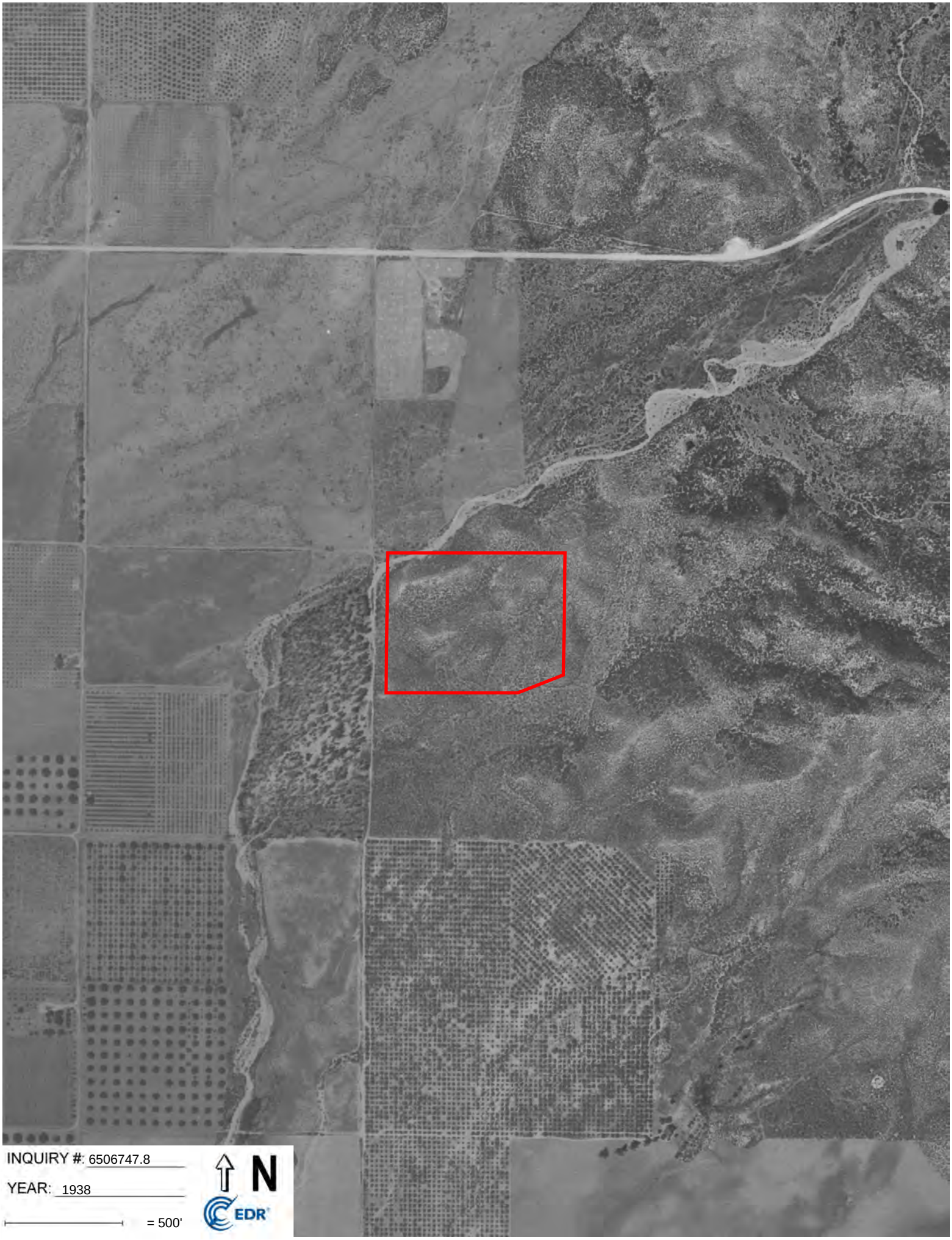

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AXM
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YEAR: 1967
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EDR


INQUIRY #: 6506747.8
YEAR: 1961
= 500'
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EDR


INQUIRY #: 6506747.8
YEAR: 1953
= 500'
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EDR


INQUIRY #: 6506747.8
YEAR: 1949
= 500'
N
EDR


INQUIRY #: 6506747.8
YEAR: 1938
= 500'
N
EDR

Monte Vista Ranch II

Monte Vista Ranch II

Wildomar, CA 92595

Inquiry Number: 6506747.3

May 24, 2021

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

05/24/21

Site Name:

Monte Vista Ranch II
Monte Vista Ranch II
Wildomar, CA 92595
EDR Inquiry # 6506747.3

Client Name:

Geotek
1548 North Maple Street
Corona, CA 92880
Contact: Franklin Sullivan

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Certified Sanborn Results:

Certification # 4CB7-4778-9C6B

PO # NA

Project Monte Vista Ranch II

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 4CB7-4778-9C6B

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Monte Vista Ranch II
Monte Vista Ranch II
Wildomar, CA 92595

Inquiry Number: 6506747.5
May 28, 2021

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Executive Summary

Findings

City Directory Images

Thank you for your business.
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EXECUTIVE SUMMARY

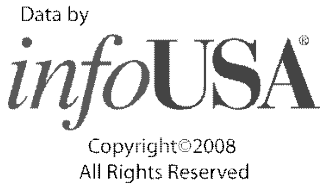
DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☐	EDR Digital Archive
2014	☑	☐	EDR Digital Archive
2010	☑	☐	EDR Digital Archive
2005	☑	☐	EDR Digital Archive
2000	☑	☐	EDR Digital Archive
1995	☑	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1976	☐	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

Monte Vista Ranch II
Wildomar, CA 92595

Year	*CD Image*	*Source*	
MONTE VISTA DR			
2017	pg A1	EDR Digital Archive	
2014	pg A2	EDR Digital Archive	
2010	pg A3	EDR Digital Archive	
2005	pg A4	EDR Digital Archive	
2000	pg A5	EDR Digital Archive	
1995	pg A6	Haines Criss-Cross Directory	
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MONTE VISTA DR 2017

34510 FEIFER, LISA
34520 USTARIZ, EDWIN G
34570 CORNERSTONE COMMUNITY CHURCH
34690 RICKERL, BARBARA M
34830 PIZZA FACTORY
34862 DEFAUL CROSSFT
MERCURY ONLINE ACADEMY OF SOUTHERN C
34878 PACIFIC POOL TILE
PENSKE TRUCK RENTAL
SUN PRO SOLAR
THE SCOOTER ZONE

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MONTE VISTA DR 2014

34520	USTARIZ, GERMAN
34570	CORNERSTONE COMMUNITY
	CORNERSTONE COMMUNITY CHURCH
34690	OCCUPANT UNKNOWN,
34698	ESTRELLA, EVONY
34830	DB KLYDE LLC
	PACOIMA PLAZA LLC
	PIZZA FACTORY
34862	DEFAUL CROSSFIT
	IN THE LIGHT MINISTRIES
	MERCURY ONLINE ACADEMY OF SOUTHERN C
34878	PACIFIC POOL TILE
	PENSKE TRUCK RENTAL
	SUN PRO SOLAR
	THE SCOOTER ZONE

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MONTE VISTA DR 2010

34520 USTARIZ, GERMAN H
34570 CORNERSTONE CHRISTIAN SCHOOL
CORNERSTONE COMMUNITY CHURCH
34698 ESTRELLA, EVONY
34800 WILLOWCREEK PROPERTY OWNERS
34830 PIZZA FACTORY

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MONTE VISTA DR 2005

34510 OCCUPANT UNKNOWN,
34520 USTARIZ, GERMAN H
34570 CORNERSTONE COMMUNITY CHURCH

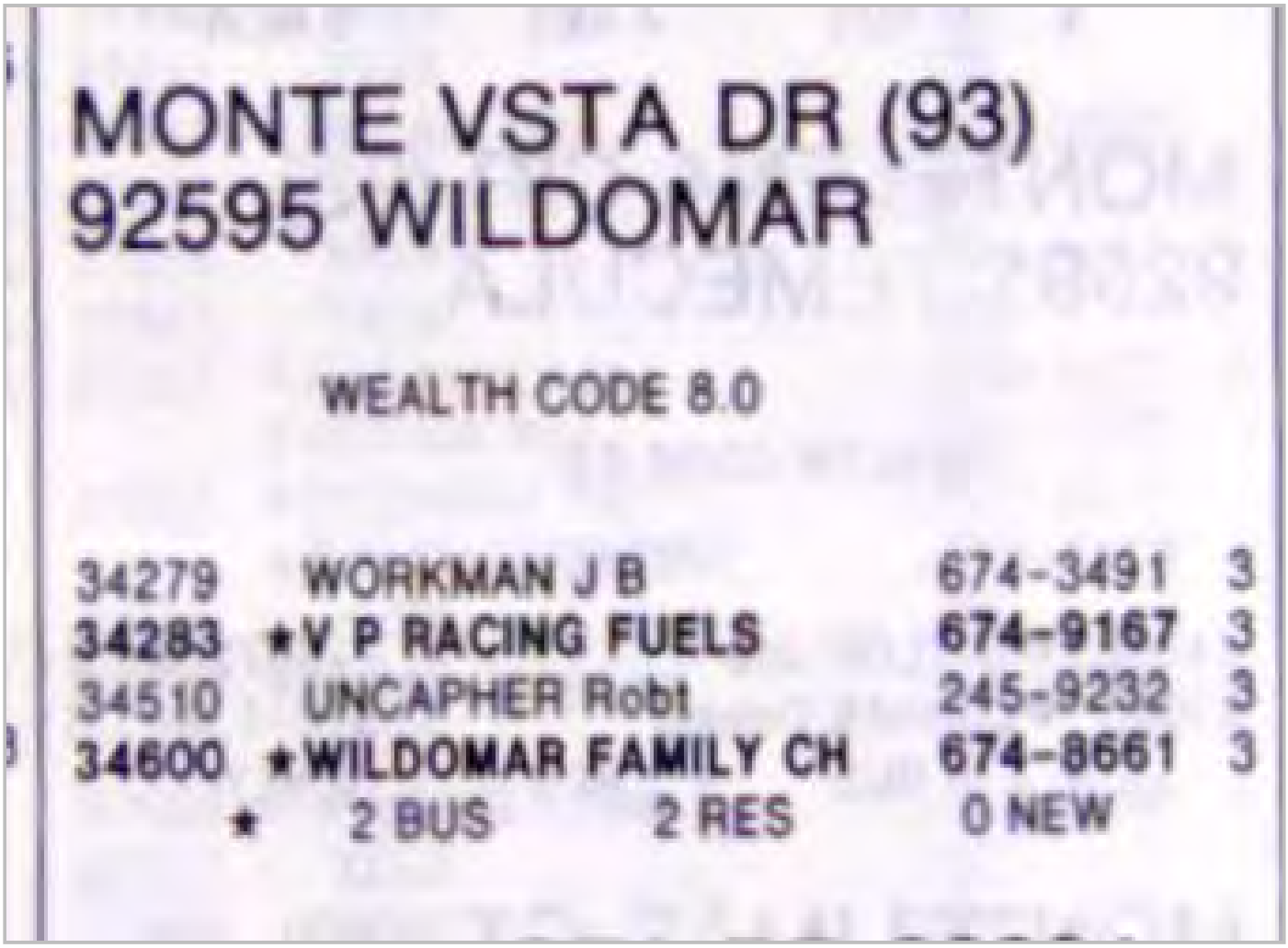
Target Street	Cross Street	Source
✓	-	EDR Digital Archive

MONTE VISTA DR 2000

34570 CORNERSTONE COMMUNITY CHURCH

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

MONTE VISTA DR 1995



MONTE VSTA DR (93)
92595 WILDOMAR

WEALTH CODE 8.0

34279	WORKMAN J B	674-3491	3
34283	*V P RACING FUELS	674-9167	3
34510	UNCAPHER Robt	245-9232	3
34600	*WILDOMAR FAMILY CH	674-8661	3

* 2 BUS 2 RES 0 NEW

Monte Vista Ranch II

Monte Vista Ranch II

Wildomar, CA 92595

Inquiry Number: 6506747.4

May 24, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

05/24/21

Site Name:	Client Name:
Monte Vista Ranch II	Geotek
Monte Vista Ranch II	1548 North Maple Street
Wildomar, CA 92595	Corona, CA 92880
EDR Inquiry # 6506747.4	Contact: Franklin Sullivan

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Geotek were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	NA	**Latitude:**	33.622397 33° 37' 21" North
Project:	Monte Vista Ranch II	**Longitude:**	-117.265757 -117° 15' 57" West
		UTM Zone:	Zone 11 North
		UTM X Meters:	475349.82
		UTM Y Meters:	3720321.05
		Elevation:	1411.25' above sea level

Maps Provided:

2012
1997
1988
1979, 1982
1978
1973
1953
1901

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets



Lake Elsinore
2012
7.5-minute, 24000



Romoland
2012
7.5-minute, 24000



Wildomar
2012
7.5-minute, 24000



Murrieta
2012
7.5-minute, 24000

1997 Source Sheets

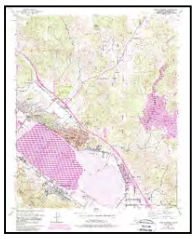


Wildomar
1997
7.5-minute, 24000
Aerial Photo Revised 1994



Lake Elsinore
1997
7.5-minute, 24000
Aerial Photo Revised 1994

1988 Source Sheets

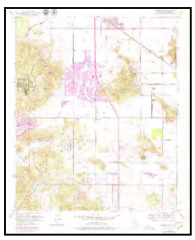


Lake Elsinore
1988
7.5-minute, 24000
Aerial Photo Revised 1985



Wildomar
1988
7.5-minute, 24000
Aerial Photo Revised 1985

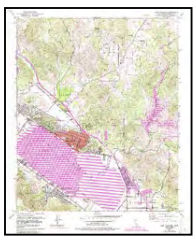
1979, 1982 Source Sheets



Romoland
1979
7.5-minute, 24000
Aerial Photo Revised 1976



Murrieta
1979
7.5-minute, 24000
Aerial Photo Revised 1976



Lake Elsinore
1982
7.5-minute, 24000
Aerial Photo Revised 1980



Wildomar
1982
7.5-minute, 24000
Aerial Photo Revised 1980

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1978 Source Sheets



Lake Elsinore
1978
7.5-minute, 24000
Aerial Photo Revised 1978

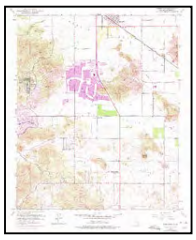
1973 Source Sheets



Elsinore
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Murrieta
1973
7.5-minute, 24000
Aerial Photo Revised 1973

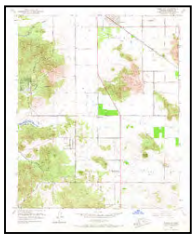


Romoland
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Wildomar
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1953 Source Sheets



Romoland
1953
7.5-minute, 24000
Aerial Photo Revised 1951



Murrieta
1953
7.5-minute, 24000
Aerial Photo Revised 1951



Wildomar
1953
7.5-minute, 24000
Aerial Photo Revised 1951



Elsinore
1953
7.5-minute, 24000
Aerial Photo Revised 1951

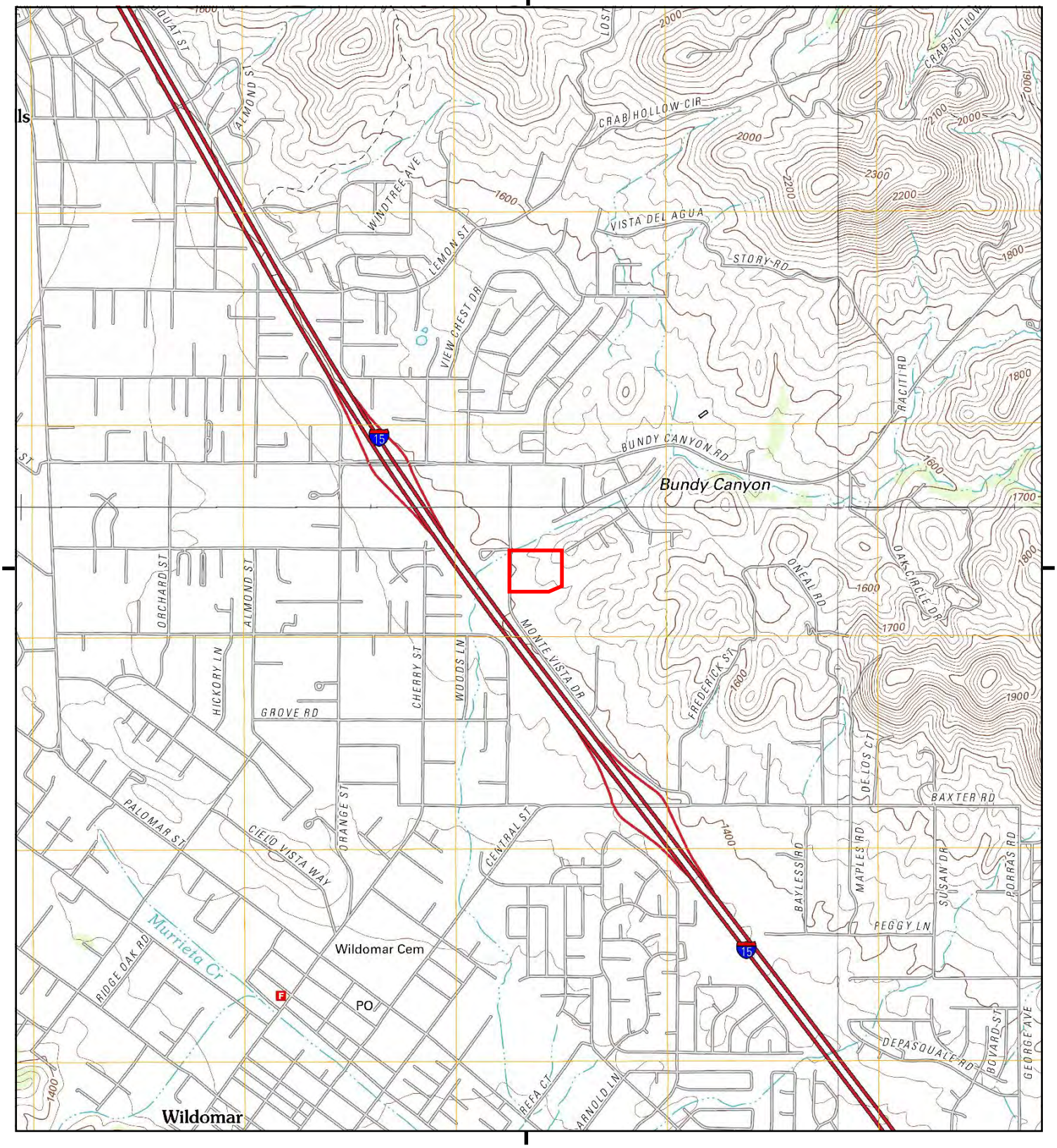
1901 Source Sheets



Elsinore
1901
30-minute, 125000

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

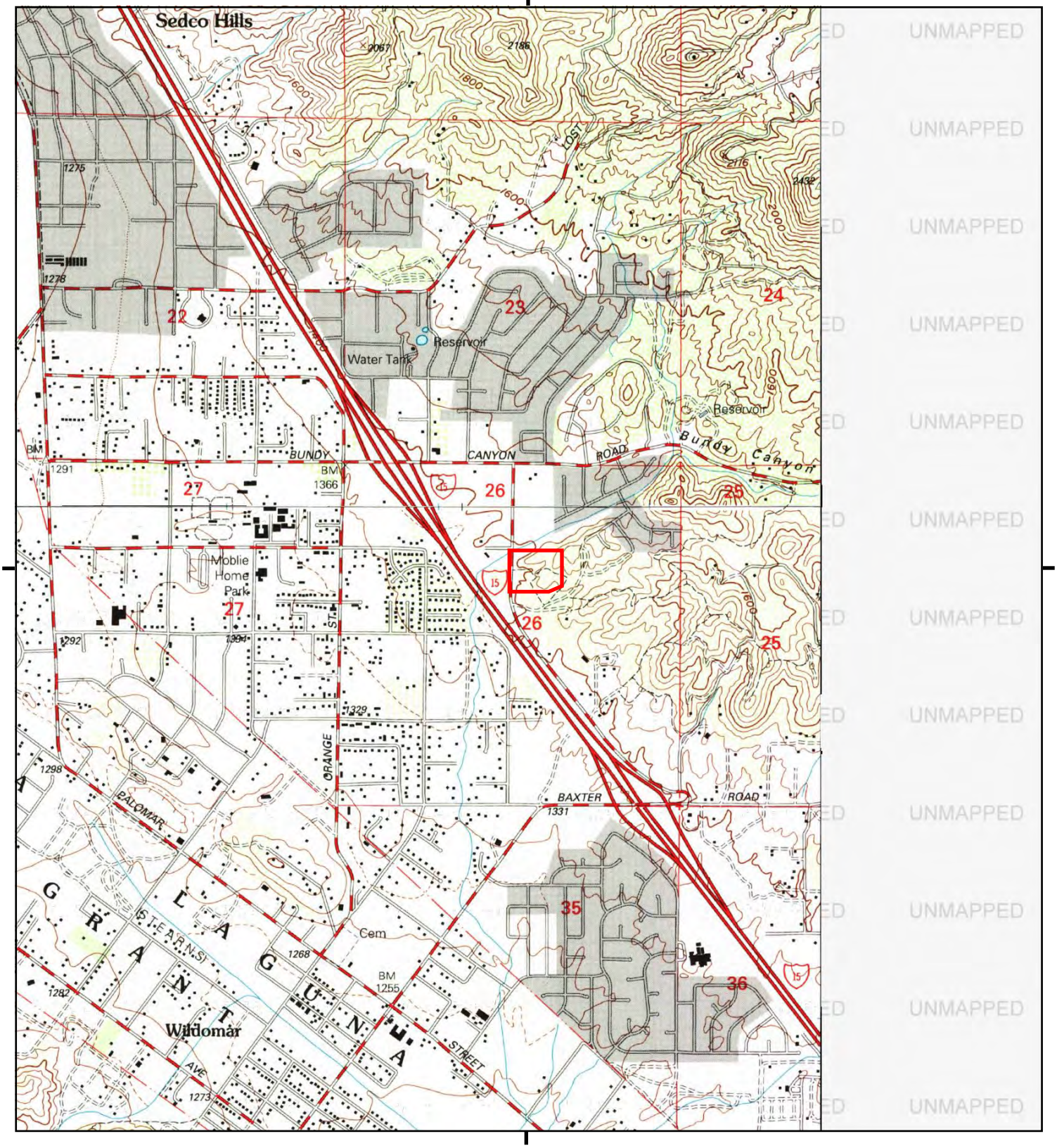
TP, Wildomar, 2012, 7.5-minute
NE, Romoland, 2012, 7.5-minute
SE, Murrieta, 2012, 7.5-minute
NW, Lake Elsinore, 2012, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

Historical Topo Map

1997



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

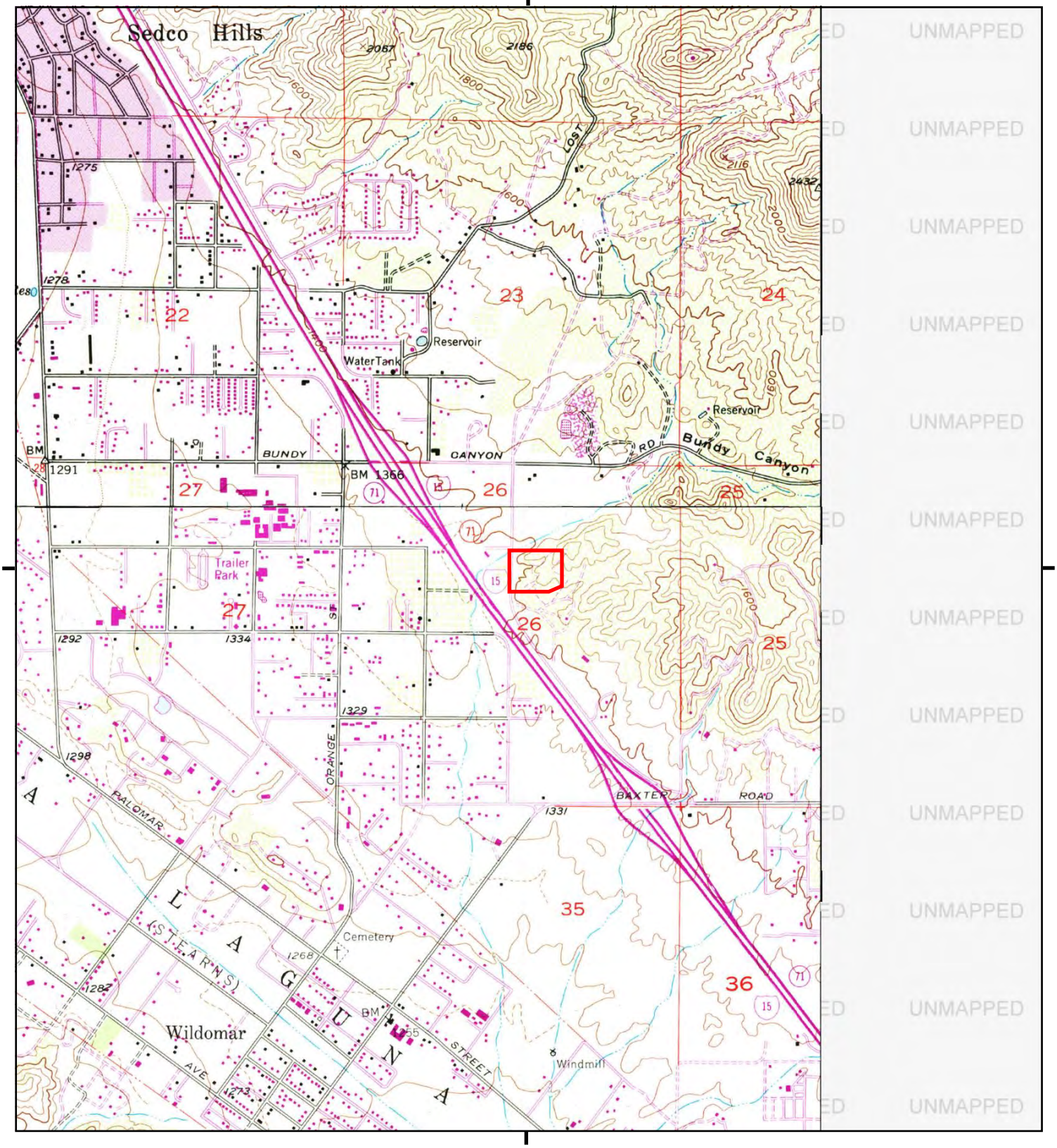
TP, Wildomar, 1997, 7.5-minute
NW, Lake Elsinore, 1997, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

Historical Topo Map

1988



This report includes information from the following map sheet(s).

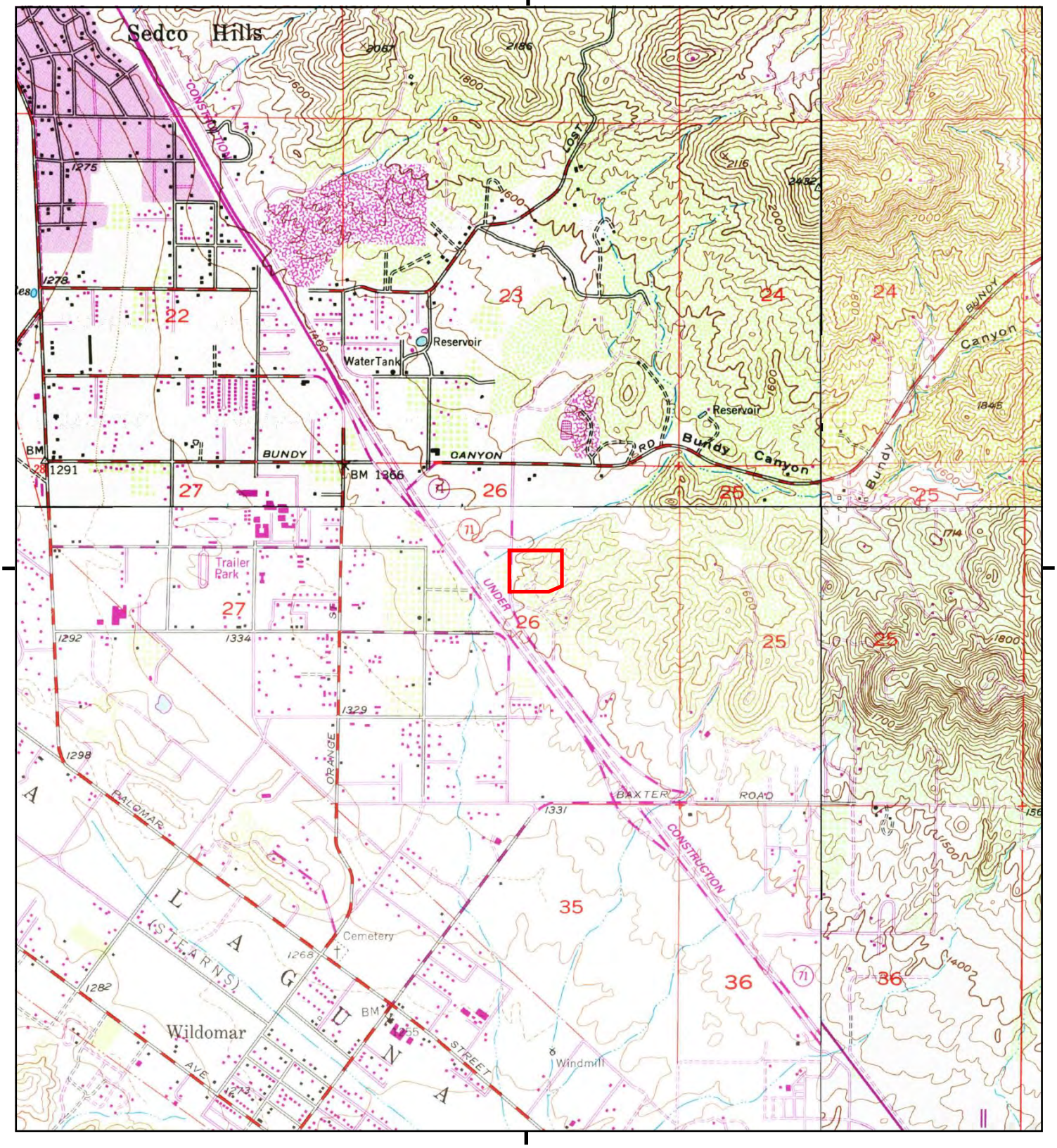
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Wildomar, 1988, 7.5-minute
NW, Lake Elsinore, 1988, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N



This report includes information from the following map sheet(s).

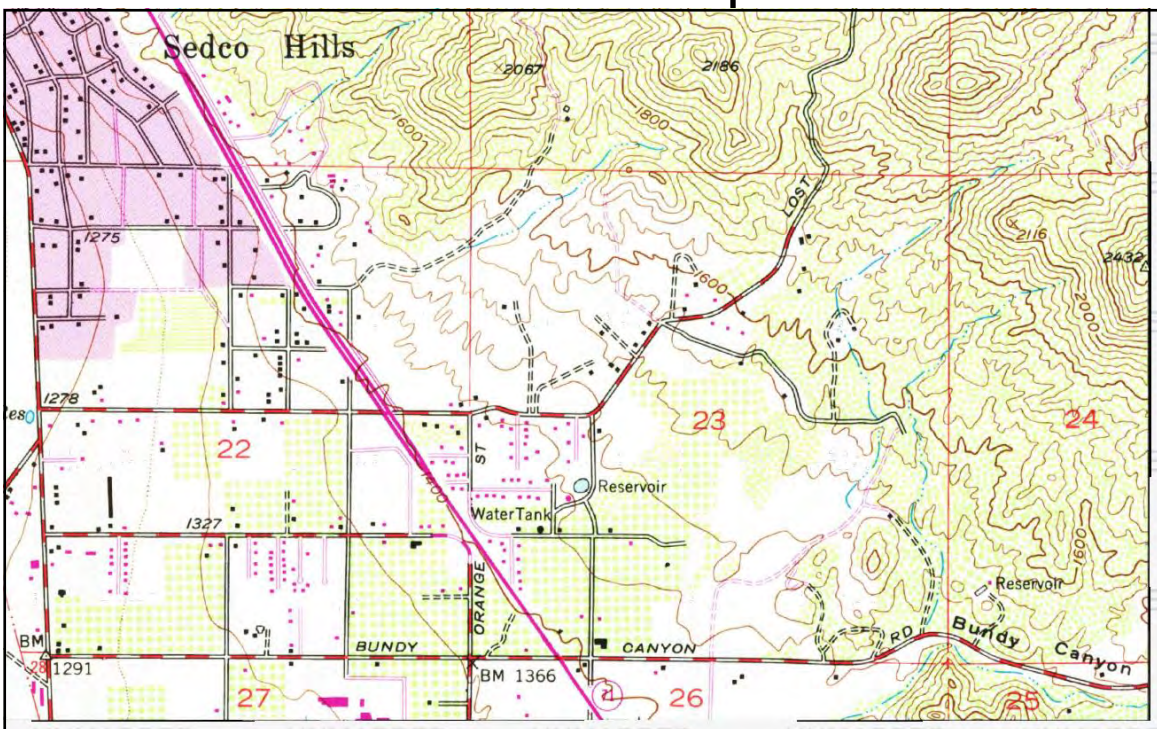
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Wildomar, 1982, 7.5-minute
NE, Romoland, 1979, 7.5-minute
SE, Murrieta, 1979, 7.5-minute
NW, Lake Elsinore, 1982, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N



UNMAPPED

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

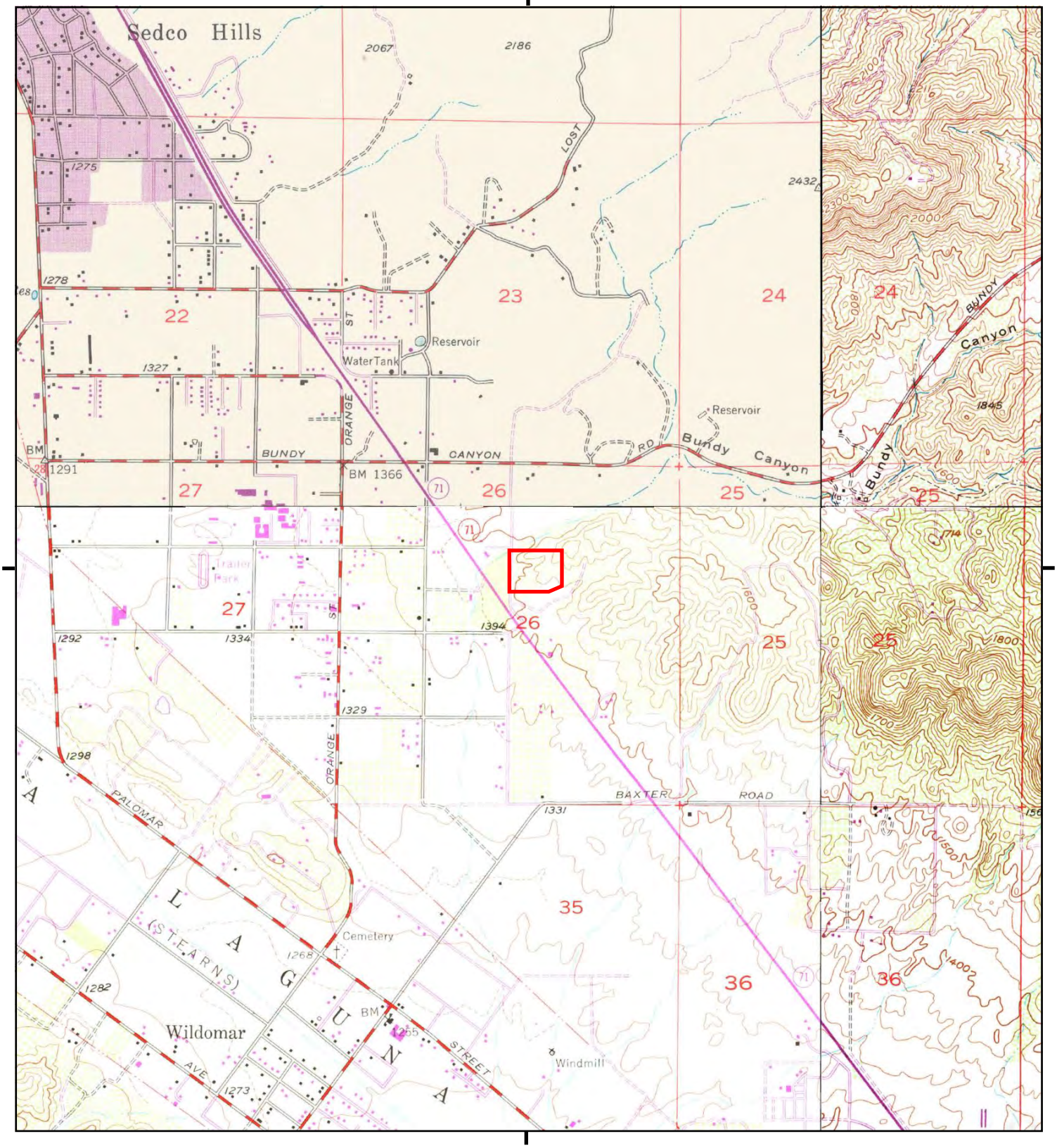
NW, Lake Elsinore, 1978, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

Historical Topo Map

1973



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

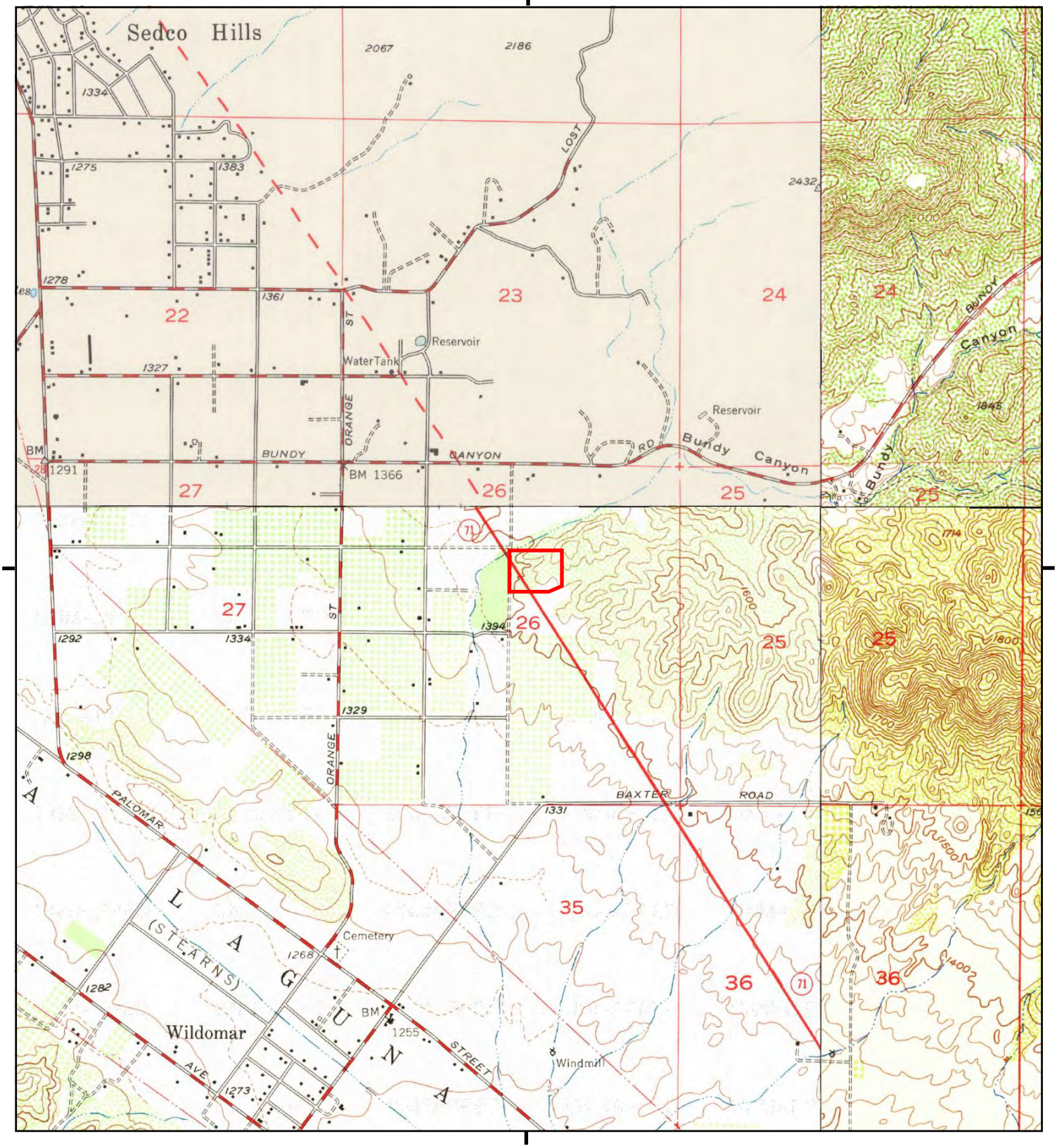
TP, Wildomar, 1973, 7.5-minute
NE, Romoland, 1973, 7.5-minute
SE, Murrieta, 1973, 7.5-minute
NW, Elsinore, 1973, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

Historical Topo Map

1953



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

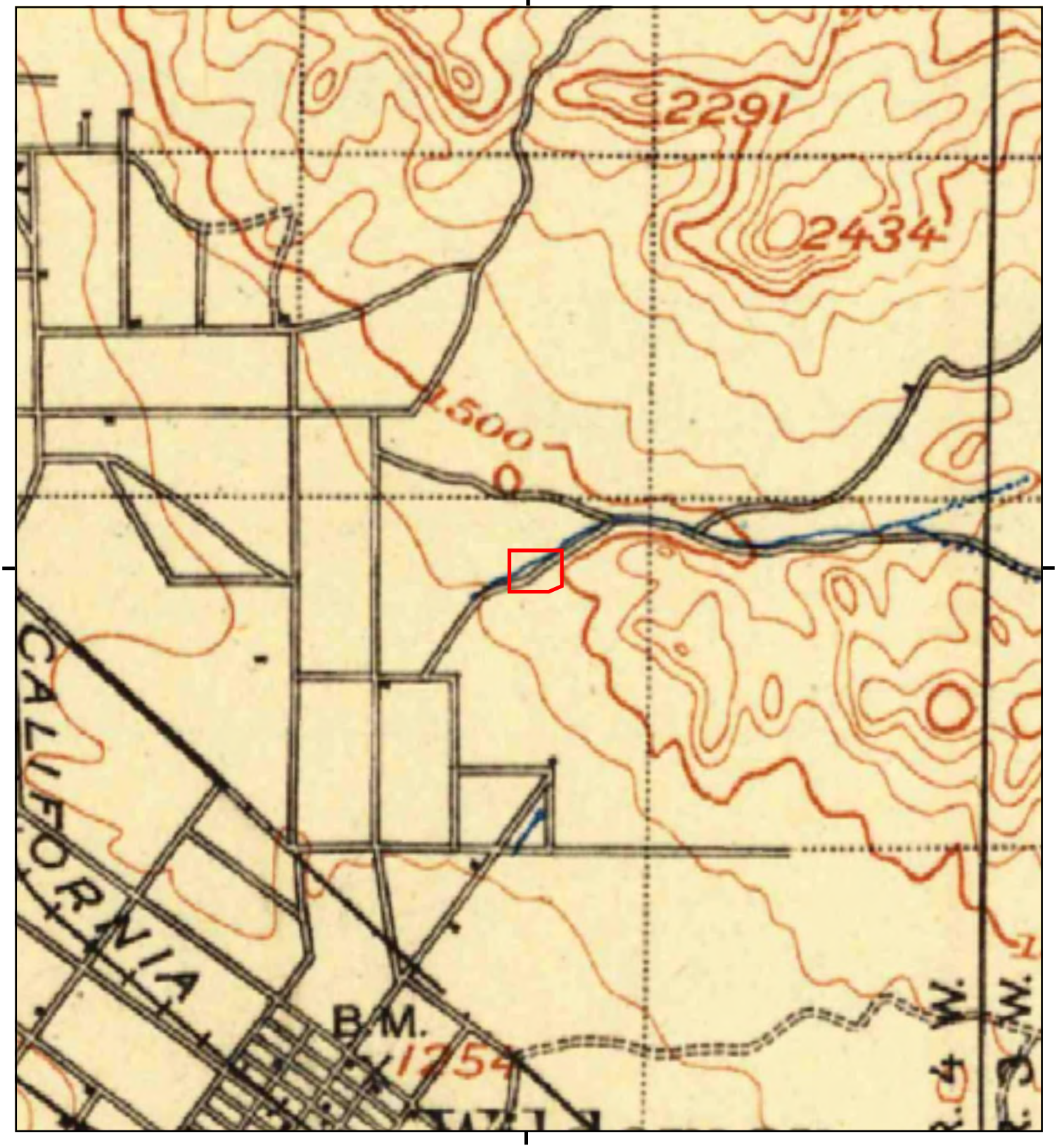
TP, Wildomar, 1953, 7.5-minute
NE, Romoland, 1953, 7.5-minute
SE, Murrieta, 1953, 7.5-minute
NW, Elsinore, 1953, 7.5-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

Historical Topo Map

1901



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Elsinore, 1901, 30-minute

SITE NAME: Monte Vista Ranch II
ADDRESS: Monte Vista Ranch II
Wildomar, CA 92595
CLIENT: Geotek

N

USER QUESTIONNAIRE

INTRODUCTION

In order to qualify for one of the *Landowner Liability Protections* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2002, the *user* must provide the following information (if available) to the *environmental professional.* Failure to provide this information could result in a determination that "*all appropriate inquiry*" is not complete.

(1) Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law?

CIRCLE YES *or* NO

If yes, please explain in detail.

(2) Are you aware of any Act Use Limitations (AUL), such as *engineering controls*, land use restrictions or *institutional controls* that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

YES *or* NO

If yes, please explain.

(3) As the *user* of this Environmental Site Assessment (ESA) do you have any specialized knowledge or familiarity related to the *property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *property* or its neighboring *property*, so that you may have specific knowledge of the chemicals and processes used by this type of business?

YES *or* NO

If yes, please explain.

(4) Does the purchase price being paid for this *property* reasonably reflect the fair market value of the *property*?

YES or NO

If you believe that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

YES or NO

If yes, please explain.

(5) Are you aware of commonly known or *reasonably* ascertainable information that would help the *environment professional* to identify conditions pinpointing releases or threaten releases of hazardous materials and/ or chemicals? For example, as user,

(a.) Do you know of any past uses of the *property*? YES or NO

(b.) Do you know of specific chemicals that are present or once were present at the *property*? YES or NO

(c.) Do you know of any chemical spills or any other chemical releases that have taken place at the *property*? YES or NO

(d.) Do you know of any environmental cleanups that have taken place at the *property*? YES or NO

If any yes, please explain.

(6) As the user of this Environmental Site Assessment (ESA), based on your knowledge and experience related to the *property* are there any *obvious* indicators that point to the presence or likely presence of a contamination at the *property*?

YES or NO

If yes, please explain.

Completed By ERIK LUNDE
Print Name

APPENDIX C

PHOTOGRAPHS

PHOTOGRAPHS
Tract No. 38155
Wildomar, California



1. View northwest from southern portion of the Site.



2. View north from southwest corner of the Site.

GEOTEK

PHOTOGRAPHS
Tract No. 38155
Wildomar, California



3. View east from the southwest corner of the Site.



4. View north from southeast corner of the Site.

GEOTEK

APPENDIX D

ENVIRONMENTAL DATABASE REPORT

Monte Vista Ranch II
Monte Vista Ranch II
Wildomar, CA 92595

Inquiry Number: 6506747.2s
May 24, 2021

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

MONTE VISTA RANCH II
WILDOMAR, CA 92595

COORDINATES

Latitude (North):	33.6223970 - 33° 37' 20.62''
Longitude (West):	117.2657570 - 117° 15' 56.72''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	475349.3
UTM Y (Meters):	3720127.8
Elevation:	1409 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5636487 WILDOMAR, CA
Version Date:	2012
Northeast Map:	5641314 ROMOLAND, CA
Version Date:	2012
Southeast Map:	5641304 MURRIETA, CA
Version Date:	2012
Northwest Map:	5636473 LAKE ELSINORE, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140527, 20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
MONTE VISTA RANCH II
WILDOMAR, CA 92595

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	MONTE VISTA RANCH	SOUTH OF BUNDY CANYO	NPDES, CIWQS	Higher	1 ft.
2	WILDOMAR MDP LATERAL		CIWQS, CERS	Lower	4, 0.001,
3	GIANT INLAND EMPIRE	22482 WALNUT ST	RCRA NonGen / NLR	Lower	823, 0.156, SW
4	ADAN ALBERTO RUIZ DB	22331 WALNUT ST	RCRA NonGen / NLR	Lower	1143, 0.216, SW
5	BUNDY CANYON	22800 BUNDY CANYON R	SWF/LF, CERS	Higher	1934, 0.366, NE
6	ELSINORE HIGH SCHOOL	BUNDY CANYON ROAD/OR	ENVIROSTOR, SCH	Lower	4984, 0.944, WNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ..... State Response Sites

State and tribal leaking storage tank lists

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register
HIST Cal-Sites ..... Historical Calsites Database
SCH ..... School Property Evaluation Program

CDL ---- Clandestine Drug Labs
Toxic Pits ---- Toxic Pits Cleanup Act Sites
CERS HAZ WASTE ---- CERS HAZ WASTE
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CA FID UST ---- Facility Inventory Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
PADS ---- PCB Activity Database System
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ---- Incident and Accident Data
CONSENT ---- Superfund (CERCLA) Consent Decrees
INDIAN RESERV ---- Indian Reservations

FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System
HWTS	Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST ---------- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/25/2021 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
ELSINORE HIGH SCHOOL	***BUNDY CANYON ROAD/OR***	***WNW 1/2 - 1 (0.944 mi.)***	***6***	***25***
Facility Id: 33010015				
Status: No Further Action				

State and tribal landfill and/or solid waste disposal site lists

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list, as provided by EDR, has revealed that there is 1 SWF/LF site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BUNDY CANYON	***22800 BUNDY CANYON R***	***NE 1/4 - 1/2 (0.366 mi.)***	***5***	***22***
Database: SWF/LF (SWIS), Date of Government Version: 02/08/2021				

EXECUTIVE SUMMARY

Facility ID: 33-CR-0002
Operational Status: Closed
Regulation Status: Pre-regulation

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/22/2021 has revealed that there are 2 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
GIANT INLAND EMPIRE EPA ID:: CAL000414783	22482 WALNUT ST	SW 1/8 - 1/4 (0.156 mi.)	3	16
ADAN ALBERTO RUIZ DB EPA ID:: CAR000215277	22331 WALNUT ST	SW 1/8 - 1/4 (0.216 mi.)	4	19

NPDES: A listing of NPDES permits, including stormwater.

A review of the NPDES list, as provided by EDR, and dated 02/08/2021 has revealed that there is 1 NPDES site within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MONTE VISTA RANCH Facility Status: Terminated	***SOUTH OF BUNDY CANYO***	***0 - 1/8 (0.000 mi.)***	***1***	***9***

CIWQS: The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

A review of the CIWQS list, as provided by EDR, and dated 11/30/2020 has revealed that there are 2 CIWQS sites within approximately 0.001 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MONTE VISTA RANCH	***SOUTH OF BUNDY CANYO***	***0 - 1/8 (0.000 mi.)***	***1***	***9***

Lower Elevation	Address	Direction / Distance	Map ID	Page
WILDOMAR MDP LATERAL		***0 - 1/8 (0.001 mi.)***	***2***	***16***

EXECUTIVE SUMMARY

CERS: The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

A review of the CERS list, as provided by EDR, and dated 01/20/2021 has revealed that there is 1 CERS site within approximately 0.001 miles of the target property.

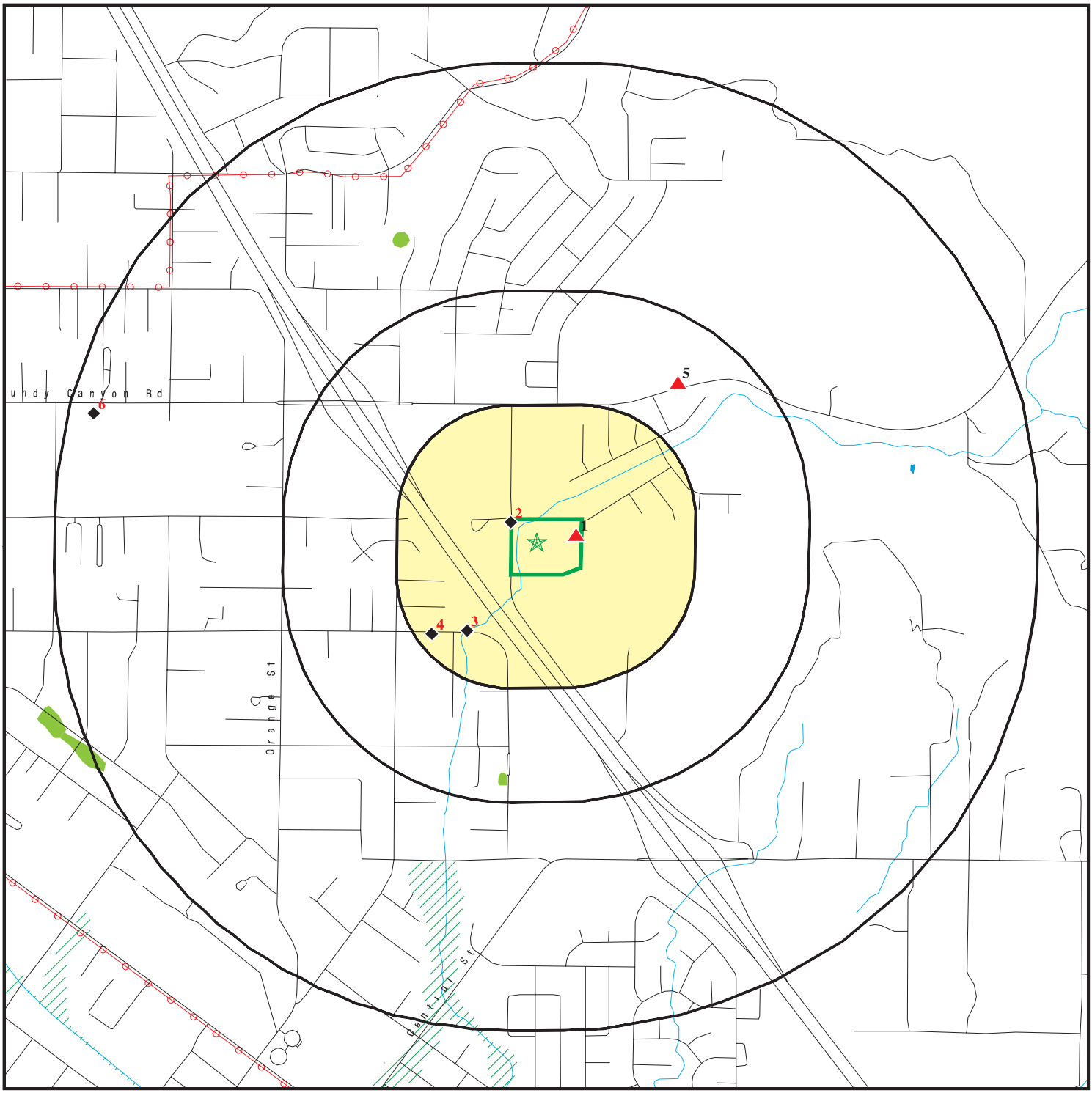
Lower Elevation	Address	Direction / Distance	Map ID	Page
WILDOMAR MDP LATERAL		***0 - 1/8 (0.001 mi.)***	***2***	***16***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

Site Name	Database(s)
TRACT 32024 MONTE VISTA RANCH	CIWQS
MONTE VISTA RANCH	FINDS
MONTE VISTA RANCH	FINDS, ECHO

OVERVIEW MAP - 6506747.2S



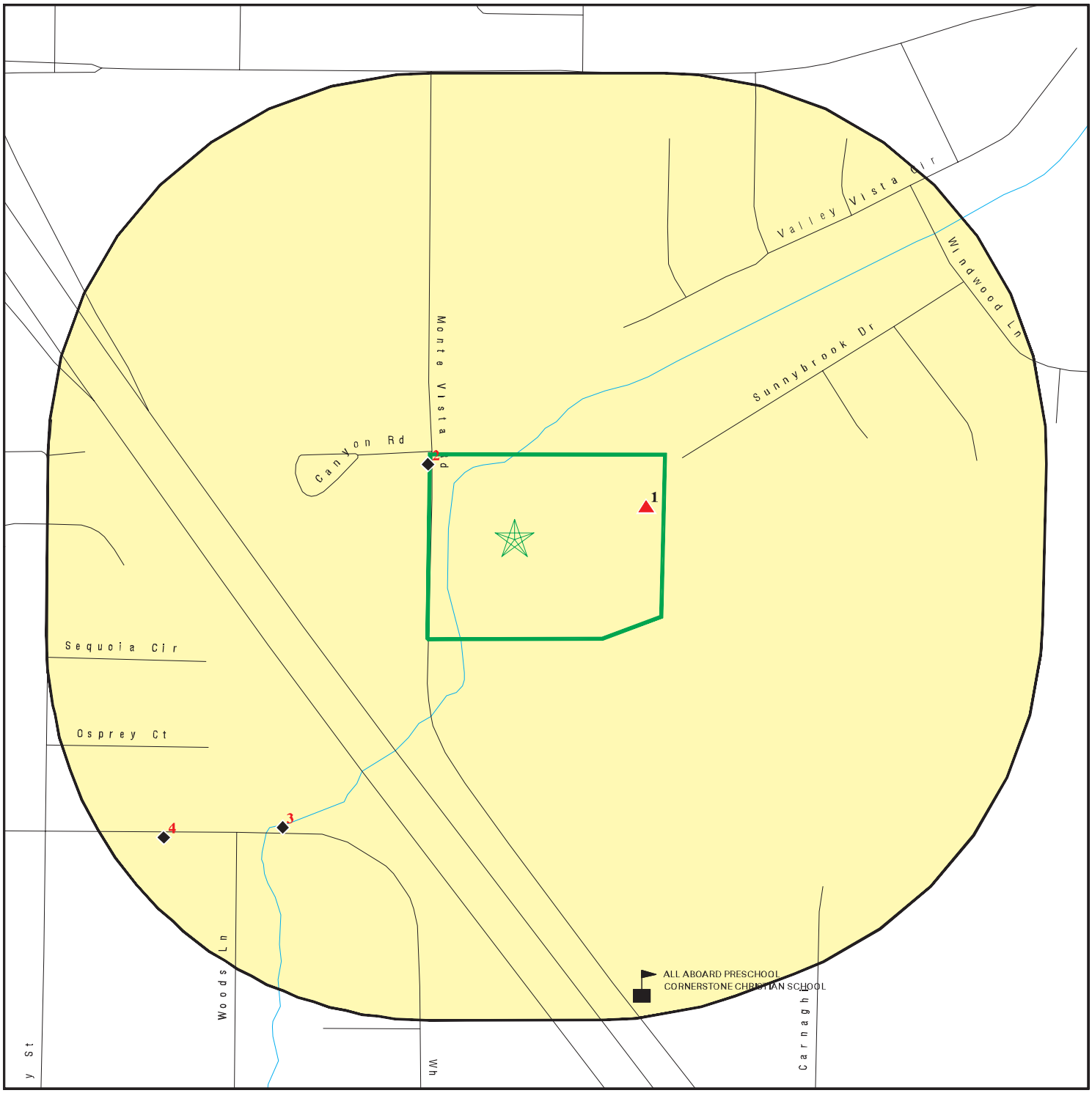
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Monte Vista Ranch II	CLIENT: Geotek
ADDRESS: Monte Vista Ranch II Wildomar CA 92595	CONTACT: Franklin Sullivan INQUIRY #: 6506747.2s
LAT/LONG: 33.622397 / 117.265757	DATE: May 24, 2021 3:00 pm

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DETAIL MAP - 6506747.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/16 1/8 1/4 Miles

Indian Reservations BIA
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Monte Vista Ranch II	CLIENT: Geotek
ADDRESS: Monte Vista Ranch II Wildomar CA 92595	CONTACT: Franklin Sullivan INQUIRY #: 6506747.2s
LAT/LONG: 33.622397 / 117.265757	DATE: May 24, 2021 3:04 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	1	NR	NR	1
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	2	NR	NR	NR	2
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		1	NR	NR	NR	NR	1
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		2	NR	NR	NR	NR	2
CERS	0.001		1	NR	NR	NR	NR	1
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	4	2	1	1	0	8

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1 **MONTE VISTA RANCH** **NPDES** **S111459767**
SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD **CIWQS** **N/A**
< 1/8 **WILDOMAR, CA 92595**
1 ft.

Relative: Higher
Actual: 1486 ft.

NPDES:

Name:	MONTE VISTA RANCH
Address:	SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD
City,State,Zip:	WILDOMAR, CA 92595
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	9 33C362945
Regulatory Measure Type:	Construction
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Terminated
Status Date:	05/29/2018
Operator Name:	Monte Vista Ranch LLC
Operator Address:	225 W Plaza St
Operator City:	Solana Beach
Operator State:	California
Operator Zip:	92075

NPDES as of 03/2018:

NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	9
Regulatory Measure ID:	423232
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	9 33C362945
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/06/2012
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Monte Vista Ranch LLC
Discharge Address:	225 W Plaza St
Discharge City:	Solana Beach
Discharge State:	California
Discharge Zip:	92075
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported

MONTE VISTA RANCH (Continued) **S111459767**

Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	9

MONTE VISTA RANCH (Continued) **S111459767**

Regulatory Measure ID:	423232
Order Number:	Not reported
Regulatory Measure Type:	Construction
Place ID:	Not reported
WDID:	9 33C362945
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	01/30/2012
Processed Date:	02/06/2012
Status:	Active
Status Date:	02/06/2012
Place Size:	39.75
Place Size Unit:	Acres
Contact:	Gregory Block
Contact Title:	Not reported
Contact Phone:	858-755-8667
Contact Phone Ext:	Not reported
Contact Email:	Gblock@blockgaunce.com
Operator Name:	Monte Vista Ranch LLC
Operator Address:	225 W Plaza St
Operator City:	Solana Beach
Operator State:	California
Operator Zip:	92075
Operator Contact:	Gregory Block
Operator Contact Title:	Not reported
Operator Contact Phone:	858-755-8667
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	gblock@blockgaunce.com
Operator Type:	Private Business
Developer:	Monte Vista Ranch LLC
Developer Address:	225 W Plaza St
Developer City:	Solana Beach
Developer State:	California
Developer Zip:	92075
Developer Contact:	Gregory Block
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	N
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported

MONTE VISTA RANCH (Continued) **S111459767**

Constype Recons Ind:	Not reported
Constype Residential Ind:	Y
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Murrieta Creek
Certifier:	Gregory Block
Certifier Title:	Not reported
Certification Date:	30-JAN-12
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	MONTE VISTA RANCH
Address:	SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD
City,State,Zip:	WILDOMAR, CA 92595
Facility Status:	Terminated
NPDES Number:	CAS000002
Region:	9
Agency Number:	0
Regulatory Measure ID:	423232
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	9 33C362945
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/06/2012
Termination Date Of Regulatory Measure:	05/29/2018
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	225 W Plaza St
Discharge Name:	Monte Vista Ranch LLC
Discharge City:	Solana Beach
Discharge State:	California
Discharge Zip:	92075
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	9
Regulatory Measure ID:	423232
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	9 33C362945
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported

MONTE VISTA RANCH (Continued) **S111459767**

Effective Date Of Regulatory Measure:	02/06/2012
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Monte Vista Ranch LLC
Discharge Address:	225 W Plaza St
Discharge City:	Solana Beach
Discharge State:	California
Discharge Zip:	92075
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported

MONTE VISTA RANCH (Continued) **S111459767**

Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	9
Regulatory Measure ID:	423232
Order Number:	Not reported
Regulatory Measure Type:	Construction
Place ID:	Not reported
WDID:	9 33C362945
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	01/30/2012
Processed Date:	02/06/2012
Status:	Active
Status Date:	02/06/2012
Place Size:	39.75
Place Size Unit:	Acres
Contact:	Gregory Block
Contact Title:	Not reported
Contact Phone:	858-755-8667
Contact Phone Ext:	Not reported
Contact Email:	Gblock@blockgaunce.com
Operator Name:	Monte Vista Ranch LLC
Operator Address:	225 W Plaza St
Operator City:	Solana Beach
Operator State:	California
Operator Zip:	92075
Operator Contact:	Gregory Block
Operator Contact Title:	Not reported
Operator Contact Phone:	858-755-8667
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	gblock@blockgaunce.com
Operator Type:	Private Business
Developer:	Monte Vista Ranch LLC
Developer Address:	225 W Plaza St
Developer City:	Solana Beach
Developer State:	California
Developer Zip:	92075
Developer Contact:	Gregory Block
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	N

MONTE VISTA RANCH (Continued) **S111459767**

Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Y
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Murrieta Creek
Certifier:	Gregory Block
Certifier Title:	Not reported
Certification Date:	30-JAN-12
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	MONTE VISTA RANCH
Address:	SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD
City,State,Zip:	WILDOMAR, CA 92595
Agency:	Monte Vista Ranch LLC
Agency Address:	225 W Plaza St Suite 105, Solana Beach, CA 92075
Place/Project Type:	Construction - Residential
SIC/NAICS:	Not reported
Region:	9
Program:	CONSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	9 33C362945
NPDES Number:	CAS000002
Adoption Date:	01/01/1900
Effective Date:	02/06/2012
Termination Date:	05/29/2018
Expiration/Review Date:	01/01/1900
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.62269
Longitude:	-117.26426

2 **WILDOMAR MDP LATERAL C REVISION** **CIWQS S125342393**
CERS N/A

< 1/8
0.001 mi.
4 ft.

WILDOMAR, CA 92595

Relative:
Lower

Actual:
1399 ft.

CIWQS:

Name:	WILDOMAR MDP LATERAL C REVISION
Address:	Not reported
City,State,Zip:	WILDOMAR, CA 92595
Agency:	Riverside County Flood Control & Water Conservation District
Agency Address:	1995 Market Street, Riverside, CA 92501
Place/Project Type:	Dredge/Fill Site
SIC/NAICS:	Not reported
Region:	9
Program:	CERFILLEXC
Regulatory Measure Status:	Active
Regulatory Measure Type:	Enrollee - 401 Certification
Order Number:	SB17001GN
WDID:	9 000003495
NPDES Number:	Not reported
Adoption Date:	01/01/1900
Effective Date:	09/09/2019
Termination Date:	01/01/1900
Expiration/Review Date:	03/18/2022
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	33.62309
Longitude:	-117.26674

CERS:

Name:	WILDOMAR MDP LATERAL C REVISION
Address:	Not reported
City,State,Zip:	WILDOMAR, CA 92595
Site ID:	556827
CERS ID:	860921
CERS Description:	Wetlands - Fill and Dredge Material

---

3 **GIANT INLAND EMPIRE RV CENTER DBA GIANT RV** **RCRA NonGen / NLR** **1024854168**
SW **22482 WALNUT ST** **CAL000414783**
1/8-1/4 **WILDOMAR, CA 92595**
0.156 mi.
823 ft.

Relative:
Lower

Actual:
1373 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	2016-03-03 00:00:00.0
Handler Name:	GIANT INLAND EMPIRE RV CENTER DBA GIANT RV
Handler Address:	22482 WALNUT ST
Handler City,State,Zip:	WILDOMAR, CA 92595
EPA ID:	CAL000414783
Contact Name:	SANDY ARKLE
Contact Address:	9150 BENSON AVE
Contact City,State,Zip:	MONTCLAIR, CA 91763
Contact Telephone:	909-253-4082
Contact Fax:	909-253-4088

GIANT INLAND EMPIRE RV CENTER DBA GIANT RV (Continued) **1024854168**

Contact Email:	SANDYARKLE@GIANTRV.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	9150 BENSON AVE
Mailing City,State,Zip:	MONTCLAIR, CA 91763-1688
Owner Name:	BEHZAD BAROUTI
Owner Type:	Other
Operator Name:	SANDY ARKLE
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A

GIANT INLAND EMPIRE RV CENTER DBA GIANT RV (Continued) **1024854168**

Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2018-09-06 17:07:31.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	BEHZAD BAROUTI
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	9150 BENSON AVE
Owner/Operator City,State,Zip:	MONTCLAIR, CA 91763-1688
Owner/Operator Telephone:	909-981-0444
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	SANDY ARKLE
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	9150 BENSON AVE
Owner/Operator City,State,Zip:	MONTCLAIR, CA 91763
Owner/Operator Telephone:	909-253-4082
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2016-03-03 00:00:00.0
Handler Name:	GIANT INLAND EMPIRE RV CENTER DBA GIANT RV
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

GIANT INLAND EMPIRE RV CENTER DBA GIANT RV (Continued) **1024854168**

List of NAICS Codes and Descriptions:
NAICS Code: 44121
NAICS Description: RECREATIONAL VEHICLE DEALERS

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

---

4 **ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT** **RCRA NonGen / NLR** **1014387900**
SW **22331 WALNUT ST** **CAR000215277**
1/8-1/4 **WILDOMAR, CA 92595**
0.216 mi.
1143 ft.

Relative:
Lower

Actual:
1371 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	2012-07-23 00:00:00.0
Handler Name:	ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT
Handler Address:	22331 WALNUT ST
Handler City,State,Zip:	WILDOMAR, CA 92595
EPA ID:	CAR000215277
Contact Name:	ADAN A RUIZ
Contact Address:	22331 WALNUT ST
Contact City,State,Zip:	WILDOMAR, CA 92595
Contact Telephone:	310-863-4226
Contact Fax:	Not reported
Contact Email:	CAXCANTRUCKING@YAHOO.COM
Contact Title:	OWNER
EPA Region:	09
Land Type:	Private
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	22331 WALNUT ST
Mailing City,State,Zip:	WILDOMAR, CA 92595
Owner Name:	ADAN A RUIZ
Owner Type:	Private
Operator Name:	ADAN A RUIZ
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	Yes
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No

ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT (Continued) **1014387900**

Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2012-08-07 13:23:04.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	Not reported
Manifest Broker:	Not reported
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name:	ADAN A RUIZ
Legal Status:	Private
Date Became Current:	2002-01-26 00:00:00.
Date Ended Current:	Not reported
Owner/Operator Address:	Not reported
Owner/Operator City,State,Zip:	Not reported
Owner/Operator Telephone:	Not reported
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported

ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT (Continued) **1014387900**

Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: ADAN A RUIZ
Legal Status: Private
Date Became Current: 2002-01-26 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: 22331 WALNUT ST
Owner/Operator City,State,Zip: WILDOMAR, CA 92595
Owner/Operator Telephone: 310-863-4226
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: ADAN A RUIZ
Legal Status: Private
Date Became Current: 2002-01-26 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: ADAN A RUIZ
Legal Status: Private
Date Became Current: 2002-01-26 00:00:00.
Date Ended Current: Not reported
Owner/Operator Address: 22331 WALNUTST
Owner/Operator City,State,Zip: WILDOMAR, CA 92595
Owner/Operator Telephone: 310-863-4226
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 2010-11-17 00:00:00.0
Handler Name: CAXCAN TRANSPORT
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

Receive Date: 2012-07-23 00:00:00.0
Handler Name: ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No

ADAN ALBERTO RUIZ DBA CAXCAN TRANSPORT (Continued) **1014387900**

Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	562111
NAICS Description:	SOLID WASTE COLLECTION
NAICS Code:	562112
NAICS Description:	HAZARDOUS WASTE COLLECTION

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

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5 **BUNDY CANYON** **SWF/LF** **S102361751**
NE **22800 BUNDY CANYON ROAD** **CERS** **N/A**
1/4-1/2 **WILDOMAR, CA 92595**
0.366 mi.
1934 ft.

Relative:
Higher

Actual:
1469 ft.

SWF/LF (SWIS):

Name:	BUNDY CANYON
Address:	22800 BUNDY CANYON ROAD
City,State,Zip:	WILDOMAR, CA 92595
Region:	STATE
Facility ID:	33-CR-0002
SWIS Number:	33-CR-0002
Point of Contact:	Angela Gomez
Is Archived:	No
Is Closed Illegal Abandoned:	Yes
Is Site Inert Debris Engineered Fill:	No
Is Financial Assurances Responsible:	No
Absorbed On:	Not reported
Operational Status:	Closed
Absorbed By:	Not reported
Closed Illegal Abandoned Category:	C3
EPA Federal Registry ID:	Not reported
ARB District:	South Coast
SWRCB Region:	San Diego
Local Government:	Wildomar
Reporting Agency Legal Name:	County of Riverside
Reporting Agency Department:	Department of Environmental Health
Enforcing Agency Legal Name:	County of Riverside
Enforcing Agency Department:	Department of Environmental Health
Regulation Status:	Pre-regulation

Activity:

SWIS Number:	33-CR-0002
Site Name:	Bundy Canyon

BUNDY CANYON (Continued) **S102361751**

Activity:	Solid Waste Disposal Site
Activity Is Archived:	No
Category:	Disposal
Activity Classification:	Solid Waste Disposal Site
WDR Number:	Not reported
WDR Landfill Class:	Not reported
Cease Operation:	12/31/1969
Cease Operation Type:	Estimated
Inspection Frequency:	Biennial
Throughput:	0
Throughput Units:	Not reported
Remaining Capacity:	0
Remaining Capacity Date:	Not reported
Capacity:	0
Capacity Units:	Not reported
Total Acreage:	0
Disposal Acreage:	0
Permitted Elevation:	0
Permitted Elevation Type:	Not reported
Permitted Depth:	0
Permitted Depth Type:	Not reported
Point of Contact:	Angela Gomez
Site Operational Status:	Closed
Site Regulatory Status:	Pre-regulation
Site Is Archived:	No
Is Closed Illegal Abandoned:	Yes
Is Site Inert Debris Engineered Fill:	No
Is Financial Assurances Responsible:	No
Absorbed On:	Not reported
Absorbed By:	Not reported
Closed Illegal Abandoned Category:	C3
EPA Federal Registry ID:	Not reported
County:	Riverside
ARB District:	South Coast
SWRCB Region:	San Diego
Local Government:	Wildomar
Street Address:	22800 Bundy Canyon Road
City:	Wildomar
State:	CA
ZIP Code:	92595
Reporting Agency Legal Name:	County of Riverside
Reporting Agency Department:	Department of Environmental Health
Enforcing Agency Legal Name:	County of Riverside
Enforcing Agency Department:	Department of Environmental Health

Operator:

SWIS Number:	33-CR-0002
Site Name:	Bundy Canyon
Site Operational Status:	Closed
Site Type:	Disposal Only
Site Regulatory Status:	Pre-regulation
Latitude:	33.6302
Longitude:	-117.2606
Is Archived:	No
Operator:	Riverside County Dept. of Waste Resource
Started On:	5/26/2016
Contact Name:	Not reported

BUNDY CANYON (Continued) **S102361751**

Contact Title: Not reported
Contact Email: HKERNKAM@rcwaste.org
Contact Phone: (951) 486-3200
Street Address: Hans W. Kernkamp 14310 Frederick St.
Operator City: Moreno Valley
Operator State: CA
Operator Zip: 92553

Owner:
SWIS Number: 33-CR-0002
Owner: Riverside County Dept. of Waste Resource
Owner Address: Hans W. Kernkamp 14310 Frederick St.
Owner City: Moreno Valley
Owner State: CA
Owner Zip: 92553
Site Name: Bundy Canyon
Site Operational Status: Closed
Site Type: Disposal Only
Site Regulatory Status: Pre-regulation
Latitude: 33.6302
Longitude: -117.2606
Is Archived: No
Started On: 5/26/2016
Contact Name: Not reported
Contact Title: Not reported
Contact Email: HKERNKAM@rcwaste.org
Contact Phone: (951) 486-3200

SWIS Number: 33-CR-0002
Owner: Riverside Co. Dept. of Waste Resources
Owner Address: 14310 Frederick St.
Owner City: Moreno Valley
Owner State: CA
Owner Zip: 92553
Site Name: Bundy Canyon
Site Operational Status: Closed
Site Type: Disposal Only
Site Regulatory Status: Pre-regulation
Latitude: 33.6302
Longitude: -117.2606
Is Archived: No
Started On: 12/31/2015
Contact Name: Fouad Mina
Contact Title: Not reported
Contact Email: Not reported
Contact Phone: (951) 486-3244

CERS:
Name: BUNDY CANYON
Address: 22800 BUNDY CANYON ROAD
City,State,Zip: WILDOMAR, CA
Site ID: 507265
CERS ID: 33-CR-0002
CERS Description: Solid Waste and Recycle Sites

BUNDY CANYON (Continued) **S102361751**

Affiliation:

Affiliation Type Desc:	Legal Operator
Entity Name:	Riverside County Dept. of Waste Resource
Entity Title:	Not reported
Affiliation Address:	Hans W. Kernkamp14310 Frederick St.
Affiliation City:	Moreno Valley
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92553
Affiliation Phone:	9514863200

Affiliation Type Desc:	Legal Owner
Entity Name:	Riverside County Dept. of Waste Resource
Entity Title:	Not reported
Affiliation Address:	Hans W. Kernkamp14310 Frederick St.
Affiliation City:	Moreno Valley
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92553
Affiliation Phone:	9514863200

Affiliation Type Desc:	Legal Owner
Entity Name:	Riverside Co. Dept. of Waste Resources
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Moreno Valley
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92553
Affiliation Phone:	9514863244

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6 **ELSINORE HIGH SCHOOL EXPANSION** **ENVIROSTOR** **S107736291**
WNW **BUNDY CANYON ROAD/ORCHARD STREET** **SCH** **N/A**
1/2-1 **WILDOMAR, CA 92595**
0.944 mi.
4984 ft.

Relative:
Lower

Actual:
1325 ft.

ENVIROSTOR:

Name:	ELSINORE HIGH SCHOOL EXPANSION
Address:	BUNDY CANYON ROAD/ORCHARD STREET
City,State,Zip:	WILDOMAR, CA 92595
Facility ID:	33010015
Status:	No Further Action
Status Date:	06/04/2001
Site Code:	404116
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	16.2
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	28

ELSINORE HIGH SCHOOL EXPANSION (Continued) **S107736291**

Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.62655
Longitude: -117.2826
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic DDE
Confirmed COC: Arsenic DDE
Potential Description: SOIL
Alias Name: ELSINORE HIGH SCH. EXPANSION (PROPOSED)
Alias Type: Alternate Name
Alias Name: ELSINORE HIGH SCHOOL EXPANSION
Alias Type: Alternate Name
Alias Name: ELSINORE HIGH SCHOOL EXPANSION (PROP)
Alias Type: Alternate Name
Alias Name: LAKE ELSINORE UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: LAKE ELSINORE USD-ELSINORE HS EXP/VCA
Alias Type: Alternate Name
Alias Name: 404116
Alias Type: Project Code (Site Code)
Alias Name: 33010015
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 10/10/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 11/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 03/22/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/04/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 08/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE

ELSINORE HIGH SCHOOL EXPANSION (Continued) **S107736291**

Completed Sub Area Name: Not reported
Completed Document Type: * Workplan
Completed Date: 11/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 12/22/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 07/26/2000
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: ELSINORE HIGH SCHOOL EXPANSION
Address: BUNDY CANYON ROAD/ORCHARD STREET
City,State,Zip: WILDOMAR, CA 92595
Facility ID: 33010015
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 16.2
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Not reported
Supervisor: Shahir Haddad
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 404116
Assembly: 67
Senate: 28
Special Program Status: Not reported
Status: No Further Action
Status Date: 06/04/2001
Restricted Use: NO
Funding: School District
Latitude: 33.62655
Longitude: -117.2826
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic, DDE

ELSINORE HIGH SCHOOL EXPANSION (Continued) **S107736291**

Confirmed COC: Arsenic, DDE
Potential Description: SOIL
Alias Name: ELSINORE HIGH SCH. EXPANSION (PROPOSED)
Alias Type: Alternate Name
Alias Name: ELSINORE HIGH SCHOOL EXPANSION
Alias Type: Alternate Name
Alias Name: ELSINORE HIGH SCHOOL EXPANSION (PROP)
Alias Type: Alternate Name
Alias Name: LAKE ELSINORE UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: LAKE ELSINORE USD-ELSINORE HS EXP/VCA
Alias Type: Alternate Name
Alias Name: 404116
Alias Type: Project Code (Site Code)
Alias Name: 33010015
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 10/10/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 11/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 03/22/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/04/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 08/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Workplan
Completed Date: 11/15/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 12/22/2000

ELSINORE HIGH SCHOOL EXPANSION (Continued) **S107736291**

Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	07/26/2000
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 3 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
WILDOMAR	1023288624	MONTE VISTA RANCH	MONTE VISTA	92595	FINDS
WILDOMAR	1023694654	MONTE VISTA RANCH	SOUTH OF BUNDY CANYON RD AT MO	92595	FINDS, ECHO
WILDOMAR	S121684131	TRACT 32024 MONTE VISTA RANCH	S OF BUNDY CANYON RD AT I 15 F	92595	CIWQS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/30/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 39

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/15/2020
Date Made Active in Reports: 12/22/2020
Number of Days to Update: 7

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/15/2020
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 83

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/29/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/05/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 04/01/2021
Number of Days to Update: 23

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/22/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/09/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/11/2020
Date Data Arrived at EDR: 12/11/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/16/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/22/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/22/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs
A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites
Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27
Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 02/24/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 77

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/03/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/16/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 85

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/24/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 47

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/14/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/17/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/21/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 60

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 01/22/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/05/2021
Number of Days to Update: 50
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/11/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 61
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/05/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/02/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/13/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 68

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/28/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/30/2020
Date Made Active in Reports: 01/25/2021
Number of Days to Update: 56

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 03/01/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/01/2021
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/24/2021
Next Scheduled EDR Contact: 06/06/2021
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/06/2021
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/06/2021
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/11/2020
Date Data Arrived at EDR: 12/11/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 81

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/10/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/03/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 33

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/13/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/02/2021
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/17/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 12/17/2020
Date Made Active in Reports: 03/09/2021
Number of Days to Update: 82

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/23/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/04/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 77
Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/23/2021
Date Data Arrived at EDR: 02/25/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 83
Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/26/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78
Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Varies

ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/09/2021
Number of Days to Update: 79
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/13/2021
Number of Days to Update: 77
Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/12/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 82
Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/16/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/07/2021
Number of Days to Update: 79

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/16/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/05/2021
Date Data Arrived at EDR: 01/05/2021
Date Made Active in Reports: 03/18/2021
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/06/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 01/29/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/03/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 02/08/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 05/04/2021
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/03/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 12/10/2020
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 11/30/2020
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/12/2021
Number of Days to Update: 73

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/19/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 01/20/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits

An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/08/2021
Date Data Arrived at EDR: 04/09/2021
Date Made Active in Reports: 04/20/2021
Number of Days to Update: 11

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 09/10/2018
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 03/17/2021
Date Data Arrived at EDR: 03/18/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 7

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/17/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List

Cupa Facility List

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/24/2020
Number of Days to Update: 8

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 01/25/2021
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 80

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 04/20/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 01/28/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 01/14/2021
Date Data Arrived at EDR: 01/15/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 80

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 04/01/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/17/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 2

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/10/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 10/29/2020
Date Data Arrived at EDR: 10/30/2020
Date Made Active in Reports: 01/15/2021
Number of Days to Update: 77

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/21/2021
Date Made Active in Reports: 01/28/2021
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/10/2021
Date Data Arrived at EDR: 02/12/2021
Date Made Active in Reports: 03/11/2021
Number of Days to Update: 27

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/11/2021
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 72

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/05/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/11/2021
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/26/2021
Number of Days to Update: 73

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/13/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 81

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 04/16/2021
Date Made Active in Reports: 04/21/2021
Number of Days to Update: 5

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 10/19/2020
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/26/2021
Number of Days to Update: 73

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/16/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/07/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 09/11/2020
Date Data Arrived at EDR: 10/07/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 77

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/23/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/21/2020
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 79

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 02/09/2021
Date Made Active in Reports: 02/18/2021
Number of Days to Update: 9

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 01/08/2021
Date Data Arrived at EDR: 01/12/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 72

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/03/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/01/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 9
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 02/01/2021
Date Data Arrived at EDR: 02/02/2021
Date Made Active in Reports: 04/20/2021
Number of Days to Update: 77
Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 11/24/2020
Date Data Arrived at EDR: 11/24/2020
Date Made Active in Reports: 11/25/2020
Number of Days to Update: 1
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 55
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/15/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/10/2021
Number of Days to Update: 55

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/15/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 02/18/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/15/2020
Number of Days to Update: 76

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/31/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/24/2020
Date Data Arrived at EDR: 03/31/2020
Date Made Active in Reports: 06/17/2020
Number of Days to Update: 78

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/01/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 4

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/16/2020
Date Data Arrived at EDR: 11/18/2020
Date Made Active in Reports: 02/04/2021
Number of Days to Update: 78

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 05/03/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/21/2021
Number of Days to Update: 79

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/03/2021
Next Scheduled EDR Contact: 03/15/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/28/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/07/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 3

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/06/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/08/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/26/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 82

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 12/03/2020
Date Made Active in Reports: 02/18/2021
Number of Days to Update: 77

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 03/12/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 12/15/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 12/23/2020
Number of Days to Update: 7

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/05/2021
Date Data Arrived at EDR: 01/06/2021
Date Made Active in Reports: 03/18/2021
Number of Days to Update: 71

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/19/2021
Next Scheduled EDR Contact: 07/05/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/21/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/26/2021
Next Scheduled EDR Contact: 06/14/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 04/27/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/14/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/28/2020
Date Data Arrived at EDR: 01/29/2021
Date Made Active in Reports: 04/22/2021
Number of Days to Update: 83
Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/25/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/29/2021
Date Data Arrived at EDR: 04/21/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 2
Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/19/2021
Next Scheduled EDR Contact: 08/02/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/09/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/21/2020
Date Data Arrived at EDR: 12/23/2020
Date Made Active in Reports: 01/04/2021
Number of Days to Update: 12
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/26/2021
Next Scheduled EDR Contact: 07/12/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 20

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 04/24/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 10/05/2020
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 82

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/19/2021
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/09/2021
Next Scheduled EDR Contact: 07/26/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 02/24/2021
Number of Days to Update: 13

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/08/2021
Next Scheduled EDR Contact: 06/21/2021
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MONTE VISTA RANCH II
MONTE VISTA RANCH II
WILDOMAR, CA 92595

TARGET PROPERTY COORDINATES

Latitude (North):	33.622397 - 33° 37' 20.63''
Longitude (West):	117.265757 - 117° 15' 56.73''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	475349.3
UTM Y (Meters):	3720127.8
Elevation:	1409 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5636487 WILDOMAR, CA
Version Date:	2012
Northeast Map:	5641314 ROMOLAND, CA
Version Date:	2012
Southeast Map:	5641304 MURRIETA, CA
Version Date:	2012
Northwest Map:	5636473 LAKE ELSINORE, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

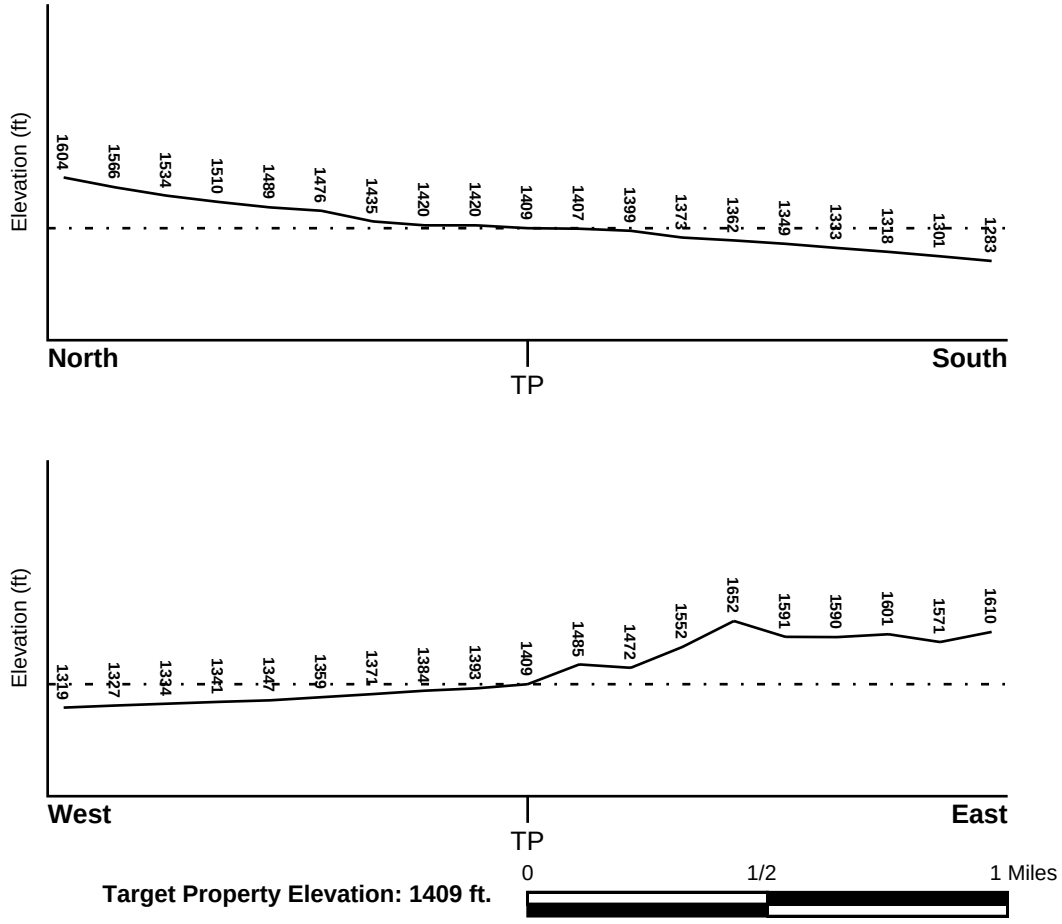
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1409 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C2682G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C2043G	FEMA FIRM Flood data
0602452070B	FEMA Q3 Flood data
0602452090B	FEMA Q3 Flood data
0602452730B	FEMA Q3 Flood data
0602452710B	FEMA Q3 Flood data
06065C2681G	FEMA FIRM Flood data
06065C2705G	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
WILDOMAR	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

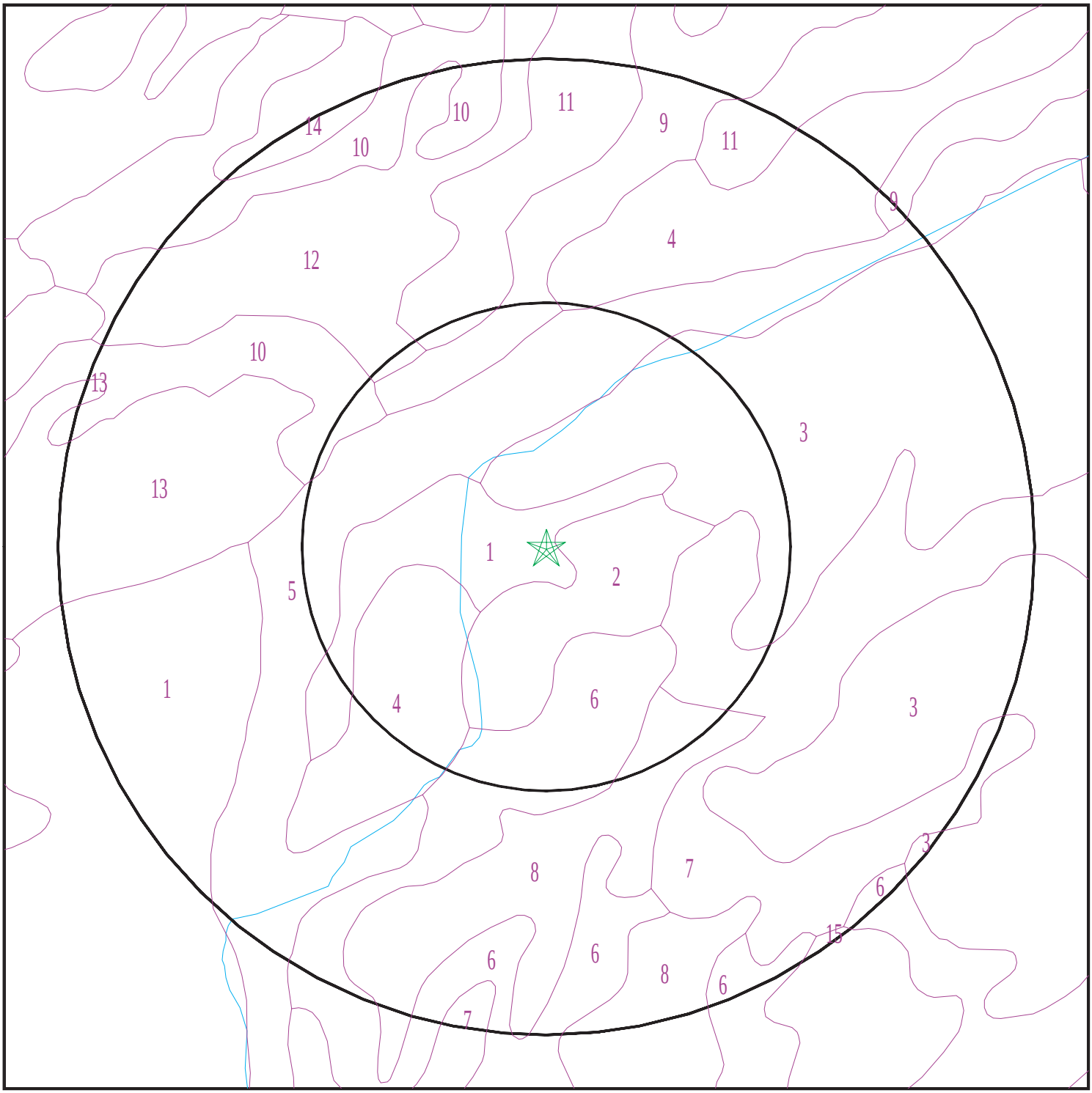
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 6506747.2s



SITE NAME:	Monte Vista Ranch II	CLIENT:	Geotek
ADDRESS:	Monte Vista Ranch II Wildomar CA 92595	CONTACT:	Franklin Sullivan
		INQUIRY #:	6506747.2s
LAT/LONG:	33.622397 / 117.265757	DATE:	May 24, 2021 3:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 2

Soil Component Name: CIENEBA

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	14 inches	22 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: Cieneba

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	14 inches	22 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: TUJUNGA

Soil Surface Texture: loamy sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Well-graded sand.	Max: 141 Min: 42	Max: 7.8 Min: 6.1
2	9 inches	59 inches	loamy sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Clean Sands, Well-graded sand.	Max: 141 Min: 42	Max: 7.8 Min: 6.1

Soil Map ID: 5

Soil Component Name: RIVERWASH

Soil Surface Texture: gravelly coarse sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Excessively drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	gravelly coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141 Min: 42	Max: Min:

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
2	5 inches	59 inches	stratified extremely gravelly coarse sand to gravelly sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILIS, Gravels, Clean Gravels, Well-graded gravel.	Max: 141 Min: 42	Max: Min:

Soil Map ID: 6

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
3	27 inches	44 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
4	44 inches	57 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
5	57 inches	70 inches	loamy coarse sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 7

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 8

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
2	14 inches	22 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	22 inches	68 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	68 inches	74 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 9

Soil Component Name: HONCUT

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	22 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.1
2	22 inches	59 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.1

Soil Map ID: 10

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
2	9 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
3	18 inches	44 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
4	44 inches	57 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6
5	57 inches	70 inches	loamy coarse sand	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

Soil Map ID: 11

Soil Component Name: YOKOHL

Soil Surface Texture: loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	5 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
2	5 inches	20 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
3	20 inches	24 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6
4	24 inches	59 inches	stratified sandy loam to gravelly loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 6.6

Soil Map ID: 12

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 13

Soil Component Name: RAMONA

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	7 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
2	7 inches	16 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	16 inches	68 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	68 inches	74 inches	gravelly sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 14

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	42 inches	59 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 15

Soil Component Name: VISTA

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	14 inches	24 inches	coarse sandy loam	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	24 inches	27 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000136098	1/8 - 1/4 Mile SSW
4	USGS40000136126	1/4 - 1/2 Mile West
B5	USGS40000136102	1/4 - 1/2 Mile SE
6	USGS40000136096	1/4 - 1/2 Mile SE
C7	USGS40000136084	1/4 - 1/2 Mile SW
D8	USGS40000136110	1/4 - 1/2 Mile WSW
C9	USGS40000136092	1/4 - 1/2 Mile SW
12	USGS40000136066	1/4 - 1/2 Mile SE
D13	USGS40000136103	1/4 - 1/2 Mile WSW
E16	USGS40000136076	1/2 - 1 Mile SW
E17	USGS40000136088	1/2 - 1 Mile WSW
F18	USGS40000136033	1/2 - 1 Mile SSW
G20	USGS40000136022	1/2 - 1 Mile South
H27	USGS40000136012	1/2 - 1 Mile SW
I30	USGS40000136008	1/2 - 1 Mile SE
J32	USGS40000135969	1/2 - 1 Mile South
I35	USGS40000135999	1/2 - 1 Mile SE
36	USGS40000135970	1/2 - 1 Mile SSW

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

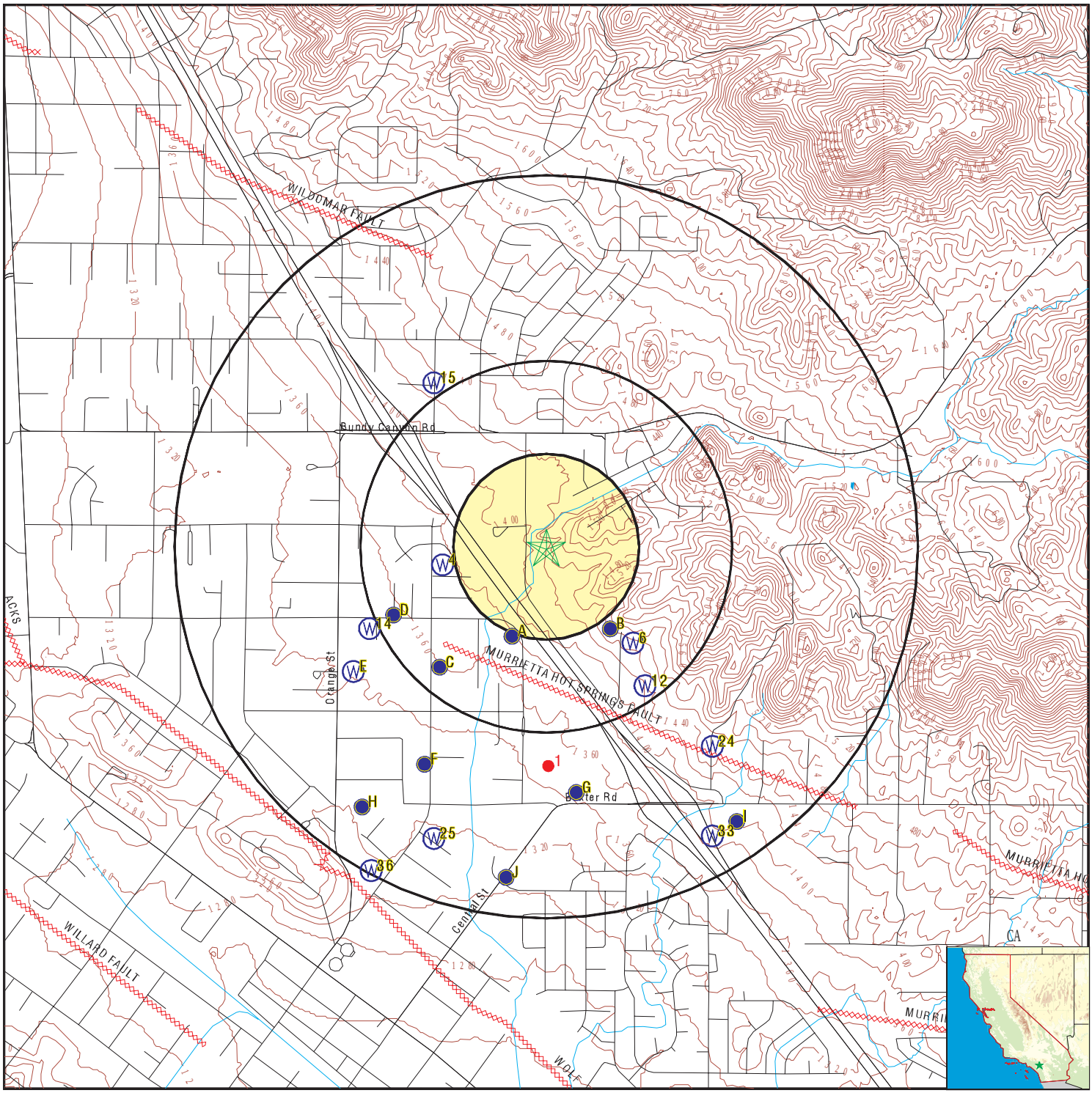
MAP ID	WELL ID	LOCATION FROM TP
B2	CADWR8000004536	1/4 - 1/2 Mile SE
A3	CADWR8000004532	1/4 - 1/2 Mile SSW
D10	CADWR8000004540	1/4 - 1/2 Mile WSW
C11	CADWR8000004525	1/4 - 1/2 Mile SW
14	CADWR8000004537	1/2 - 1 Mile WSW
15	CADWR0000011422	1/2 - 1 Mile NW
G19	CADWR8000004487	1/2 - 1 Mile South
G21	CAUSGSN00005063	1/2 - 1 Mile South
G22	CADWR0000002579	1/2 - 1 Mile South
F23	CADWR8000004497	1/2 - 1 Mile SSW
24	CADWR0000019435	1/2 - 1 Mile SE
25	CADWR0000034659	1/2 - 1 Mile SSW
H26	CADWR0000034366	1/2 - 1 Mile SW
H28	CAUSGSN00000521	1/2 - 1 Mile SW
H29	CADWR8000004483	1/2 - 1 Mile SW
I31	CAUSGSN00019016	1/2 - 1 Mile SE
33	CADWR8000004476	1/2 - 1 Mile SSE
J34	CADWR8000004460	1/2 - 1 Mile South

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG14000006425	1/2 - 1 Mile South

PHYSICAL SETTING SOURCE MAP - 6506747.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Monte Vista Ranch II	CLIENT:	Geotek
ADDRESS:	Monte Vista Ranch II Wildomar CA 92595	CONTACT:	Franklin Sullivan
LAT/LONG:	33.622397 / 117.265757	INQUIRY #:	6506747.2s
		DATE:	May 24, 2021 3:05 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
SSW
1/8 - 1/4 Mile
Lower

FED USGS **USGS40000136098**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26L001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19470101	Well Depth:	100
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	61.00	Feet to sea level:	Not Reported
Note:	Not Reported		

B2
SE
1/4 - 1/2 Mile
Higher

CA WELLS **CADWR8000004536**

State Well #:	06S04W26K001S	Station ID:	7099
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Not Reported	Well Completion Rpt #:	Not Reported

A3
SSW
1/4 - 1/2 Mile
Lower

CA WELLS **CADWR8000004532**

State Well #:	06S04W26L001S	Station ID:	7100
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Not Reported	Well Completion Rpt #:	Not Reported

4
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000136126**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26E001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported

Construction Date:	19470101	Well Depth:	332
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

B5
SE **FED USGS** **USGS40000136102**
1/4 - 1/2 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26K001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	87	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	65.00	Feet to sea level:	Not Reported
Note:	Not Reported		

6
SE **FED USGS** **USGS40000136096**
1/4 - 1/2 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26K002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	19520101
Well Depth:	76	Well Depth Units:	ft
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

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C7
SW **FED USGS** **USGS40000136084**
1/4 - 1/2 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26L002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	130
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	45.00	Feet to sea level:	Not Reported
Note:	Not Reported		

D8
WSW **FED USGS** **USGS40000136110**
1/4 - 1/2 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26E002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	44.00	Feet to sea level:	Not Reported
Note:	Not Reported		

C9
SW **FED USGS** **USGS40000136092**
1/4 - 1/2 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26M002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	91
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

D10
WSW **CA WELLS** **CADWR8000004540**
1/4 - 1/2 Mile
Lower

State Well #:	06S04W26E002S	Station ID:	7098
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

C11
SW
1/4 - 1/2 Mile
Lower

CA WELLS **CADWR8000004525**

State Well #:	06S04W26L002S	Station ID:	7101
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Not Reported	Well Completion Rpt #:	Not Reported

12
SE
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000136066**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26J001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	Not Reported
Well Depth:	Not Reported	Well Depth Units:	Not Reported
Well Hole Depth:	Not Reported	Well Hole Depth Units:	Not Reported

---

D13
WSW
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000136103**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26M001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	102
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	44.00	Feet to sea level:	Not Reported
Note:	Not Reported		

14
WSW
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000004537**

State Well #:	06S04W26M001S	Station ID:	7102
Well Name:	Not Reported	Well Use:	Unknown

Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

15
NW
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000011422**

Well ID:	06S04W26C001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	06S04W26C001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=06S04W26C001S&store_num=		
GeoTracker Data:	Not Reported		

E16
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000136076**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26M003S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19510101	Well Depth:	171
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

E17
WSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000136088**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W27J002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19490101	Well Depth:	250
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

F18
SSW
1/2 - 1 Mile
Lower

FED USGS **USGS40000136033**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26N001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	128
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	54.00	Feet to sea level:	Not Reported
Note:	Not Reported		

G19
South
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000004487**

State Well #:	06S04W26Q001S	Station ID:	7103
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

G20
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000136022**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W26Q001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19380101	Well Depth:	71
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	5.00	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G21
South
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00005063**

Well ID:	USGS-333646117154801	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-333646117154801	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-333646117154801&store_num=		
GeoTracker Data:	Not Reported		

G22
South
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000002579**

Well ID:	06S04W26Q001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	06S04W26Q001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=06S04W26Q001S&store_num=		
GeoTracker Data:	Not Reported		

F23
SSW
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000004497**

State Well #:	06S04W26N001S	Station ID:	38338
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

24
SE
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000019435**

Well ID:	06S04W36D001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	06S04W36D001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=06S04W36D001S&store_num=		
GeoTracker Data:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

25
SSW
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000034659**

Well ID:	06S04W35F001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	06S04W35F001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=06S04W35F001S&store_num=		
GeoTracker Data:	Not Reported		

H26
SW
1/2 - 1 Mile
Lower

CA WELLS **CADWR0000034366**

Well ID:	06S04W35D001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	06S04W35D001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=06S04W35D001S&store_num=		
GeoTracker Data:	Not Reported		

H27
SW
1/2 - 1 Mile
Lower

FED USGS **USGS40000136012**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W35D001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19520101	Well Depth:	198
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	123.00	Feet to sea level:	Not Reported
Note:	Not Reported		

H28
SW
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00000521**

Well ID:	USGS-333644117162401	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-333644117162401	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-333644117162401&store_num=		

GeoTracker Data: Not Reported

H29
SW
1/2 - 1 Mile
Lower

CA WELLS **CADWR8000004483**

State Well #:	06S04W35D001S	Station ID:	7114
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

I30
SE
1/2 - 1 Mile
Lower

FED USGS **USGS40000136008**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W36D001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19500101	Well Depth:	40
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

I31
SE
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00019016**

Well ID:	USGS-333643117152201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-333643117152201	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-333643117152201&store_num=		
GeoTracker Data:	Not Reported		

J32
South
1/2 - 1 Mile
Lower

FED USGS **USGS40000135969**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W35C001S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported

Construction Date:	Not Reported	Well Depth:	130
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	101.00	Feet to sea level:	Not Reported
Note:	Not Reported		

33
SSE **CA WELLS** **CADWR8000004476**
1/2 - 1 Mile
Lower

State Well #:	06S04W36D002S	Station ID:	7121
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

J34
South **CA WELLS** **CADWR8000004460**
1/2 - 1 Mile
Lower

State Well #:	06S04W35C001S	Station ID:	28075
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Temecula Valley	Well Completion Rpt #:	Not Reported

---

I35
SE **FED USGS** **USGS40000135999**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W36D002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19540101	Well Depth:	289
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	53.00	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

36
SSW
1/2 - 1 Mile
Lower | **FED USGS** | **USGS40000135970**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	006S004W35D002S	Type:	Well
Description:	Not Reported	HUC:	18070302
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19540101	Well Depth:	132
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1968-03-01
Feet below surface:	106.00	Feet to sea level:	Not Reported
Note:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

1
South
1/2 - 1 Mile

OIL_GAS **CAOG14000006425**

API #:	0406500088	Well #:	1
Well Status:	Plugged	Well Type:	Dry Hole
Lease Name:	Stuart	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
Spud Date:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92595	5	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX E

VAPOR ENCROACHMENT

Monte Vista Ranch II
Monte Vista Ranch II
Wildomar, CA 92595

Inquiry Number: 6506747.2s
June 10, 2021

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	Default Area of Concern (Miles)*	property	1/10	> 1/10
Federal NPL site list	1.0	0	0	0
Federal Delisted NPL site list	1.0	0	0	0
Federal CERCLIS list	0.5	0	0	0
Federal CERCLIS NFRAP site list	0.5	0	0	0
Federal RCRA CORRACTS facilities list	1.0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list	0.5	0	0	0
Federal RCRA generators list	0.25	0	0	0
Federal institutional controls / engineering controls registries	0.5	0	0	0
Federal ERNS list	0.001	0	0	-
State- and tribal - equivalent NPL	1.0	0	0	0
State- and tribal - equivalent CERCLIS	1.0	0	0	0
State and tribal landfill and/or solid waste disposal site lists	0.5	0	0	0
State and tribal leaking storage tank lists	0.5	0	0	0
State and tribal registered storage tank lists	0.25	0	0	0
State and tribal institutional control / engineering control registries	not searched	-	-	-
State and tribal voluntary cleanup sites	0.5	0	0	0
State and tribal Brownfields sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS				
Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	1.0	0	0	0
Local Lists of Registered Storage Tanks	0.25	0	0	0
Local Land Records	0.5	0	0	0
Records of Emergency Release Reports	0.5	0	0	0
Other Ascertainable Records	1.0	0	2	0

EDR HIGH RISK HISTORICAL RECORDS				
EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

MONTE VISTA RANCH II
MONTE VISTA RANCH II
WILDOMAR, CA 92595

COORDINATES

Latitude (North):	33.622397 - 33° 37′ 20.634155″
Longitude (West):	117.265757 - 117° 15′ 56.71692″
Elevation:	1409 ft. above sea level

EXECUTIVE SUMMARY

SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

ADDITIONAL ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
MONTE VISTA RANCH CIWQS: CIWQS NPDES: NPDES	SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD	<1/10 ENE	▲ 1	8
WILDOMAR MDP LATERAL C REVISION CIWQS: CIWQS CERS: CERS	Not Reported	<1/10 NW	◆ 2	8

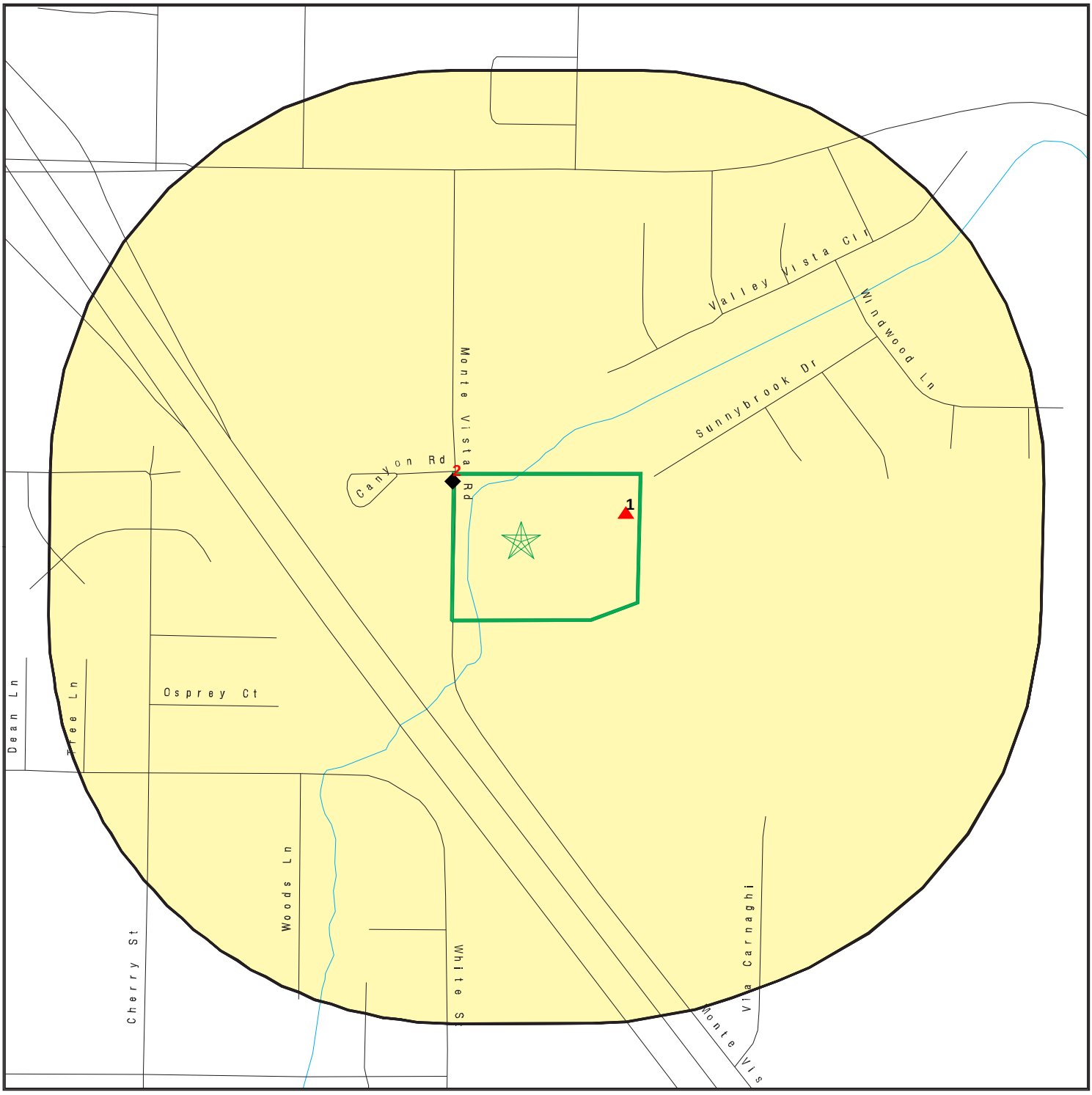
EDR HIGH RISK HISTORICAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

EDR RECOVERED GOVERNMENT ARCHIVES

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

PRIMARY MAP - 6506747.2S



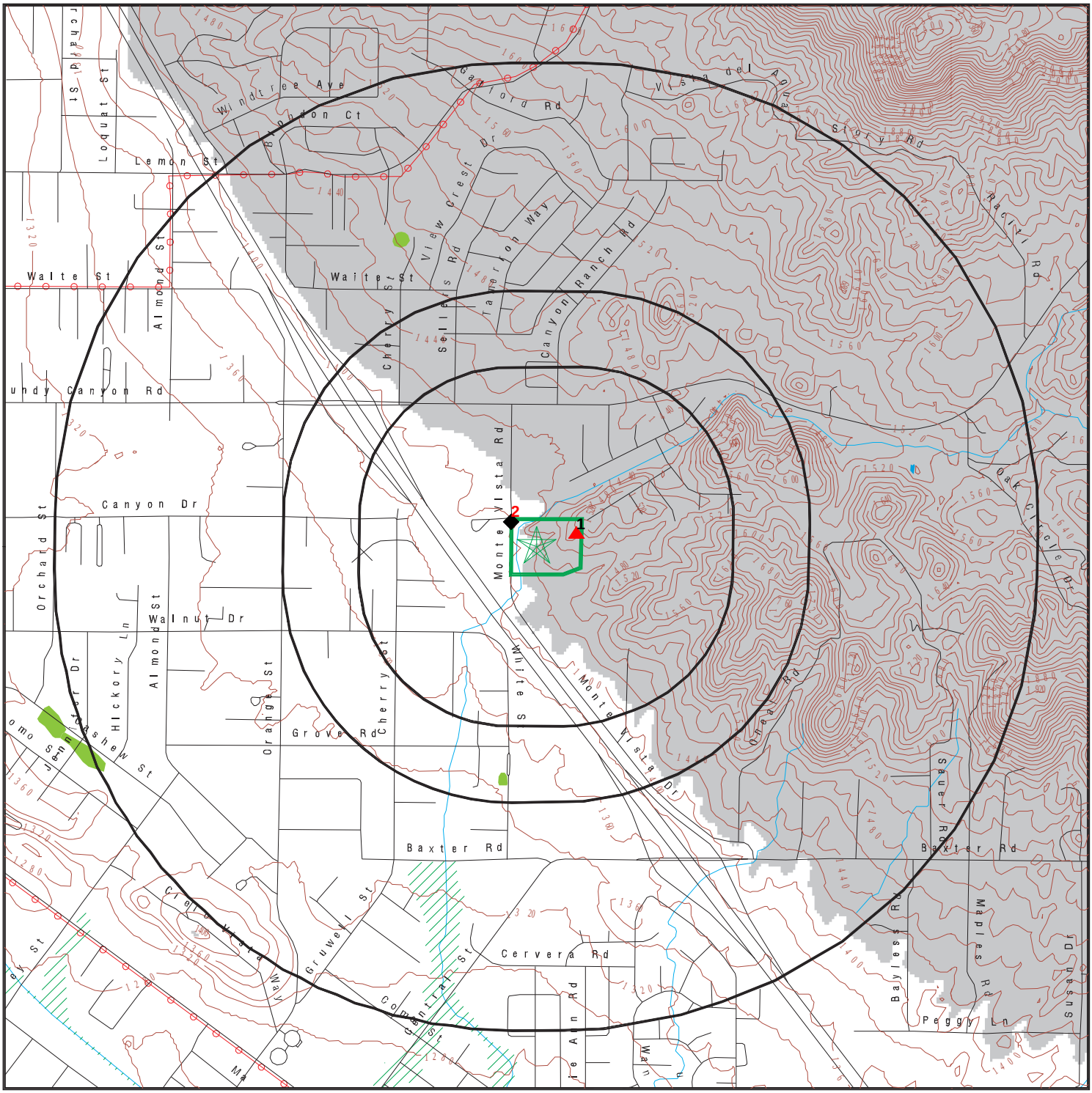
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Monte Vista Ranch II	CLIENT: Geotek
ADDRESS: Monte Vista Ranch II Wildomar CA 92595	CONTACT: Franklin Sullivan INQUIRY #: 6506747.2s
LAT/LONG: 33.622397 / 117.265757	DATE: May 24, 2021 3:01 pm

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SECONDARY MAP - 6506747.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/3 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Upgradient Area

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Monte Vista Ranch II	CLIENT:	Geotek
ADDRESS:	Monte Vista Ranch II Wildomar CA 92595	CONTACT:	Franklin Sullivan
LAT/LONG:	33.622397 / 117.265757	INQUIRY #:	6506747.2s
		DATE:	May 24, 2021 2:59 pm

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MAP FINDINGS

LEGEND

FACILITY NAME **FACILITY ADDRESS, CITY, ST, ZIP**		EDR SITE ID NUMBER
◆ **MAP ID#**	Direction Distance Range (Distance feet / miles) Relative Elevation Feet Above Sea Level	ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.

Worksheet:

Comments:
Comments may be added on the online Vapor Encroachment Worksheet.

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

MONTE VISTA RANCH SOUTH OF BUNDY CANYON RD AT MONTE VISTA ROAD, WILDOMAR, CA, 92595			S111459767
▲ 1	ENE <1/10	(0 ft. / 0 mi.)	Other Ascertainable Records
	77 ft. Higher Elevation	1486 ft. Above Sea Level	

Worksheet:

WILDOMAR MDP LATERAL C REVISION Not Reported, WILDOMAR, CA, 92595			S125342393
◆ 2	NW <1/10	(4 ft. / 0.001 mi.)	Other Ascertainable Records
	10 ft. Lower Elevation	1399 ft. Above Sea Level	

Worksheet:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	04/27/2021	05/03/2021	05/19/2021
US	Proposed NPL	Proposed National Priority List Sites	EPA	04/27/2021	05/03/2021	05/19/2021
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	04/27/2021	05/03/2021	05/19/2021
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	03/22/2021	03/23/2021	05/19/2021
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/22/2021	03/23/2021	05/19/2021
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/22/2021	03/23/2021	05/19/2021
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/22/2021	03/23/2021	05/19/2021
US	RCRA-VSQG	RCRA - Very Small Quantity Generators (Formerly Conditionall	Environmental Protection Agency	03/22/2021	03/23/2021	05/19/2021
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	02/09/2021	02/11/2021	03/22/2021
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	02/22/2021	02/23/2021	05/19/2021
US	US INST CONTROLS	Institutional Controls Sites List	Environmental Protection Agency	02/22/2021	02/23/2021	05/19/2021
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	12/14/2020	12/15/2020	12/22/2020
State and tribal - equivalent NPL						
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	01/25/2021	01/26/2021	04/13/2021
State and tribal - equivalent CERCLIS						
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	01/25/2021	01/26/2021	04/13/2021
State and tribal landfill / solid waste disposal						
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	02/08/2021	02/09/2021	05/03/2021
State and tribal leaking storage tank lists						
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	04/08/2020	05/20/2020	08/12/2020
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	11/12/2020	12/16/2020	03/12/2021
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/01/2020	12/16/2020	03/12/2021
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/09/2020	12/16/2020	03/12/2021
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	09/30/2020	12/22/2020	03/12/2021
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	10/02/2020	12/18/2020	03/12/2021
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	10/01/2020	12/16/2020	03/12/2021
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/07/2020	12/16/2020	03/12/2021
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
State and tribal registered storage tank lists						
CA	UST	Active UST Facilities	SWRCB	03/08/2021	03/09/2021	03/31/2021
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	03/05/2021	03/09/2021	04/01/2021
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/01/2020	12/16/2020	03/12/2021
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	10/02/2020	12/18/2020	03/12/2021
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	11/12/2020	12/16/2020	03/12/2021
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	04/08/2020	05/20/2020	08/12/2020
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/09/2020	12/16/2020	03/12/2021
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/01/2020	12/16/2020	03/12/2021
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	09/30/2020	12/22/2020	03/12/2021
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	10/07/2020	12/16/2020	03/12/2021
US	FEMA UST	Underground Storage Tank Listing	FEMA	01/29/2021	02/17/2021	03/22/2021
State and tribal voluntary cleanup sites						
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	01/25/2021	01/26/2021	04/13/2021

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
State and tribal Brownfields sites						
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	12/17/2020	12/17/2020	03/09/2021
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	12/31/2020	01/13/2021	03/22/2021
US	ROD	Records Of Decision	EPA	04/27/2021	05/03/2021	05/19/2021
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	04/27/2021	05/03/2021	05/19/2021
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
CA	SWRCY	Recycler Database	Department of Conservation	03/09/2021	03/09/2021	03/31/2021
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	02/11/2021	02/11/2021	05/05/2021
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2019	12/01/2020	02/09/2021
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	09/13/2019	11/06/2019	02/10/2020
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	01/12/2017	03/05/2019	11/11/2019
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	12/07/2020	12/09/2020	03/02/2021
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	04/27/2021	05/03/2021	05/19/2021
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	12/14/2020	12/17/2020	03/12/2021
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	Delisted NPL	National Priority List Deletions	EPA	04/27/2021	05/03/2021	05/19/2021
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	04/27/2021	05/03/2021	05/19/2021
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/22/2021	03/23/2021	05/19/2021
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	12/16/2020	12/17/2020	03/12/2021
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	01/02/2020	01/28/2020	04/17/2020
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	12/07/2020	12/09/2020	03/02/2021
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	12/11/2020	12/11/2020	03/02/2021
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	04/02/2018	04/11/2018	11/06/2019
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	02/11/2021	02/17/2021	04/05/2021
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	08/30/2019	11/15/2019	01/28/2020
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	MINES VIOLATIONS	MSHA Violation Assessment Data	DOL, Mine Safety & Health Admi	11/24/2020	11/30/2020	01/25/2021
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	02/01/2021	02/24/2021	05/19/2021
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	05/06/2020	05/27/2020	08/13/2020
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	12/30/2020	01/14/2021	03/05/2021
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2018	08/14/2020	11/04/2020
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/17/2020	09/10/2020

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	SSTS	Section 7 Tracking Systems	EPA	01/20/2021	01/21/2021	03/22/2021
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	11/19/2020	01/08/2021	03/22/2021
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	03/08/2021	03/11/2021	05/11/2021
US	RADINFO	Radiation Information Database	Environmental Protection Agency	07/01/2019	07/01/2019	09/23/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	02/03/2021	03/03/2021	04/05/2021
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	01/22/2021	02/18/2021	05/11/2021
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2017	06/22/2020	11/20/2020
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	12/11/2020	12/11/2020	03/02/2021
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2019	01/20/2021	04/08/2021
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	12/31/2020	01/20/2021	04/08/2021
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	12/17/2020	12/17/2020	03/09/2021
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	05/01/2019	05/14/2019	07/17/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	03/02/2021	03/03/2021	05/19/2021
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	03/01/2021	03/04/2021	05/20/2021
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	02/23/2021	02/25/2021	05/19/2021
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	02/26/2021	03/02/2021	05/19/2021
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2018	06/16/2020	08/28/2020
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	12/31/2020	01/20/2021	04/09/2021
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	01/25/2021	01/26/2021	04/13/2021
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	02/08/2021	02/12/2021	05/05/2021
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	11/23/2020	11/23/2020	02/08/2021
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2019	04/15/2020	07/02/2020
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	02/16/2021	02/17/2021	05/10/2021
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	01/05/2021	01/05/2021	03/18/2021
CA	ICE	ICE	Department of Toxic Subsances Control	02/16/2021	02/17/2021	05/07/2021
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	03/08/2021	03/09/2021	03/31/2021
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	03/01/2021	03/03/2021	05/20/2021
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/31/2021
CA	MINES	Mines Site Location Listing	Department of Conservation	03/08/2021	03/09/2021	03/30/2021
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	01/29/2021	03/03/2021	05/20/2021
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	02/08/2021	02/09/2021	05/04/2021
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	03/02/2021	03/03/2021	05/20/2021
CA	PROC	Certified Processors Database	Department of Conservation	03/09/2021	03/09/2021	03/31/2021
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	12/07/2020	12/09/2020	12/10/2020
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	01/25/2021	01/26/2021	04/13/2021

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	03/08/2021	03/09/2021	03/31/2021
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	11/19/2019	01/07/2020	03/09/2020
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
CA	HWTS	Hazardous Waste Tracking System	Department of Toxic Substances Control	04/08/2021	04/09/2021	04/20/2021
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	01/20/2021	01/20/2021	04/08/2021
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	03/08/2021	03/09/2021	03/30/2021
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	01/20/2021	01/20/2021	04/08/2021
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	03/09/2021	03/09/2021	03/31/2021
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	02/17/2021	02/17/2021	03/22/2021
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	11/03/2020	11/17/2020	02/09/2021
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	02/24/2021	02/24/2021	05/14/2021
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	01/02/2021	01/08/2021	03/22/2021
US	MINES MRDS	Mineral Resources Data System	USGS	04/06/2018	10/21/2019	10/24/2019
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	01/20/2021	01/20/2021	04/08/2021
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	11/30/2020	12/01/2020	02/12/2021
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2018	07/02/2020	09/17/2020
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	03/08/2021	03/09/2021	03/30/2021
HISTORICAL USE RECORDS						
US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
COUNTY RECORDS						
CA	CS ALAMEDA	Contaminated Sites	Alameda County Environmental Health Services	01/09/2019	01/11/2019	03/05/2019
CA	UST ALAMEDA	Underground Tanks	Alameda County Environmental Health Services	03/17/2021	03/18/2021	03/25/2021
CA	CUPA AMADOR	CUPA Facility List	Amador County Environmental Health	02/02/2021	02/04/2021	04/23/2021
CA	CUPA BUTTE	CUPA Facility Listing	Public Health Department	04/21/2017	04/25/2017	08/09/2017
CA	CUPA CALVERAS	CUPA Facility Listing	Calveras County Environmental Health	12/15/2020	12/16/2020	12/24/2020
CA	CUPA COLUSA	CUPA Facility List	Health & Human Services	04/06/2020	04/23/2020	07/10/2020
CA	SL CONTRA COSTA	Site List	Contra Costa Health Services Department	01/25/2021	01/26/2021	04/16/2021
CA	CUPA DEL NORTE	CUPA Facility List	Del Norte County Environmental Health Divisio	12/17/2020	01/28/2021	04/16/2021
CA	CUPA EL DORADO	CUPA Facility List	El Dorado County Environmental Management Dep	02/09/2021	02/11/2021	05/05/2021
CA	CUPA FRESNO	CUPA Resources List	Dept. of Community Health	01/14/2021	01/15/2021	04/05/2021
CA	CUPA GLENN	CUPA Facility List	Glenn County Air Pollution Control District	01/22/2018	01/24/2018	03/14/2018
CA	CUPA HUMBOLDT	CUPA Facility List	Humboldt County Environmental Health	05/17/2021	05/18/2021	05/20/2021
CA	CUPA IMPERIAL	CUPA Facility List	San Diego Border Field Office	01/19/2021	01/20/2021	04/08/2021
CA	CUPA INYO	CUPA Facility List	Inyo County Environmental Health Services	04/02/2018	04/03/2018	06/14/2018
CA	CUPA KERN	CUPA Facility List	Kern County Public Health	10/29/2020	10/30/2020	01/15/2021
CA	UST KERN	Underground Storage Tank Sites & Tank Listing	Kern County Environment Health Services Depar	01/19/2021	01/21/2021	01/28/2021
CA	CUPA KINGS	CUPA Facility List	Kings County Department of Public Health	12/03/2020	01/26/2021	04/14/2021
CA	CUPA LAKE	CUPA Facility List	Lake County Environmental Health	02/10/2021	02/12/2021	03/11/2021
CA	CUPA LASSEN	CUPA Facility List	Lassen County Environmental Health	07/31/2020	08/21/2020	11/09/2020
CA	AOCONCERN	Key Areas of Concerns in Los Angeles County		03/30/2009	03/31/2009	10/23/2009
CA	HMS LOS ANGELES	HMS: Street Number List	Department of Public Works	01/11/2021	01/12/2021	03/25/2021
CA	LF LOS ANGELES	List of Solid Waste Facilities	La County Department of Public Works	01/11/2021	01/12/2021	03/26/2021
CA	LF LOS ANGELES CITY	City of Los Angeles Landfills	Engineering & Construction Division	01/01/2021	02/18/2021	05/10/2021
CA	LOS ANGELES AST	Active & Inactive AST Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	LOS ANGELES CO LF METHANE	Methane Producing Landfills	Los Angeles County Department of Public Works	02/04/2021	04/16/2021	04/21/2021
CA	LOS ANGELES HM	Active & Inactive Hazardous Materials Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	LOS ANGELES UST	Active & Inactive UST Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	SITE MIT LOS ANGELES	Site Mitigation List	Community Health Services	10/19/2020	01/12/2021	03/26/2021
CA	UST EL SEGUNDO	City of El Segundo Underground Storage Tank	City of El Segundo Fire Department	01/21/2017	04/19/2017	05/10/2017
CA	UST LONG BEACH	City of Long Beach Underground Storage Tank	City of Long Beach Fire Department	04/22/2019	04/23/2019	06/27/2019
CA	UST TORRANCE	City of Torrance Underground Storage Tank	City of Torrance Fire Department	09/11/2020	10/07/2020	12/23/2020
CA	CUPA MADERA	CUPA Facility List	Madera County Environmental Health	08/10/2020	08/12/2020	10/23/2020
CA	UST MARIN	Underground Storage Tank Sites	Public Works Department Waste Management	09/26/2018	10/04/2018	11/02/2018
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	12/21/2020	12/21/2020	03/10/2021
CA	CUPA MERCED	CUPA Facility List	Merced County Environmental Health	02/04/2021	02/09/2021	02/18/2021
CA	CUPA MONO	CUPA Facility List	Mono County Health Department	02/22/2021	03/02/2021	05/19/2021
CA	CUPA MONTEREY	CUPA Facility Listing	Monterey County Health Department	01/08/2021	01/12/2021	03/25/2021
CA	LUST NAPA	Sites With Reported Contamination	Napa County Department of Environmental Manag	01/09/2017	01/11/2017	03/02/2017
CA	UST NAPA	Closed and Operating Underground Storage Tank Sites	Napa County Department of Environmental Manag	09/05/2019	09/09/2019	10/31/2019
CA	CUPA NEVADA	CUPA Facility List	Community Development Agency	02/03/2021	02/04/2021	04/23/2021
CA	IND_SITE ORANGE	List of Industrial Site Cleanups	Health Care Agency	02/01/2021	02/04/2021	04/23/2021
CA	LUST ORANGE	List of Underground Storage Tank Cleanups	Health Care Agency	03/01/2021	05/03/2021	05/12/2021
CA	UST ORANGE	List of Underground Storage Tank Facilities	Health Care Agency	02/01/2021	02/02/2021	04/20/2021
CA	MS PLACER	Master List of Facilities	Placer County Health and Human Services	11/24/2020	11/24/2020	11/25/2020
CA	CUPA PLUMAS	CUPA Facility List	Plumas County Environmental Health	03/31/2019	04/23/2019	06/26/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST RIVERSIDE	Listing of Underground Tank Cleanup Sites	Department of Environmental Health	01/13/2021	01/14/2021	03/10/2021
CA	UST RIVERSIDE	Underground Storage Tank Tank List	Department of Environmental Health	01/13/2021	01/14/2021	03/10/2021
CA	CS SACRAMENTO	Toxic Site Clean-Up List	Sacramento County Environmental Management	02/18/2020	03/31/2020	06/15/2020
CA	ML SACRAMENTO	Master Hazardous Materials Facility List	Sacramento County Environmental Management	02/24/2020	03/31/2020	06/17/2020
CA	CUPA SAN BENITO	CUPA Facility List	San Benito County Environmental Health	04/28/2021	04/29/2021	05/03/2021
CA	PERMITS SAN BERNARDINO	Hazardous Material Permits	San Bernardino County Fire Department Hazardo	11/16/2020	11/18/2020	02/04/2021
CA	HMMD SAN DIEGO	Hazardous Materials Management Division Database	Hazardous Materials Management Division	03/02/2021	03/03/2021	05/21/2021
CA	LF SAN DIEGO	Solid Waste Facilities	Department of Health Services	10/01/2020	11/23/2020	02/08/2021
CA	SAN DIEGO CO LOP	Local Oversight Program Listing	Department of Environmental Health	07/14/2020	07/16/2020	09/29/2020
CA	SAN DIEGO CO SAM	Environmental Case Listing	San Diego County Department of Environmental	03/23/2010	06/15/2010	07/09/2010
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	02/11/2021	02/11/2021	05/05/2021
CA	LUST SAN FRANCISCO	Local Oversite Facilities	Department Of Public Health San Francisco Cou	09/19/2008	09/19/2008	09/29/2008
CA	UST SAN FRANCISCO	Underground Storage Tank Information	Department of Public Health	02/11/2021	02/11/2021	05/05/2021
CA	UST SAN JOAQUIN	San Joaquin Co. UST	Environmental Health Department	06/22/2018	06/26/2018	07/11/2018
CA	CUPA SAN LUIS OBISPO	CUPA Facility List	San Luis Obispo County Public Health Departme	05/07/2021	05/11/2021	05/14/2021
CA	BI SAN MATEO	Business Inventory	San Mateo County Environmental Health Service	02/20/2020	02/20/2020	04/24/2020
CA	LUST SAN MATEO	Fuel Leak List	San Mateo County Environmental Health Service	03/29/2019	03/29/2019	05/29/2019
CA	CUPA SANTA BARBARA	CUPA Facility Listing	Santa Barbara County Public Health Department	09/08/2011	09/09/2011	10/07/2011
CA	CUPA SANTA CLARA	Cupa Facility List	Department of Environmental Health	02/24/2021	02/26/2021	05/19/2021
CA	HIST LUST SANTA CLARA	HIST LUST - Fuel Leak Site Activity Report	Santa Clara Valley Water District	03/29/2005	03/30/2005	04/21/2005
CA	LUST SANTA CLARA	LOP Listing	Department of Environmental Health	03/03/2014	03/05/2014	03/18/2014
CA	SAN JOSE HAZMAT	Hazardous Material Facilities	City of San Jose Fire Department	11/03/2020	11/05/2020	01/26/2021
CA	CUPA SANTA CRUZ	CUPA Facility List	Santa Cruz County Environmental Health	01/21/2017	02/22/2017	05/23/2017
CA	CUPA SHASTA	CUPA Facility List	Shasta County Department of Resource Manageme	06/15/2017	06/19/2017	08/09/2017
CA	LUST SOLANO	Leaking Underground Storage Tanks	Solano County Department of Environmental Man	06/04/2019	06/06/2019	08/13/2019
CA	UST SOLANO	Underground Storage Tanks	Solano County Department of Environmental Man	12/03/2020	12/03/2020	02/18/2021
CA	CUPA SONOMA	Cupa Facility List	County of Sonoma Fire & Emergency Services De	12/15/2020	12/16/2020	12/23/2020
CA	LUST SONOMA	Leaking Underground Storage Tank Sites	Department of Health Services	01/05/2021	01/06/2021	03/18/2021
CA	CUPA STANISLAUS	CUPA Facility List	Stanislaus County Department of Ennvironmenta	02/09/2021	02/11/2021	05/05/2021
CA	UST SUTTER	Underground Storage Tanks	Sutter County Environmental Health Services	03/01/2021	03/02/2021	05/19/2021
CA	CUPA TEHAMA	CUPA Facility List	Tehama County Department of Environmental Hea	01/13/2021	01/14/2021	04/06/2021
CA	CUPA TRINITY	CUPA Facility List	Department of Toxic Substances Control	01/19/2021	01/20/2021	04/08/2021
CA	CUPA TULARE	CUPA Facility List	Tulare County Environmental Health Services D	02/02/2021	02/04/2021	04/23/2021
CA	CUPA TUOLUMNE	CUPA Facility List	Divison of Environmental Health	04/23/2018	04/25/2018	06/25/2018
CA	BWT VENTURA	Business Plan, Hazardous Waste Producers, and Operating Unde	Ventura County Environmental Health Division	12/28/2020	01/29/2021	04/22/2021
CA	LF VENTURA	Inventory of Illegal Abandoned and Inactive Sites	Environmental Health Division	12/01/2011	12/01/2011	01/19/2012
CA	LUST VENTURA	Listing of Underground Tank Cleanup Sites	Environmental Health Division	05/29/2008	06/24/2008	07/31/2008
CA	MED WASTE VENTURA	Medical Waste Program List	Ventura County Resource Management Agency	03/29/2021	04/21/2021	04/23/2021
CA	UST VENTURA	Underground Tank Closed Sites List	Environmental Health Division	03/01/2021	03/09/2021	03/31/2021
CA	UST YOLO	Underground Storage Tank Comprehensive Facility Report	Yolo County Department of Health	12/21/2020	12/23/2020	01/04/2021
CA	CUPA YUBA	CUPA Facility List	Yuba County Environmental Health Department	04/21/2021	04/22/2021	05/12/2021

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date

STREET AND ADDRESS INFORMATION

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APPENDIX F

PROJECT TEAM QUALIFICATIONS

Edward H. LaMont, CEG, PG

Branch Manager

Areas of Expertise

Geotechnical Field Investigations
Grading and Earthwork Construction
Industry Standard of Care
Hillside, Liquefaction, Seismic Hazard, Fault Analyses and Forensic Studies.

Education

Bachelor of Science in Geology, Cal State University, Northridge

Registrations

Registered Geologist, PG 6025
Certified Engineering Geologist, CEG 1892

Certifications

OSHA 40-Hr HAZWOPER Training
OSHA 8-Hour Refresher
First Aid/CPR

Professional Affiliations

Association of Engineering Geologist
South Coast Geological Society
San Diego Association of Geologist
Inland Geological Society
BIA Riverside
BIA San Diego

Professional Experience

Mr. LaMont has been involved with numerous public works, residential and commercial earthwork projects across the southern California area. Many residential, commercial and public works projects have been successfully completed across southern and central California. Projects include liquefaction and subsidence studies, fault evaluations, commercial, residential, federal, FEMA levee certifications and military construction projects. These projects have generally included preliminary geotechnical evaluations, slope stability studies, review and design recommendations, street improvements construction and testing services, and project management.

In addition, Mr. LaMont has performed governmental review of geotechnical reports for the County of Orange. Mr. LaMont has also completed geotechnical studies for the Riverside County Flood Control and Cities of Banning, Chino, Corona, Palm Springs, Lancaster and Victorville, to name a few.

Representative Project Experience

Project experience has included residential and commercial developments, for various land developers including Melia Homes, Meritage Homes, Frontier Enterprises, D·R·Horton, Beazer Homes, KB Home, Integral Communities, IntraCorp, Shopoff, Shea Homes, etc. Mr. LaMont has also completed geotechnical investigations and performed project management for numerous residential tracts and commercial facilities all across Southern California.

Professional History

Branch Manager/Principal Geologist - Riverside GeoTek, Inc., 2004 to present

Vice President, Principal Geologist - GeoSoils, Inc., Santa Ana, 2003 to 2004

Geotechnical Reviewer, Engineering Geologist - County of Orange, 2001 to 2003.

Project Geologist - GeoSoils, Inc., Santa Ana, California, 1994 to 2001.

Staff/Project Geologist - GeoSoils, Inc., Carlsbad, California, 1988 to 1994.

J. MICHAEL BATTEN, CAC, CEM, REPA

Principal/Environmental Services Manager

Education

BS in Geology, California State University, Fresno 1988

Registrations

- Certified Asbestos Consultant (CA #95-1721)
- Licensed Asbestos Abatement Consultant (NV #IJPM0655)
- Certified Environmental Manager (NV #1782)
- Asbestos Professional Inspector (IL #100-11092)
- Registered Environmental Property Assessor (#113162))
- Certified Lead Inspector Assessor (CA #4358)
- Certified Lead Inspector (EPA #LBP-I-1162326-1)
- Certified Lead Risk Assessor (EPA #LBP-R-1162326-1)

Certifications

- AHERA Certified Asbestos Building Inspector, Management Planner, Project Designer, & Contractor/Supervisor
- EPA Accredited Lead-based Paint Inspector & Risk Assessor
- OSHA HAZWOPER certified worker & supervisor
- OSHA Construction Safety & Health (10-Hour)

Affiliations

- American Society of Testing and Materials
- National Registry of Environmental Professionals

Professional Experience

Mr. Batten has over 30 years of environmental experience, throughout which he has conducted and managed numerous environmental investigations, assessments, and remediations. He has prepared several NEPA assessments, USEPA EIS, and CEQA EIR reports. In addition, Mr. Batten has extensive experience in conducting asbestos and lead-based paint surveys and preparing management plans, including remediation design, for asbestos and lead present in buildings.

Project Experience

- **Phase I Environmental Site Assessments:** Mr. Batten has conducted more than 2,000 Phase I Environmental Site Assessments in 27 states, including Brownfield studies under USEPA grants.
- **Phase II Environmental Site Assessments:** Mr. Batten has conducted more than 150 Phase II Environmental Assessments, including Brownfield studies under USEPA grants.
- **Site Characterizations and Remediations:** Mr. Batten has experience conducting numerous site characterizations and remediations, including obtaining regulatory closure.
- **NEPA Studies:** Mr. Batten has conducted more than 200 NEPA studies, including Environmental Assessments, Environmental Impact Reports/Environmental Impact Studies, in eight states. The agencies involved include USEPA, FCC, BLM, National Park Service, and California EPA.
- **Asbestos Services:** Mr. Batten has conducted over 600 asbestos surveys in several states. He has also prepared numerous Asbestos Management Plans, prepared design plans, and monitored numerous abatement projects.
- **Lead-Based Paint Services:** Mr. Batten has conducted numerous Lead-Based Paint surveys.
- **Landfills**: Mr. Batten has conducted investigations and overseen remediations on landfills in Fresno, California and Henderson, Nevada.
- **Other Services:** Mr. Batten has been called upon to conduct less usual services on occasion, including mold consultation and investigation, radon studies, vapor intrusion studies, and indoor air quality studies.

J. MICHAEL BATTEN, continued…

Professional History

Environmental Services Manager. GeoTek, Inc., 2001 to present.

Director of Environmental Services. ATC Associates, Inc., 1999 to 2001.

Director of Operations. Hygienetics Environmental Services, Inc., 1997 to 1999.

Project Manager. AllWest Environmental, Inc., 1996 to 1997.

Project Manager. Citadel Environmental Services, Inc., 2/1996 to 9/1996.

Project Manager. Boelter Environmental consultants, 3/1995 to 9/1995.

Senior Staff Geologist. Converse Consultants, 1992 to 1995.

Staff Geologist. Converse Environmental West, 1991 to 1992.

Project Geologist. Krazan and Associates, 1990 to 1991.

Environmental Technician. Krazan and Associates, 1989 to 1990.

National Registry of Environmental Professionals

For

Environmental Certifications

This is to Certify that

Michael J Batten

having sucessfully demonstrated to the Academic Board of this organization the required level of knowledge and ability, is here by awarded the distinction of

Registered Environmental Property Assessor

together with all rights, benefits and privileges attached thereto and that the name and title of the aforementioned registrant is today placed upon the register of the organization.

Given under our hands on this 15 day of June, 2013.

Richard A Young

Executive Director

NREP

113162

Registrant Number

This Certificate is the property of the National Registry of Environmental Professionals and must, upon demand, be returned.

United States Environmental Protection Agency

This is to certify that



J M Batten

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Inspector

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires March 14, 2022

LBP-I-I162326-2

Certification #

December 08, 2018

Issued On

Adrienne Priselac, Manager, Toxics Office

Land Division

United States Environmental Protection Agency

This is to certify that



J M Batten

has fulfilled the requirements of the Toxic Substances Control Act (TSCA) Section 402, and has received certification to conduct lead-based paint activities pursuant to 40 CFR Part 745.226 as:

Risk Assessor

In the Jurisdiction of:

All EPA Administered Lead-based Paint Activities Program States, Tribes and Territories

This certification is valid from the date of issuance and expires March 14, 2022

LBP-R-I162326-2
Certification #

December 08, 2018
Issued On

Adrienne Priselac, Manager, Toxics Office
Land Division

STATE OF CALIFORNIA — Gavin Newsom, Governor

DEPARTMENT OF INDUSTRIAL RELATIONS
Division of Occupational Safety and Health
Asbestos Certification & Training Unit
1750 Howe Avenue, Suite 460
Sacramento, CA 95825
(916) 574-2993 Office http://www.dir.ca.gov/dosh/asbestos.html acru@dir.ca.gov

505011721C 109 115

October 08, 2020

J. Michael Batten
8240 Edmond Street
Las Vegas NV 89139

Dear Certified Asbestos Consultant or Technician:

Enclosed is your certification card. **To maintain your certification, you must abide by the rules printed on the back of the certification card.**

Your certification is valid for a period of one year. If you wish to renew your certification, you must apply for renewal at least 60 days before the expiration date shown on your card. [8 CCR 341.15(h)(1)].

Please hold and do not send copies of your required AHERA refresher renewal certificates to our office until you apply for renewal of your certification.

Certificates must be kept current if you are actively working as a CAC or CSST. The grace period is only for those who are not actively working as an asbestos consultant or site surveillance technician.

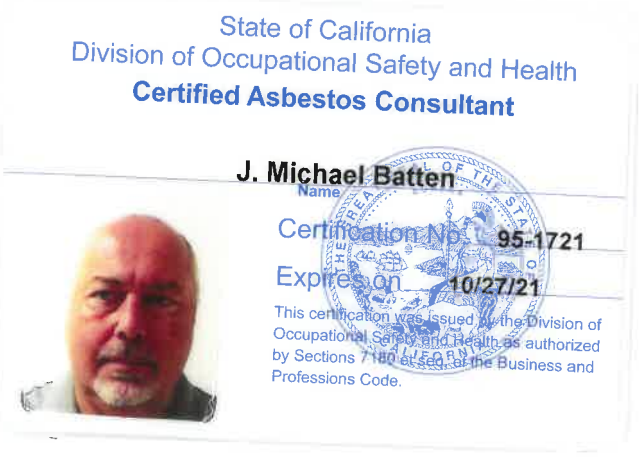
Please notify our office via U.S. Postal Service or other carrier of any changes in your mailing or work address within 15 days of the change.

Sincerely,

Jeff Ferrell
Senior Safety Engineer

Attachment: Certification Card

cc: File


State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Name J. Michael Batten

Certification No. 95-1721

Expires on 10/27/21

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.

Renewal – Card Attached (Revised 06/2020)

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC HEALTH

LEAD-RELATED CONSTRUCTION CERTIFICATE

INDIVIDUAL:	CERTIFICATE TYPE:	NUMBER:	EXPIRATION DATE:
 **Michael Batten**	Lead Inspector/Assessor	LRC-00002629	11/17/2021

Disclaimer: This document alone should not be relied upon to confirm certification status. Compare the individual's photo and name to another valid form of government issued photo identification. Verify the individual's certification status by searching for Lead-Related Construction Professionals at www.cdph.ca.gov/programs/clppb or calling (800) 597-LEAD.

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

525-535 West Jefferson Street • Springfield, Illinois 62761-0001 • www.dph.illinois.gov

MICHAEL BATTEN
8240 EDMOND STREET
LAS VEGAS, NV 89139

8/19/2020

ASBESTOS PROFESSIONAL LICENSE ID NUMBER: 11092

Enclosed is your Asbestos Professional License. Please note the expiration date on the card and in the image depicted below.

COPY OF THE ASBESTOS PROFESSIONAL LICENSE

Front of License

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
IDPH
PROTECTING HEALTH, IMPROVING LIVES

ASBESTOS PROFESSIONAL LICENSE

ID NUMBER	ISSUED	EXPIRES
100 - 11092	**8/19/2020**	05/15/2021

MICHAEL BATTEN
8240 EDMOND STREET
LAS VEGAS, NV 89139
Environmental Health



Back of License

ENDORSEMENTS	TC EXPIRES
INSPECTOR	8/10/2021

Alteration of this license shall result in legal action
This license issued under authority of the State of Illinois Department of Public Health
This license is valid only when accompanied by a valid training course certificate.

If you have any questions or need further assistance, contact the Asbestos Program at (217)782-3517 or fax (217)785-5897.

Our WEB address is: dph.illinois.gov/topics-services/environmental-health-protection/asbestos
EMAIL Address: dph.asbestos@illinois.gov

State of Nevada

Department of Conservation and Natural Resources

Division of Environmental Protection

This is to certify that

Michael J Batten

having given satisfactory evidence of the necessary qualifications as required by the Nevada Revised Statute 459.400 to 459.600, inclusive, and Nevada Administrative Code 459.970 to 459.9729, inclusive, has been granted certification as a

Environmental Manager

in the State of Nevada

In testimony whereof, witness the signature of the Administrator and the Seal of the State of Nevada.

1782

Certification Number

Greg Lovato, Administrator

8/31/2021

Expiration Date

State of Nevada Department of Business & Industry

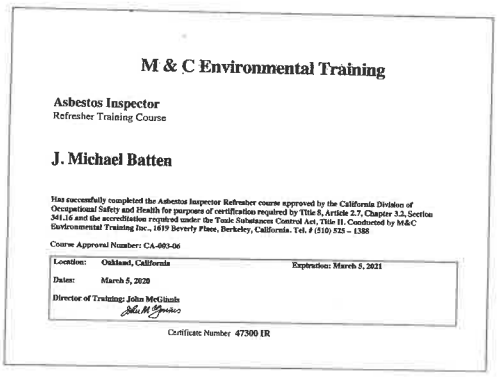
Industrial Relations (DIR)

STATE OF NEVADA
DEPARTMENT OF BUSINESS AND INDUSTRY
DIVISION OF INDUSTRIAL RELATIONS
Occupational Safety and Health Administration
Asbestos Control Program

Certifies That J. Michael Batten
Geotek Insite Inc.
is Licensed As Asbestos Abatement Consultant

License No. IJPM-655 Expiration Date 03/05/2021

Signature Of Licensee J. Michael Batten



M & C Environmental Training

Asbestos Inspector
Refresher Training Course

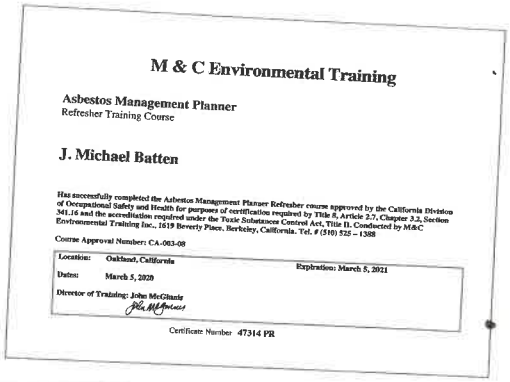
J. Michael Batten

Has successfully completed the Asbestos Inspector Refresher course approved by the California Division of Occupational Safety and Health for purposes of certification required by Title 8, Article 2.7, Chapter 3.2, Section 341.16 and the accreditation required under the Toxic Substances Control Act, Title II. Conducted by M&C Environmental Training Inc., 1619 Beverly Place, Berkeley, California. Tel. # (510) 525 – 1388

Course Approval Number: CA-003-06

Location: Oakland, California — Expiration: March 5, 2021
Dates: March 5, 2020
Director of Training: John McGinnis

Certificate Number 47300 IR



M & C Environmental Training

Asbestos Management Planner
Refresher Training Course

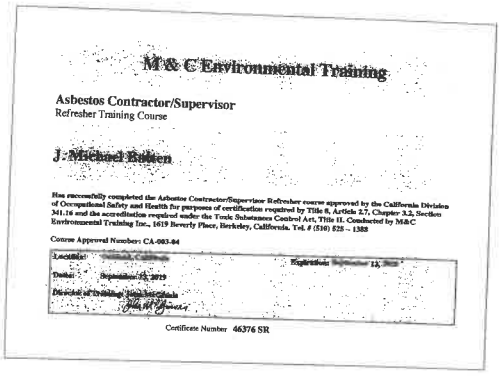
J. Michael Batten

Has successfully completed the Asbestos Management Planner Refresher course approved by the California Division of Occupational Safety and Health for purposes of certification required by Title 8, Article 2.7, Chapter 3.2, Section 341.16 and the accreditation required under the Toxic Substances Control Act, Title II. Conducted by M&C Environmental Training Inc., 1619 Beverly Place, Berkeley, California. Tel. # (510) 525 – 1388

Course Approval Number: CA-003-08

Location: Oakland, California — Expiration: March 5, 2021
Dates: March 5, 2020
Director of Training: John McGinnis

Certificate Number 47314 PR



M & C Environmental Training

Asbestos Contractor/Supervisor
Refresher Training Course

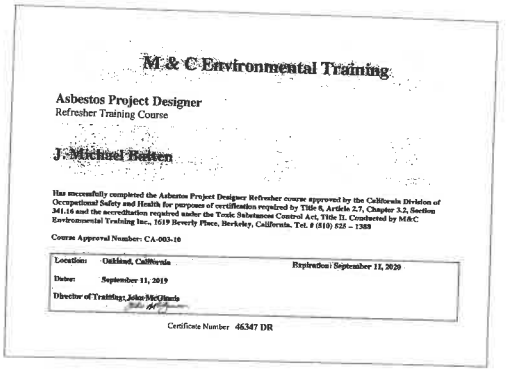
J. Michael Batten

Has successfully completed the Asbestos Contractor/Supervisor Refresher course approved by the California Division of Occupational Safety and Health for purposes of certification required by Title 8, Article 2.7, Chapter 3.2, Section 341.16 and the accreditation required under the Toxic Substances Control Act, Title II. Conducted by M&C Environmental Training Inc., 1619 Beverly Place, Berkeley, California. Tel. # (510) 525 – 1388

Course Approval Number: CA-003-04

Location: [illegible] — Expiration: [illegible]
Dates: September 11, 2019
Director of Training: John McGinnis

Certificate Number 46376 SR



M & C Environmental Training

Asbestos Project Designer
Refresher Training Course

J. Michael Batten

Has successfully completed the Asbestos Project Designer Refresher course approved by the California Division of Occupational Safety and Health for purposes of certification required by Title 8, Article 2.7, Chapter 3.2, Section 341.16 and the accreditation required under the Toxic Substances Control Act, Title II. Conducted by M&C Environmental Training Inc., 1619 Beverly Place, Berkeley, California. Tel. # (510) 525 – 1388

Course Approval Number: CA-003-10

Location: Oakland, California — Expiration: September 11, 2020
Dates: September 11, 2019
Director of Training: John McGinnis

Certificate Number 46347 DR



This is to Certify that
Michael Batten
Has Satisfactorily Completed Training in Accordance with Applicable Rules and Regulations
Asbestos Building Inspector Refresher
Completed: 3/19/2019 *Expires: 3/19/2020*
Certificate: BIR1903190998
2019
Occupational Training & Supply, Inc.
7233 Adams Street ♦ Willowbrook, IL 60527 ♦ (630) 655-3900



OSHA 002340551

U.S. Department of Labor
Occupational Safety and Health Administration

Michael Batten

has successfully completed a 10-hour Occupational Safety and Health Training Course in

Construction Safety & Health

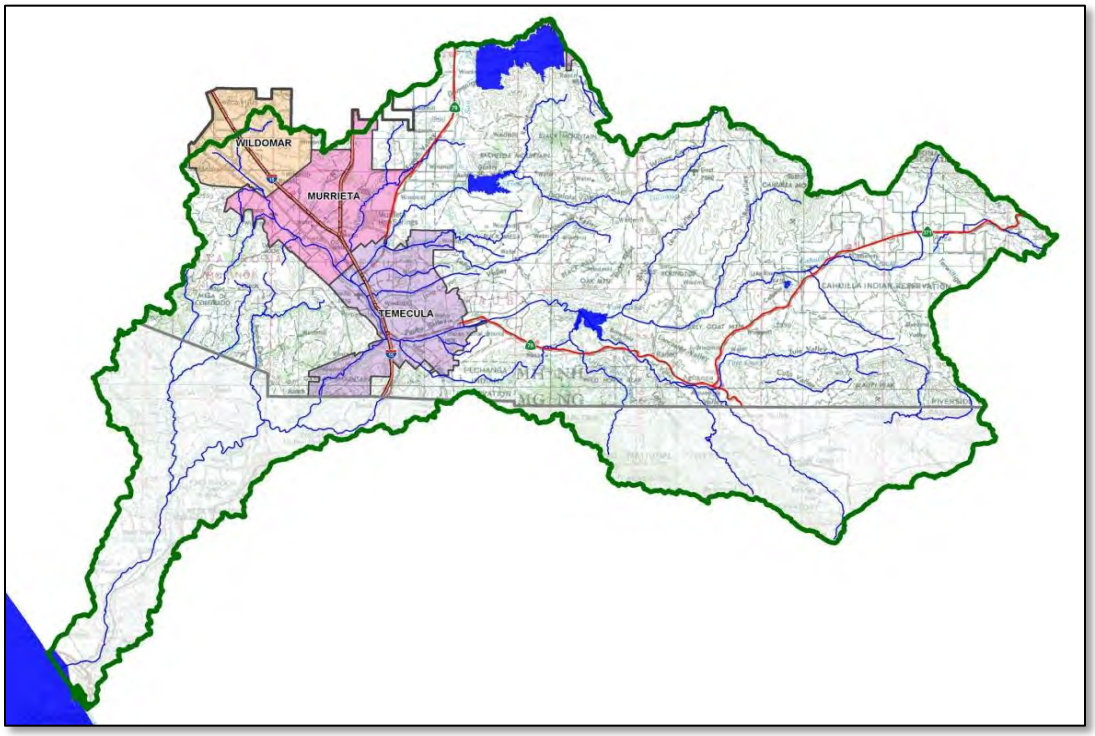
Kenner Costen (Trainer) 12/12/09 (Date)

Appendix 10

Preliminary Project Specific Water Quality Management Plan

County Project Specific Water Quality Management Plan

Project Title: **Monte Vista Ranch II**
Development No: **Tentative Tract Map No. 38155**
Design Review/Case No: PA 21-0045
BMP$_i$ (Latitude, Longitude): 33°37'20.03" N, 117°15'56.50" W



☒ **Preliminary**
☐ **Final**

Original Date Prepared: June 2021

Revision Date(s):

JN. 453.915

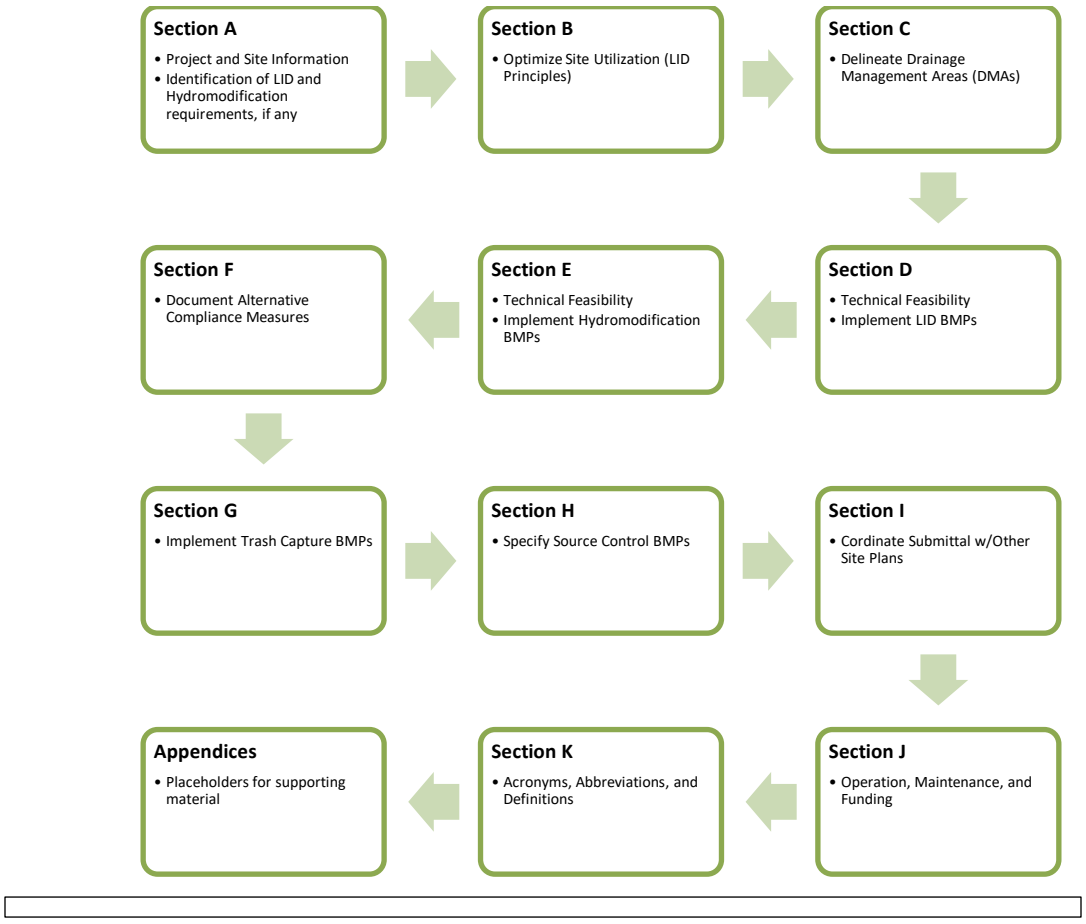
Contact Information
Prepared for: ***Monte Vista Ranch II, LLC***
1200 Quail Street, Suite 220
Newport Beach, CA 92660

Prepared by: ***K&A Engineering, Inc.***
357 N. Sheridan Street, Suite 117
Corona, CA 92880
Ph: (951) 279-1800

Based on 2018 WQMP, prepared for Compliance with Regional Board Order No. **R9-2013-0001** *as amended by Order No.* **R9-2015-0001** *and Order No.* **R9-2015-0100**

A Brief Introduction

The Regional Municipal Separate Stormwater Sewer System (MS4) Permit[1] requires that a Project-Specific WQMP be prepared for all development projects within the Santa Margarita Region (SMR) that meet the 'Priority Development Project' categories and thresholds listed in the SMR Water Quality Management Plan (WQMP). This Project-Specific WQMP Template for Development Projects in the **Santa Margarita Region** has been prepared to help document compliance and prepare a WQMP submittal. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



[1] Order No. R9-2013-0001 as amended by Order Nos. R9-2015-0001 and R9-2015-0100, NPDES No. CAS0109266, National Pollutant Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Discharges from the MS4s Draining the Watersheds within the San Diego Region, California Regional Water Quality Control Board, May 8, 2013.

OWNER'S CERTIFICATION

This Project-Specific WQMP has been prepared for **Monte Vista Ranch II, LLC** by **K&A Engineering, Inc.** for the **Tentative Tract Map No. 38155 – Monte Vista Ranch II Development** project.

This WQMP is intended to comply with the requirements of Riverside County for County Ordinance No. 754 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater Best Management Practices until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under Riverside County Water Quality Ordinance (No. 754).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control Best Management Practices in this plan meet the requirements of Regional Water Quality Control Board Order No. **R9-2013-0001** as amended by Order Nos. **R9-2015-0001 and R9-2015-0100**."



Preparer's Signature	Date
Amir H. Fallahi, P.E.	Principal
Preparer's Printed Name	Preparer's Title/Position



Preparer's Licensure:
RCE 55534 (Exp. 12/31/2022)

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Section A: Project and Site Information

Use the table below to compile and summarize basic site information that will be important for completing subsequent steps. Subsections A.1 through A.4 provide additional detail on documentation of additional project and site information. The Regional MS4 Permit has effectively removed the ability for a project to be grandfathered from WQMP requirements. Even if a project were able to meet all the requirements stated in Section 1.2 of the WQMP, the 2014 WQMP requirements would apply.

PROJECT INFORMATION		
Type of PDP:	New Development	
Type of Project:	Residential	
Planning Case Number:	PA 21-0045	
Rough Grade Permit No.:		
Development Name:	Tentative Tract Map. No. 38155	
PROJECT LOCATION		
Latitude & Longitude (DMS):	33°37'20.03" N, 117°15'56.50" W	
Project Watershed and Sub-Watershed:	Santa Margarita River, Cole Canyon - Murrieta Creek	
24-Hour 85th Percentile Storm Depth (inches):	0.68	
Is project subject to Hydromodification requirements?	☒ Y ☐ N (Select based on Section A.3)	
APN(s):	367-140-011	
Map Book and Page No.:		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)		Residential
Proposed or Potential SIC Code(s)		N/A
Existing Impervious Area of Project Footprint (SF)		0 sf
Total area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement		178,770 sf
Total Project Area (ac)		5.13 Ac gross
Does the project consist of offsite road improvements?		☐ Y ☒ N
Does the project propose to construct unpaved roads?		☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?		☐ Y ☒ N
Has preparation of Project-Specific WQMP included coordination with other site plans?		☐ Y ☒ N
EXISTING SITE CHARACTERISTICS		
Is the project located within any Multi-Species Habitat Conservation Plan area (MSHCP Criteria Cell?)		☐ Y ☒ N If "Y" insert Cell Number
Is a Geotechnical Report attached?		☐ Y ☒ N
If no Geotech. Report, list the Natural Resources Conservation Service (NRCS) soils type(s) present on the site (A, B, C and/or D)		Majority Soil Type D

Provide a brief description of the project:

Tentative Tract Map No. 38155 - Monte Vista Ranch II project consists of approximately 6 acre gross, 5.13-acre net property, located within the City of Wildomar, County of Riverside, California. The project is located approximately 800 feet east of the I-15 Freeway and 1300 feet south of Bundy Canyon Road. It is immediately adjacent to existing Monte Vista Drive on the west. Parallel to Monte Vista Drive, and roughly wrapping around the northern boundary of the project, there is an existing Riverside County Flood Control and Water Conservation District owned and maintained concrete trapezoidal channel, Bundy Canyon

Channel. This channel flows from north to south.

The subject property is located within Section 29, Township 6 South, Range 4 West, located at northeast corner of Monte Vista Drive and Summer Sage Way in City of Wildomar, California.

The Project site will consist about 65 residential lots at 8-14 lots/acre with recreation area and residential streets.

Run-on from the site will be conveyed via storm drain system through the proposed Bio-filtration Modular Wetlands prior exiting the project site.

The project is located at Latitude & Longitude 33°37'20.03" N, 117°15'56.50" W (33.622231 & -117.265694)

Access

Access for construction activities will be located at entrance from Summer Sage Way from the south side of the project site.

Paver and dirt roads are considered pervious for determining WQMP applicability.

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the Project vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Vicinity and location maps
- Parcel Boundary and Project Footprint
- Existing and Proposed Topography
- Drainage Management Areas (DMAs)
- Proposed Structural Best Management Practices (BMPs)
- Drainage Paths
- Drainage infrastructure, inlets, overflows
- Source Control BMPs
- Site Design BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Pervious Surfaces (i.e. Landscaping)
- Standard Labeling
- Cross Section and Outlet details

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Copermittee plan reviewer must be able to easily analyze your Project utilizing this template and its associated site plans and maps. Complete the checklists in Appendix 1 to verify that all exhibits and components are included.

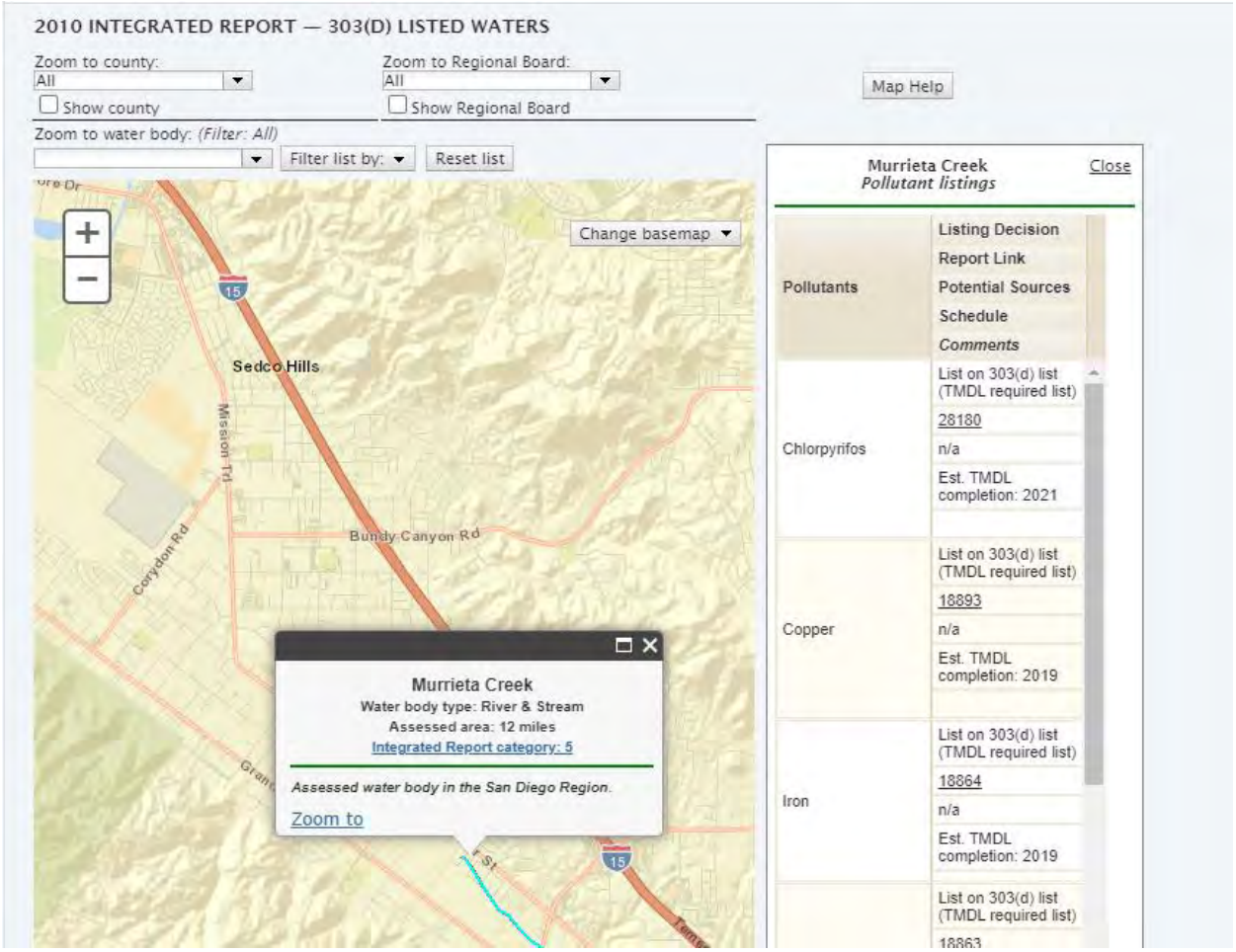
A.2 Identify Receiving Waters

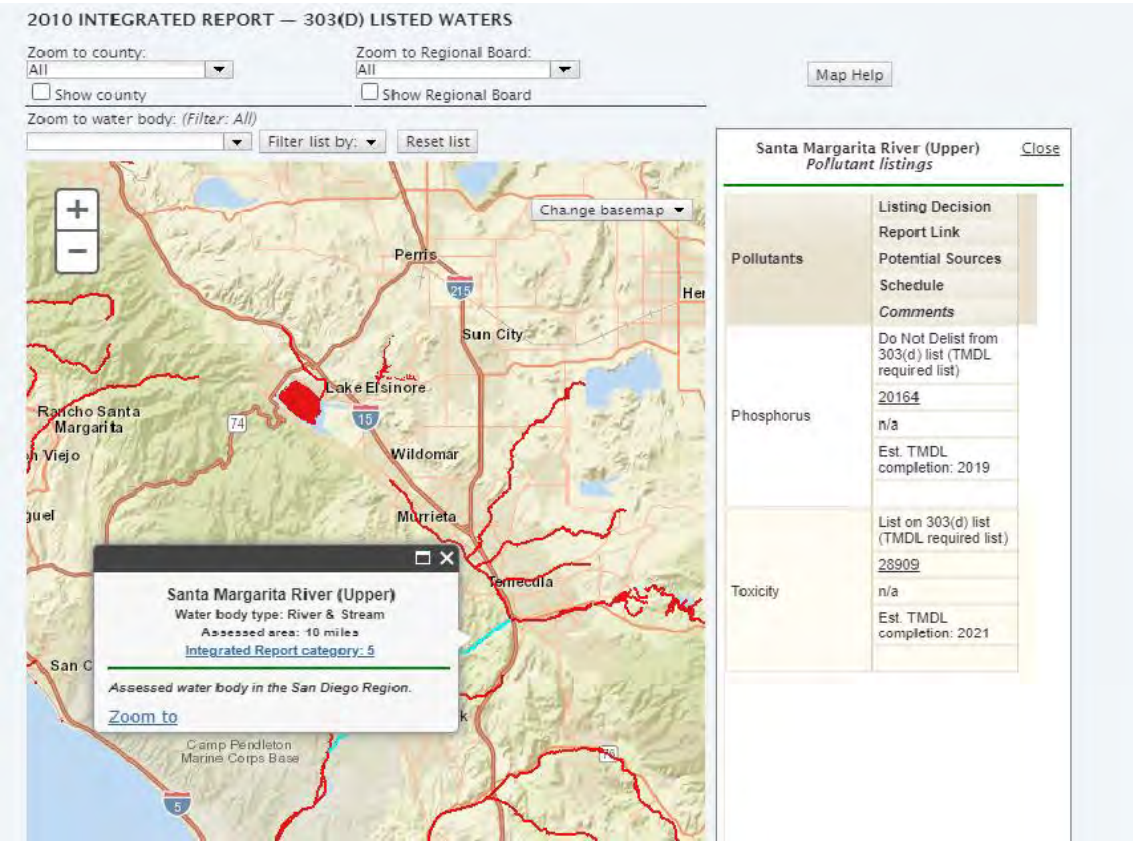
Using Table A-1 below, list in order of upstream to downstream, the Receiving Waters that the Project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated Beneficial Uses, and proximity, if any, to a RARE Beneficial Use. Include a map of the Receiving Waters in Appendix 1. This map should identify the path of the stormwater discharged from the site all the way to the outlet of the Santa Margarita River to the Pacific Ocean. Use the most recent 303(d) list available from the State Water Resources Control Board Website.
(http://www.waterboards.ca.gov/sandiego/water_issues/programs/basin_plan/)

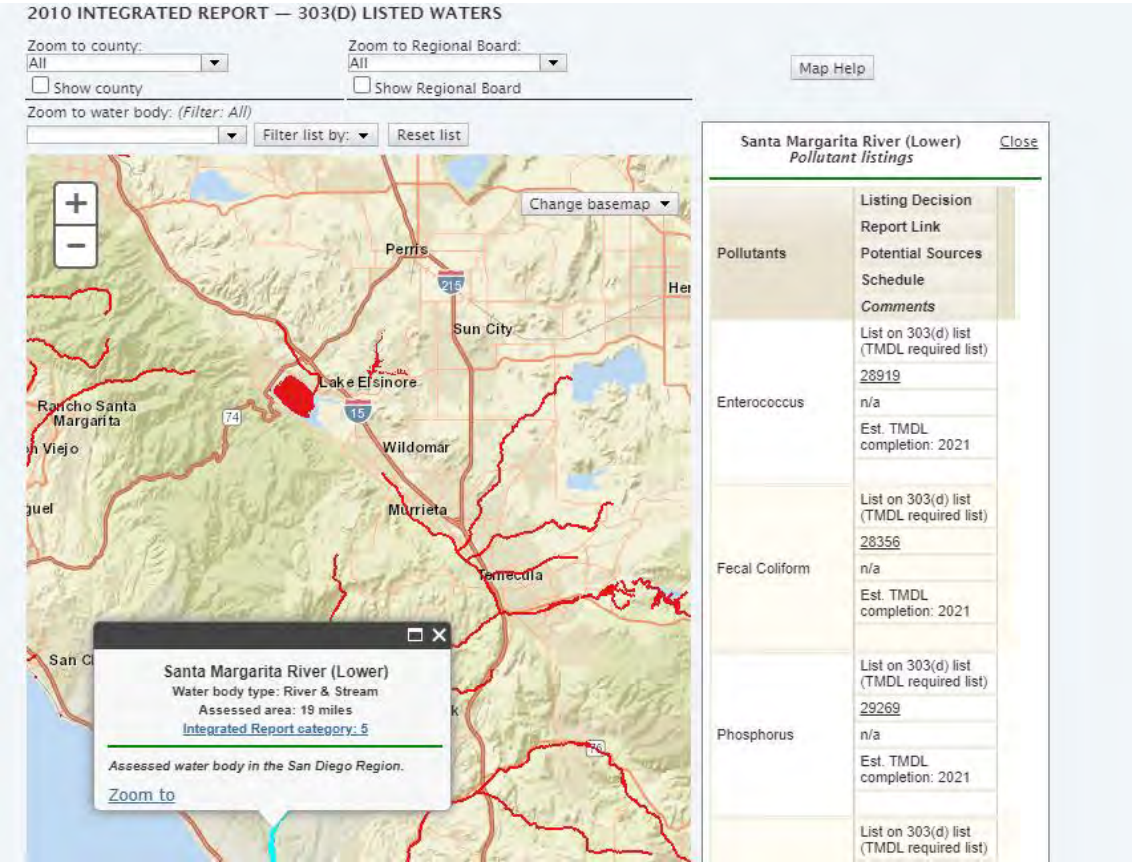
Table A-1 Identification of Receiving Waters

Receiving Waters	USEPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Wildomar MDP Line C, Stage 3	none	none	none
Murrieta Creek	Chlorpyrifos, Cooper, Iron, Manganese, Nitrogen, Phosphorus, Toxicity	MUN, AGR, IND, REC-2, PROC, WARM, WILD	12.0 miles
Santa Margarita River (Upper) – H.U. 2.22	Phosphorus, Toxicity	MUN, AGR, IND, REC1, REC2, WARM, COLD, WILD, RARE	13 miles
Santa Margarita River (Lower)	Enterococcus, Fecal Coliform, Phosphorus, Total Nitrogen as N	MUN, AGR, IND, REC-1, REC-2, COLD, WARM, WILD, RARE	19 miles

9	Santa Margarita River (Upper)	River & Stream	90222000 / 18070302	• Phosphorus ◦ Unknown Nonpoint Source ◦ Unknown Point Source ◦ Urban Runoff/Storm Sewers	18 Miles	2002	5A	2019
				• Toxicity ◦ Source Unknown ◦ Unknown Nonpoint Source ◦ Unknown Point Source ◦ Urban Runoff/Storm Sewers	18 Miles	2010	5A	2021




2010 INTEGRATED REPORT — 303(D) LISTED WATERS
Zoom to county:
All
Show county
Zoom to Regional Board:
All
Show Regional Board
Map Help
Zoom to water body: (Filter: All)
Filter list by:
Reset list
Change basemap
Perris
Sun City
Lake Elsinore
Rancho Santa Margarita
Wildomar
Murrieta
Temecula
Camp Pendleton Marine Corps Base
Santa Margarita River (Upper)
Water body type: River & Stream
Assessed area: 10 miles
Integrated Report category: 5
Assessed water body in the San Diego Region.
Zoom to
Santa Margarita River (Upper)
Pollutant listings
Close
Pollutants
Listing Decision
Report Link
Potential Sources
Schedule
Comments
Phosphorus
Do Not Delist from 303(d) list (TMDL required list)
20164
n/a
Est. TMDL completion: 2019
Toxicity
List on 303(d) list (TMDL required list)
28909
n/a
Est. TMDL completion: 2021


2010 INTEGRATED REPORT — 303(D) LISTED WATERS
Zoom to county:
All
Show county
Zoom to Regional Board:
All
Show Regional Board
Map Help
Zoom to water body: (Filter: All)
Filter list by:
Reset list
Change basemap
Perris
Sun City
Lake Elsinore
Rancho Santa Margarita
Wildomar
Murrieta
Temecula
Santa Margarita River (Lower)
Water body type: River & Stream
Assessed area: 19 miles
Integrated Report category: 5
Assessed water body in the San Diego Region.
Zoom to
Santa Margarita River (Lower)
Pollutant listings
Close
Pollutants
Listing Decision
Report Link
Potential Sources
Schedule
Comments
Enterococcus
List on 303(d) list (TMDL required list)
28919
n/a
Est. TMDL completion: 2021
Fecal Coliform
List on 303(d) list (TMDL required list)
28356
n/a
Est. TMDL completion: 2021
Phosphorus
List on 303(d) list (TMDL required list)
29269
n/a
Est. TMDL completion: 2021
List on 303(d) list (TMDL required list)

A.3 Drainage System Susceptibility to Hydromodification

Using Table A-2 below, list in order of the point of discharge at the project site down to the Santa Margarita River[2], each drainage system or receiving water that the project site is tributary to. Continue to fill each row with the material of the drainage system, and any exemption (if applicable). Based on the results, summarize the applicable hydromodification performance standards that will be documented in Section E. Exempted categories of receiving waters include:

- Existing storm drains that discharge directly to water storage reservoirs, lakes, or enclosed embayments, or
- Conveyance channels whose bed and bank are concrete lined all the way from the point of discharge to water storage reservoirs, lakes, enclosed embayments, or the Pacific Ocean.
- Other water bodies identified in an approved WMAA (See Exhibit G to the WQMP)

Include a map exhibiting each drainage system and the associated susceptibility in Appendix 1.

Table A-2 Identification of Susceptibility to Hydromodification

Drainage System	Drainage System Material	Hydromodification Exemption	Hydromodification Exempt
Wildomar MDP Line C, Stage 3	Concrete	Not Susceptible	☒ Y ☐ N
Murrieta Creek	Engineered, open channel	Not Susceptible	☒ Y ☐ N
Santa Margarita River (Upper)	River, open channel	Not Susceptible	☒ Y ☐ N
Summary of Performance Standards			
☒ **Hydromodification Exempt** – Select if "Y" is selected in the Hydromodification Exempt column above, project is exempt from hydromodification requirements.			
☐ **Not Exempt**-Select if "N" is selected in any row of the Hydromodification Exempt column above. Project is subject to hydrologic control requirements and may be subject to sediment supply requirements.			

The project TTM 31855 – Monte Vista Ranch II drains into County of Riverside Wildomar MDP Lateral C, Stage 3

[2] Refer to Exhibit G of the WQMP for a map of exempt and potentially exempt areas. These maps are from the Draft SMR WMAA as of January 5, 2018 and will be replaced upon acceptance of the SMR WMAA.

A.4 Additional Permits/Approvals required for the Project:

Table A-3 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit, Building Permit, Construction permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Copermittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

All applicable permits will be included in the Final WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, constraints might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. Opportunities might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for LID Bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your Low Impact Development (LID) design and explain your design decisions to others.

Apply the following LID Principles to the layout of the PDP to the extent they are applicable and feasible. Putting thought upfront about how best to organize the various elements of a site can help to significantly reduce the PDP's potential impact on the environment and reduce the number and size of Structural LID BMPs that must be implemented. Integrate opportunities to accommodate the following LID Principles within the preliminary PDP site layout to maximize implementation of LID Principles.

Site Optimization

Complete checklist below to determine applicable Site Design BMPs for your site.

Project- Specific WQMP Site Design BMP Checklist

The following questions below are based upon Section 3.2 of the SMR WQMP will help you determine how to best optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

SITE DESIGN REQUIREMENTS

Answer the following questions below by indicating "Yes," "No," or "N/A" (Not Applicable). Justify all "No" and "N/A" answers by inserting a narrative at the end of the section. The narrative should include identification and justification of any constraints that would prevent the use of those categories of LID BMPs. Upon identifying Site Design BMP opportunities, include these on your WQMP Site plan in Appendix 1.

☒ Yes ☐ No ☐ N/A

Did you identify and preserve existing drainage patterns?

Integrating existing drainage patterns into the site plan helps to maintain the time of concentration and infiltration rates of runoff, decreasing peak flows, and may also help preserve the contribution of Critical Coarse Sediment (i.e., Bed Sediment Supply) from the PDP to the Receiving Water. Preserve existing drainage patterns by:

- Minimizing unnecessary site grading that would eliminate small depressions, where appropriate add additional "micro" storage throughout the site landscaping.
- Where possible conform the PDP site layout along natural landforms, avoid excessive grading and disturbance of vegetation and soils, preserve or replicate the sites natural drainage features and patterns.
- Set back PDP improvements from creeks, wetlands, riparian habitats and any other natural water bodies.
- Use existing and proposed site drainage patterns as a natural design element, rather than using expensive impervious conveyance systems. Use depressed landscaped areas, vegetated buffers, and bioretention areas as amenities and focal points within the site and landscape design.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.

☐ Yes ☐ No ☒ N/A

Did you identify and protect existing vegetation?

Identify any areas containing dense native vegetation or well-established trees, and try to avoid disturbing these areas. Soils with thick, undisturbed vegetation have a much higher capacity to store and infiltrate runoff than do disturbed soils. Reestablishment of a mature vegetative community may take decades. Sensitive areas, such as streams and floodplains should also be avoided.

- Define the development envelope and protected areas, identifying areas that are most suitable for development and areas that should be left undisturbed.
- Establish setbacks and buffer zones surrounding sensitive areas.
- Preserve significant trees and other natural vegetation where possible.

Project- Specific WQMP Site Design BMP Checklist

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.
Presently, the site are disturbed/graded used for construction equipment and no vegetation or trees exist. See Aerial below:.



☐ Yes ☐ No ☒ N/A

Did you identify and preserve natural infiltration capacity?

A key component of LID is taking advantage of a site's natural infiltration and storage capacity. A site survey and geotechnical investigation can help define areas with high potential for infiltration and surface storage.

- Identify opportunities to locate LID Principles and Structural BMPs in highly pervious areas. Doing so will maximize infiltration and limit the amount of runoff generated.
- Concentrate development on portions of the site with less permeable soils, and preserve areas that can promote infiltration.

Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.
This site is portion of Monte Vista Ranch project. The site had been graded and there is no vegetation left in this area.

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**Did you minimize impervious area?** Look for opportunities to limit impervious cover through identification of the smallest possible land area that can be practically impacted or disturbed during site development. • Limit overall coverage of paving and roofs. This can be accomplished by designing compact, taller structures, narrower and shorter streets and sidewalks, clustering buildings and sharing driveways, smaller parking lots (fewer stalls, smaller stalls, and more efficient lanes), and indoor or underground parking. • Inventory planned impervious areas on your preliminary site plan. Identify where permeable pavements, or other permeable materials, such as crushed aggregate, turf block, permeable modular blocks, pervious concrete or pervious asphalt could be substituted for impervious concrete or asphalt paving. This will help reduce the amount of Runoff that may need to be addressed through Structural BMPs. • Examine site layout and circulation patterns and identify areas where landscaping can be substituted for pavement, such as for overflow parking. • Consider green roofs. Green roofs are roofing systems that provide a layer of soil/vegetative cover over a waterproofing membrane. A green roof mimics pre-development conditions by filtering, absorbing, and evapotranspiring precipitation to help manage the effects of an otherwise impervious rooftop.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer. *The grading and drainage design of TTM 38155 has been developed to maintain the natural discharge patterns as much as practical. The proposed drainage plan will provide for construction of Bio-filtration Modular Wetlands as structural BMPs.*	
☒ Yes ☐ No ☐ N/A	**Did you identify and disperse runoff to adjacent pervious areas or small collection areas?** Look for opportunities to direct runoff from impervious areas to adjacent landscaping, other pervious areas, or small collection areas where such runoff may be retained. This is sometimes referred to as reducing Directly Connected Impervious Areas. • Direct roof runoff into landscaped areas such as medians, parking islands, planter boxes, etc., and/or areas of pervious paving. Instead of having landscaped areas raised above the surrounding impervious areas, design them as depressed areas that can receive Runoff from adjacent impervious pavement. For example, a lawn or garden depressed 3"-4" below surrounding walkways or driveways provides a simple but quite functional landscape design element. • Detain and retain runoff throughout the site. On flatter sites, smaller Structural BMPs may be interspersed in landscaped areas among the buildings and paving. • On hillside sites, drainage from upper areas may be collected in conventional catch basins and piped to landscaped areas and LID BMPs and/or Hydrologic Control BMPs in lower areas. Low retaining walls may also be used to create terraces that can accommodate LID BMPs. Wherever possible, direct drainage from landscaped slopes offsite and not to impervious surfaces like parking lots. • Reduce curb maintenance and provide for allowances for curb cuts. • Design landscaped areas or other pervious areas to receive and infiltrate runoff from nearby impervious areas. • Use Tree Wells to intercept, infiltrate, and evapotranspire precipitation and runoff before it reaches structural BMPs. Tree wells can be used to limit the size of Drainage Management Areas that must be treated by structural BMPs. Guidelines for Tree Wells are included in the Tree Well Fact Sheet in the LID BMP Design Handbook.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	

Project- Specific WQMP Site Design BMP Checklist	
☒ Yes ☐ No ☐ N/A	**Did you utilize native or drought tolerant species in site landscaping?** Wherever possible, use native or drought tolerant species within site landscaping instead of alternatives. These plants are uniquely suited to local soils and climate and can reduce the overall demands for potable water use associated with irrigation.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	
☒ Yes ☐ No ☐ N/A	**Did implement harvest and use of runoff?** Under the Regional MS4 Permit, Harvest and Use BMPs must be employed to reduce runoff on any site where they are applicable and feasible. However, Harvest and Use BMPs are effective for retention of stormwater runoff only when there is adequate demand for non-potable water during the wet season. If demand for non-potable water is not sufficiently large, the actual retention of stormwater runoff will be diminished during larger storms or during back-to-back storms. For the purposes of planning level Harvest and Use BMP feasibility screening, Harvest and Use is only considered to be a feasible if the total average wet season demand for non-potable water is sufficiently large to use the entire DCV within 72 hours. If the average wet season demand for non-potable water is not sufficiently large to use the entire DCV within 72 hours, then Harvest and Use is not considered to be feasible and need not be considered further. The general feasibility and applicability of Harvest and Use BMPs should consider: • Any downstream impacts related to water rights that could arise from capturing stormwater (not common). • Conflicts with recycled water used – where the project is conditioned to use recycled water for irrigation, this should be given priority over stormwater capture as it is a year-round supply of water. • Code Compliance - If a particular use of captured stormwater, and/or available methods for storage of captured stormwater would be contrary to building codes in effect at the time of approval of the preliminary Project-Specific WQMP, then an evaluation of harvesting and use for that use would not be required. • Wet season demand – the applicant shall demonstrate, to the acceptance of the County of Riverside, that there is adequate demand for harvested water during the wet season to drain the system in a reasonable amount of time.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	
☒ Yes ☐ No ☐ N/A	**Did you keep the runoff from sediment producing pervious area hydrologically separate from developed areas that require treatment?** Pervious area that qualify as self-treating areas or off-site open space should be kept separate from drainage to structural BMPs whenever possible. This helps limit the required size of structural BMPs, helps avoid impacts to sediment supply, and helps reduce clogging risk to BMPs.
Discuss how this was included or provide a discussion/justification for "No" or "N/A" answer.	

Section C: Delineate Drainage Management Areas (DMAs) & Green Streets

This section provides streamlined guidance and documentation of the DMA delineation and categorization process, for additional information refer to the procedure in Section 3.3 of the SMR WQMP which discusses the methods of delineating and mapping your project site into individual DMAs. Complete Steps 1 to 4 to successfully delineate and categorize DMAs.

Step 1: Identify Surface Types and Drainage Pathways

Carefully delineate pervious areas and impervious areas (including roofs) throughout site and identify overland flow paths and above ground and below ground conveyances. Also identify common points (such as BMPs) that these areas drain to.

Step 2: DMA Delineation

Use the information in Step 1 to divide the entire PDP site into individual, discrete DMAs. Typically, lines delineating DMAs follow grade breaks and roof ridge lines. Where possible, establish separate DMAs for each surface type (e.g., landscaping, pervious paving, or roofs). Assign each DMA a unique code and determine its size in square feet. The total area of your site should total the sum of all of your DMAs (unless water from outside the project limits comingles with water from inside the project limits, i.e. run-on). Complete Table C-1

Table C-1 DMA Identification

DMA Name or Identification	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
DMA A (Drainage Areas A-1 and A-2)	Mix surface (residential development)	223,463 sf (5.13 Ac)	To be Determined in Step 3

Add Columns as Needed. Consider a separate DMA for Tree Wells or other LID principals like Self-Retaining areas are used for mitigation.

Step 3: DMA Classification

Determine how drainage from each DMA will be handled by using information from Steps 1 and 2 and by completing Steps 3.A to 3.C. Each DMA will be classified as one of the following four types:

- Type 'A': Self-Treating Areas:
- Type 'B': Self-Retaining Areas
- Type 'C': Areas Draining to Self-Retaining Areas
- Type 'D': Areas Draining to BMPs

Tree wells are considered Type 'B' areas, and their tributary areas limited to a 10:1 ratio are considered Type 'C' areas. If Tree wells are proposed, consider grading or other features to minimize the pervious runoff to the tree wells, to avoid overwhelming the trees. Type 'A', 'B', and 'C' are considered LID Principals that can be used to minimize or potentially eliminate structural LID BMPs.

If Tree wells are proposed, a landscape architect shall be consulted on the tree selection, since compliance will be determined based on the survival of the tree. The tree type should be noted on the WQMP site map.

Step 3.A – Identify Type 'A' Self-Treating Area

Indicate if the DMAs meet the following criteria by answering "Yes" or "No".

☐ Yes ☒ No	Area is undisturbed from their natural condition OR restored with Native and/or California Friendly vegetative covers.
☐ Yes ☒ No	Area is irrigated, if at all, with appropriate low water use irrigation systems to prevent irrigation runoff.
☐ Yes ☒ No	Runoff from the area will not comingle with runoff from the developed portion of the site, or across other landscaped areas that do not meet the above criteria.

If all answers indicate "Yes," complete Table C-2 to document the DMAs that are classified as Self-Treating Areas.

Table C-2 Type 'A', Self-Treating Areas

DMA Name or Identification	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
N/A			

Step 3.B – Identify Type 'B' Self-Retaining Area and Type 'C' Areas Draining to Self-Retaining Areas

Type 'B' Self-Retaining Area: A Self-Retaining Area is shallowly depressed 'micro infiltration' areas designed to retain the Design Storm rainfall that reaches the area, without producing any Runoff.

Indicate if the DMAs meet the following criteria by answering "Yes," "No," or "N/A".

☐ Yes ☐ No ☒ N/A	Inlet elevations of area/overflow drains, if any, should be clearly specified to be three inches or more above the low point to promote ponding.
☐ Yes ☐ No ☒ N/A	Soils will be freely draining to not create vector or nuisance conditions.
☐ Yes ☐ No ☒ N/A	Pervious pavements (e.g., crushed stone, porous asphalt, pervious concrete, or permeable pavers) can be self-retaining when constructed with a gravel base course four or more inches deep below any underdrain discharge elevation.

If all answers indicate "Yes," DMAs may be categorized as Type 'B', proceed to identify Type 'C' Areas Draining to Self-Retaining Areas.

Type 'C' Areas Draining to Self-Retaining Areas: Runoff from impervious or partially pervious areas can be managed by routing it to Self-Retaining Areas consistent with the LID Principle discussed in SMR WQMP Section 3.2.5 for 'Dispersing Runoff to Adjacent Pervious Areas'.
Indicate if the DMAs meet the following criteria by answering "Yes" or "No".

☐ Yes ☒ No — The drainage from the tributary area must be directed to and dispersed within the Self-Retaining Area.

☐ Yes ☒ No — The maximum ratio of Tributary Area to Self-Retaining area is (2 ÷ Impervious Fraction): 1

If all answers indicate "Yes," DMAs may be categorized as Type 'C'.

Complete Table C-3 and Table C-4 to identify Type 'B' Self-Retaining Areas and Type 'C' Areas Draining to Self-Retaining Areas.

Table C-3 Type 'B', Self-Retaining Areas

Self-Retaining Area				Type 'C' DMAs that are draining to the Self-Retaining Area		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C-4= [C]	Required Retention Depth (inches) [D] = $[B] + \frac{[B]\cdot[C]}{[A]}$
N/A						

Note: Tree well areas can extend well beyond the drip line. The Tree Well area for open top types would include the shallow depressed area at the soil surface. The Tree Well area for Structural Soil Tree Wells or Suspended Pavement Tree Wells includes the area with open-graded gravel or void space over the structural soil or structural cells. Please specify type in this table and WQMP site map. See LID handbook Tree Well factsheet for additional details.

$$\left(\frac{\mathbf{2}}{\boldsymbol{Impervious\ Fraction}}\right) : \mathbf{1}$$

(Tributary Area**:** Self-Retaining Area)

Table C-4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet) [A]	Post-project surface type	Runoff factor [B]	Product [C] = [A] x [B]	DMA name /ID	Area (square feet) [D]	Ratio [C]/[D]
N/A							

Note: (See Section 3.3 of SMR WQMP) Ensure that partially pervious areas draining to a Self-Retaining area do not exceed the following ratio:

Step 3.B.1 – Document the use of Green Street Exemption (see Section 3.11 of the WQMP Guidance)

The Regional MS4 Permit specifies that projects that consist of **retrofitting or redevelopment of existing paved alleys, streets, or roads** may be exempted from classification as PDPs if they are designed and constructed in accordance with USEPA Green Streets Guidance. This does not apply for interior roads for PDP projects. For projects with road frontage improvements, Green Street standards can be used in the frontage road right-of-way. The remainder of the project is subject to full WQMP and Hydromodification requirements. See excerpt from Section 3.11 of the WQMP Guidance below:

3.11.4 BMP Sizing Targets for Applicable Green Streets Projects

Applicable green street projects are not required to meet the same sizing requirements for BMPs as other projects, but should attempt to meet a sizing target to the MEP. The following steps are used to size BMPs for applicable Green Streets projects:

1. Delineate drainage areas tributary to BMP locations and compute imperviousness.
2. Determine sizing goal by referring to sizing criteria presented in Section 2.3.2 (V_{BMP}).
3. Attempt to provide the target BMP sizing according to Step 2.
4. If the target criteria cannot be achieved, document the constraints that override the application of BMPs, and provide the largest portion of the sizing criteria that can be reasonably provided given constraints.

Even if BMPs cannot be sized to meet the target sizing criteria, it is still important to design the BMP inlet, energy dissipation, and overflow capacity for the full tributary area to ensure that flooding and scour is avoided. It is strongly recommended that BMPs which are designed to less than their target design volume be designed to bypass peak flows.

Table C-4.1 – Green Streets

DMA Name or ID	Street Name	BMP Sizing Targets Calculations and documenting constraints included in Appendix 6*
N/A		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
		☐ Yes ☐ No
*WQMP shall not be approved without calculations or documenting constraints for Green Street Exemption.		

Step 3.C – Identify Type 'D' Areas Draining to BMPs

Areas draining to BMPs are those that could not be fully managed through LID Principles (DMA Types A through C) and will instead drain to an LID BMP and/or a Conventional Treatment BMP designed to manage water quality impacts from that area, and Hydromodification where necessary.

Complete Table C-5 to document which DMAs are classified as Areas Draining to BMPs

Table C-5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID Receiving Runoff from DMA
DMA A (Drainage Areas A-1 and A-2)	BMP A – Biofiltration Modular Wetlands

Note: More than one DMA may drain to a single LID BMP; however, one DMA may not drain to more than one BMP.

Section D: Implement LID BMPs

The Regional MS4 Permit requires the use of LID BMPs to provide retention or treatment of the DCV and includes a BMP hierarchy which requires Full Retention BMPs (Priority 1) to be considered before Biofiltration BMPs (Priority 2) and Flow-Through Treatment BMPs and Alternative Compliance BMPs (Priority 3). LID BMP selection must be based on technical feasibility and should be considered early in the site planning and design process. Use this section to document the selection of LID BMPs for each DMA. Note that feasibility is based on the DMA scale and may vary between DMAs based on site conditions.

D.1 Full Infiltration Applicability

An assessment of the feasibility of utilizing full infiltration BMPs is required for all projects, *except where it can be shown that site design LID principles fully retain the DCV (i.e., all DMAs are Type A, B, or C), or where Harvest and Use BMPs fully retain the DCV. Check the following box if applicable:*

☐ Site design LID principles or Tree Wells fully retain the DCV (i.e., all DMAs are Type A, B, or C), (Proceed to Section E).

If the above box remains unchecked, perform a site-specific evaluation of the feasibility of Infiltration BMPs using each of the applicable criteria identified in Chapter 2.3.3 of the SMR WQMP and complete the remainder of Section D.1.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Copermittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the SMR WQMP. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Infiltration Feasibility

Table D-1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the SMR WQMP in Chapter 2.3.3. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D-1 Infiltration Feasibility

Downstream Impacts (SMR WQMP Section 2.3.3.a)		
Does the project site…	**YES**	**NO**
…have any DMAs where infiltration would negatively impact downstream water rights or other Beneficial Uses[3]?		X
If Yes, list affected DMAs:		
Groundwater Protection (SMR WQMP Section 2.3.3.b)		
Does the project site…	**YES**	**NO**
…have any DMAs with industrial, and other land uses that pose a high threat to water quality, which cannot be treated by Bioretention BMPs? Or have DMAs with active industrial process areas?		X
If Yes, list affected DMAs:		
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet horizontally of a water supply well?		X
If Yes, list affected DMAs:		
…have any DMAs that would restrict BMP locations to within a 2:1 (horizontal: vertical) influence line extending from any septic leach line?		X
If Yes, list affected DMAs:		
…have any DMAs been evaluated by a licensed Geotechnical Engineer, or Environmental Engineer, who has concluded that the soils do not have adequate physical and chemical characteristics for the protection of groundwater, and has treatment provided by amended media layers in Bioretention BMPs been considered in evaluating this factor?		X
If Yes, list affected DMAs:		
Public Safety and Offsite Improvements (SMR WQMP Section 2.3.3.c)		
Does the project site…	**YES**	**NO**
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact, such as potential seepage through fill conditions?		X
If Yes, list affected DMAs:		
Infiltration Characteristics For LID BMPs (SMR WQMP Section 2.3.3.d)		
Does the project site…	**YES**	**NO**
…have measured infiltration rates of less than 2.4 inches / hour? Riverside County may allow measure rates as low as 0.8in/hr to support infiltration BMPs, if the Engineer believes infiltration is appropriate and sustainable. Mark no, if this is the case.		X
If Yes, list affected DMAs**: Average Infiltration rate per soil report = 0.09 inches / hour**		
Cut/Fill Conditions (SMR WQMP Section 2.3.3.e)		
Does the project site…	**YES**	**NO**
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
Other Site-Specific Factors (SMR WQMP Section 2.3.3.f)		
Does the project site…	**YES**	**NO**
…have DMAs where the geotechnical investigation discovered other site-specific factors that would preclude effective and/or safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs that rely solely on infiltration should not be used for those DMAs and you should proceed to the assessment for Biofiltration BMPs below. Biofiltration BMPs that provide partial infiltration may still be feasible and should be assessed in Section D.2. Summarize concerns identified in the Geotechnical Report, if any, that resulted in a "YES" response above in the table below.

[3] Such a condition must be substantiated by sufficient modeling to demonstrate an impact and would be subject to County of Riverside discretion. There is not a standardized method for assessing this criterion. Water rights evaluations should be site-specific.

Table D-2 Geotechnical Concerns for Onsite Infiltration

Type of Geotechnical Concern	DMAs Feasible (By Name or ID)	DMAs Infeasible (By Name or ID)
Collapsible Soil		
Expansive Soil		
Slopes		
Liquefaction		
Low Infiltration Rate		
Other	Majority in Soil Type D. The site had been graded, majority in filled and used to store construction heavy equipment	

D.2 Biofiltration Applicability

This section should document the applicability of biofiltration BMPs for Type D DMAs that are not feasible for full infiltration BMPs. The key decisions to be documented in this section include:

1. Are biofiltration BMPs with partial infiltration feasible?
    a. Biofiltration BMPs must be designed to maximize incidental infiltration via a partial infiltration design unless it is demonstrated that this design is not feasible.
    b. These designs can be used at sites with low infiltration rates where other feasibility factors do not preclude incidental infiltration.

    Document summary in Table D-3.
2. If not, what are the factors that require the use of biofiltration with no infiltration? This may include:
    a. Geotechnical hazards
    b. Water rights issues
    c. Water balance issues
    d. Soil contamination or groundwater quality issues
    e. Very low infiltration rates (factored rates < 0.1 in/hr)
    f. Other factors, demonstrated to the acceptance of the local jurisdiction

    If this applies to any DMAs, then rationale must be documented in Table D-3.
3. Are biofiltration BMPs infeasible?
    a. If yes, then provide a site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee with jurisdiction over the Project site to discuss this option. Proceed below.

Table D-3 Evaluation of Biofiltration BMP Feasibility

DMA ID	Is Partial/ Incidental Infiltration Allowable? (Y/N)	Basis for Infeasibility of Partial Infiltration (provide summary and include supporting basis if partial infiltration not feasible)
N/A		

Proprietary Biofiltration BMP Approval Criteria

Does the Co-Permittee allow Proprietary BMPs as an equivalent to Biofiltration, if specific criteria is met?

☒ Yes or ☐ No, if no skip to Section F to document your alternative compliance measures.

If the project will use proprietary BMPs as biofiltration BMPs, then this section and Appendix 5 shall be completed to document that the proprietary BMPs are selected in accordance with Section 2.3.6 of the SMR WQMP and County requirements. Proprietary Biofiltration BMPs must meet both of the following approval criteria:

1. Demonstrate equivalency to Biofiltration by completing the BMP Design worksheet and Proprietary Biofiltration Criteria, which is found in Appendix 5, including all supporting documentation, and
2. Obtain Co-Permittee concurrence for the long term Operation and Maintenance Plan for the proprietary BMP. The Co-Permittee has the sole discretion to allow or reject Proprietary BMPs, especially if they will be maintained publically through a CFD, CSA, or L&LMD.

Add additional rows to Table D-4 to document approval criteria are met for each type of BMP proposed.

Table D-4 Proprietary BMP Approval Requirement Summary

Proposed Proprietary Biofiltration BMP	Approval Criteria	Notes/Comments
BioClean by A Forterra Company	BMP Design worksheets and Proprietary Biofiltration Criteria are completed in Appendix 5	☒ Yes or ☐ No
	Proposed BMP has an active TAPE GULD Certification for the project pollutants of concern[4] or equivalent 3rd party demonstrated performance.	☒ Yes or ☐ No See Modular Wetland Brochure
	Is there any media or cartridge required to maintain the function of the BMP sole-sourced or proprietary in any way? If yes, obtain explicit approval by the Agency. Potentially full replacement costs to a non-proprietary BMP needs to be considered.	☒ Yes or ☐ No If yes, provide the date of concurrence from the Co-Permittee. See Modular Wetland Brochure
	☒ The BMP includes biological features	Plant, tree or grasses with

[4] Use Table F-1, F-2, and F-3 to identify and document the pollutants of concern and include these tables in Appendix 5.

	including vegetation supported by engineered or other growing media.	Wetlandmedia

D.3 Feasibility Assessment Summaries

From the Infiltration, Biofiltration with Partial Infiltration and Biofiltration with No Infiltration Sections above, complete Table D-5 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D-5 LID Prioritization Summary Matrix

DMA Name/ID	LID Principles or Tree Wells	LID BMP Hierarchy			No LID (Alternative Compliance)
		1. Infiltration	2. Biofiltration with Partial Infiltration*	3. Biofiltration with No Infiltration*	
BMP - A	☐	☐	☐	☐	☒
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

*Includes Proprietary Biofiltration, if accepted by the Co-Permittee.

For those DMAs where LID BMPs are not feasible, provide a narrative in Table D-6 below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section F below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

This is based on the clarification letter titled "San Diego Water Board's Expectations of Documentation to Support a Determination of Priority Development Project Infiltration Infeasibility" (April 28, 2017, Via email from San Diego Regional Water Quality Control Board to San Diego County Municipal Storm Water Copermittees[5]).

Table D-6 Summary of Infeasibility Documentation

Question	Narrative Summary (include reference to applicable appendix/attachment/report, as applicable)
a) When in the entitlement process did a geotechnical engineer analyze the site for infiltration feasibility?	Yes, see Tract 32024
b) When in the entitlement process were other investigations conducted (e.g., groundwater quality, water rights) to evaluate infiltration feasibility?	Yes, see Tract 32024
c) What was the scope and results of testing, if conducted, or rationale	Majority in Soil Type D

[5] http://www.projectcleanwater.org/download/pdp-infiltration-infeasibility/

for why testing was not needed to reach findings?	
d) What public health and safety requirements affected infiltration locations?	There is no public risk or health risk with infiltration BMP in this area.
e) What were the conclusions and recommendations of the geotechnical engineer and/or other professional responsible for other investigations?	There is no infiltration available in the project area.
f) What was the history of design discussions between the permittee and applicant for the proposed project, resulting in the final design determination related locations feasible for infiltration?	The Phase 1 or Tract 32024 was proposing Extended Detention Basin which is not infiltration BMP
g) What site design alternatives were considered to achieve infiltration or partial infiltration on site?	There was small opportunity to achieve any infiltration even partial because the area downstream is the edge of slope (over 25' slope) which will influence by saturated the slope and effect the stability.
h) What physical impairments (i.e., fire road egress, public safety considerations, utilities) and public safety concerns influenced site layout and infiltration feasibility?	The site was the stockpile area, majority in Soil Type D and the final finish surface is mostly in filled area. Therefore the infiltration feasibility is negative.
i) What LID Principles (site design BMPs) were included in the project site design?	Performed feasibility on infiltration BMP, Source Control BMP, minimize the proposed impervious areas, provide alternative BMP to mitigate the Water Quality and Hydromod.

D.4 LID BMP Sizing

Each LID BMP must be designed to ensure that the DCV will be captured by the selected BMPs with no discharge to the storm drain or surface waters during the DCV size storm. Infiltration BMPs must at minimum be sized to capture the DCV to achieve pollutant control requirements.

Biofiltration BMPs must at a minimum be sized to:

- Treat 1.5 times the DCV not reliably retained on site using a volume-base or flow-based sizing method, or
- Include static storage volume, including pore spaces and pre-filter detention volume, at least 0.75 times the portion of the DCV not reliably retained on site.

First**,** calculate the DCV for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using the methods included in Section 3 of the LID BMP Design Handbook. Utilize the worksheets found in the LID BMP Design Handbook or consult with the Copermittee to assist you in correctly sizing your LID BMPs. Use Table D-7 below to

document the DCV each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D-7 DCV Calculations for LID BMPs

DMA Type/ID	DMA (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
Alternative LID						*Design Storm Depth (in)*	*DCV, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{12}$	[G]

[B], [C] is obtained as described in Section 2.6.1.b of the SMR WQMP
[E] is obtained from Exhibit A in the SMR WQMP
[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6.

Complete Table D-8 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. You can add rows to the table as needed. Alternatively, the Santa Margarita Hydrology Model (SMRHM) can be used to size LID BMPs to address the DCV and, if applicable, to size Hydrologic Control BMPs to meet the Hydrologic Performance Standard described in the SMR WQMP, as identified in Section E.

Table D-8 LID BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	Design Capture Volume (ft^3)	Proposed Volume (ft^3)
Alternative LID				

If bioretention will include a capped underdrain, then include sizing calculations demonstrating that the BMP will meet infiltration sizing requirements with the underdrain capped and also meet biofiltration sizing requirements if the underdrain is uncapped.

Section E: Implement Hydrologic Control BMPs and Sediment Supply BMPs

See Appendix 7 for additional required information.

If a completed Table 1.2 demonstrates that the project is exempt from Hydromodification Performance Standards, specify N/A and proceed to Section G.

☒ N/A Project is Exempt from Hydromodification Performance Standards.

If a PDP is not exempt from hydromodification requirements than the PDP must satisfy the requirements of the performance standards for hydrologic control BMPs and Sediment Supply BMPs. The PDP may choose to satisfy hydrologic control requirements using onsite or offsite BMPs (i.e. Alternative Compliance). Sediment supply requirements cannot be met via alternative compliance. If N/A is not selected above, select one of the two options below and complete the applicable sections.

☐ Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control and Sediment Supply BMPs Onsite (complete Section E).

☐ Project is Not Hydromodification Exempt and chooses to implement Hydrologic Control Requirements using Alternative Compliance (complete Section F). Selection of this option must be approved by the Copermittee.

The project TTM 31855 – Monte Vista Ranch II drains into County of Riverside Wildomar MDP Lateral C, Stage 3

E.1 Hydrologic Control BMP Selection

Capture of the DCV and achievement of the Hydrologic Performance Standard may be met by combined and/or separate structural BMPs. The user should consider the full suite of Hydrologic Control BMPs to manage runoff from the post-development condition and meet the Hydrologic Performance Standard identified in this section.

For the Preliminary WQMP, in lieu of preparing detailed routing calculations, the basin size may be estimated as the difference in volume between the pre-development and post-development hydrograph for the 10-year 24-hour storm event plus the Vbmp. This does not relieve the engineer of the responsibility for meeting the full Hydrologic Control requirements during final design.

The Hydrologic Performance Standard consists of matching or reducing the flow duration curve of post-development conditions to that of pre-existing, naturally occurring conditions, for the range of geomorphically significant flows (the low flow threshold runoff event up to the 10-year runoff event).

10% of the 2-year runoff event can be used for the low flow threshold without any justification. Higher low flow thresholds can be used with site-specific analysis, see Section 2.6.2.b of the WQMP guidance document. Select each of the hydrologic control BMP types that are applied to meet the above performance standard on the site.

☐ LID principles as defined in Section 3.2 of the SMR WQMP, including Tree Wells.

☐ Structural LID BMPs that may be modified or enlarged, if necessary, beyond the DCV.

☐ Structural Hydrologic Control BMPs that are distinct from the LID BMPs above. The LID BMP Design Handbook provides information not only on Hydrologic Control BMP design, but also on BMP design to meet the combined LID requirement and Hydrologic Performance Standard. The Handbook specifies the type of BMPs that can be used to meet the Hydrologic Performance Standard.

E.2 Hydrologic Control BMP Sizing

Hydrologic Control BMPs must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA for the range of geomorphically significant flows. Using SMRHM, (or another acceptable continuous simulation model if approved by the Copermittee) the applicant shall demonstrate that the performance of the Hydrologic Control BMPs complies with the Hydrologic Performance Standard. Complete Table E-1 below and identify, for each DMA, the type of Hydrologic Control BMP, if the SMRHM model confirmed the management (Identified as "passed" in SMRHM), the total volume capacity of the Hydrologic Control BMP, the Hydrologic Control BMP footprint at top floor elevation, and the drawdown time of the Hydrologic Control BMP. SMRHM summary reports should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table E-1 Hydrologic Control BMP Sizing

BMP Name / ID	DMA No.	BMP Type / Description	SMRHM * Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
N/A			☐			
			☐			
			☐			
			☐			

**Or other continuous simulation model, compliant with the WQMP and Permit. If Tree Wells are proposed for some or all of the project, check the box for Tree Wells in Section E.1 and enter each Tree Well DMA in Table E-1 above for the BMP Name/ID, DMA No. and BMP Type/Description. For Tree Wells, leave SMRHM* Passed Column and the columns to the left blank.*

If a bioretention BMP with capped underdrain is used and hydromodification requirements apply, then sizing calculations must demonstrate that the BMP meets flow duration control criteria with the underdrain capped and uncapped. Both calculations must be included.

E.3 Implement Sediment Supply BMPs

The sediment supply performance standard applies to PDPs for which hydromodification applied that have the potential to impact Potential Critical Coarse Sediment Yield Areas. Refer to Exhibit G-1 of the WQMP Guidance Document to determine if there are onsite Potential Critical Coarse Sediment Yield Areas (based on on-going WMAA analysis) or Potential Sediment Source Areas (sites added through the Regional Board review process). Select one of the two options below and include the Potential Critical Coarse Sediment Yield Area Exhibit showing your project location in Appendix 7.

☒ There are no mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site. Include a copy of Exhibit G - CCSY & PSS Areas in Appendix 7, with the project location marked. If the project is outside of the "Potential Critical Coarse Sediment Yield Areas and Potential Sediment Source Areas" then check this box. The Sediment Supply Performance Standard is met with no further action is needed.

☐ There are mapped Potential Critical Coarse Sediment Yield Areas or Potential Sediment Source Areas on the site, the Sediment Supply Performance Standard will be met through Option 1 (E.3.1) or Option 2 (E.3.2) below.

☐ **E.3.1 Option 1: Avoid Potential Critical Coarse Sediment Yield Areas and Potential Sediment Source Areas**

The simplest approach for complying with the Sediment Supply Performance Standard is to avoid impacts to areas identified as Potential Critical Coarse Sediment Yield Areas or Potential Sediment Supply Areas. If a portion of PDP is identified as a Potential Critical Coarse Sediment Yield Area or a Potential Sediment Source Area, that PDP may still achieve compliance with the Sediment Supply Performance Standards if Potential Critical Coarse Sediment Yield Areas and Potential Sediment Supply Areas are avoided, i.e. areas are not developed and thereby delivery of Critical Coarse Sediment to the receiving waters is not impeded by site developments.

Provide a narrative describing how the PDP has avoided impacts to Potential Critical Coarse Sediment Yield Areas and/or Potential Sediment Source Areas below.

Insert narrative description here

If it is not feasible to avoid these areas, proceed to Option 2 to complete a Site-Specific Critical Coarse Sediment Analysis.

☐ **E.3.2 Option 2: Site-Specific Critical Coarse Sediment Analysis**

Perform a stepwise assessment to ensure the pre-project source(s) of Critical Coarse Sediment (i.e., Bed Sediment Supply) is maintained:

Step 1: Identify if the site is an actual verified Critical Coarse Sediment Yield Area supplying Bed Sediment Supply to the receiving channel

☐ **Step 1.A** – Is the Bed Sediment of onsite streams similar to that of receiving streams?

Rate the similarity: ☐ High
☐ Medium
☒ Low

Results from the geotechnical and sieve analysis to be performed both onsite and in the receiving channel should be documented in Appendix 7. Of particular interest, the results of the sieve analysis, the soil erodibility factor, a description of the topographic relief of the project area, and the lithology of onsite soils should be reported in Appendix 7.

☐ **Step 1.B** – Are onsite streams capable of delivering Bed Sediment Supply from the site, if any, to the receiving channel?

Rate the potential: ☐ High
☐ Medium
☒ Low

Results from the analyses of the sediment delivery potential to the receiving channel should be documented in Appendix 7 and identify, at a minimum, the Sediment Source, the distance to the receiving channel, the onsite channel density, the project watershed area, the slope, length, land use, and rainfall intensity.

☐ **Step 1.C** – Will the receiving channel adversely respond to a change in Bed Sediment Load?

Rate the need for bed sediment supply:
☐ High
☐ Medium
☒ Low

Results from the in-stream analysis to be performed both onsite should be documented in Appendix 7. The analysis should, at a minimum, quantify the bank stability and the degree of incision, provide a gradation of the Bed Sediment within the receiving channel, and identify if the channel is sediment supply-limited.

☐ **Step 1.D** – Summary of Step 1

Summarize in Table E.3 the findings of Step 1 and associate a score (in parenthesis) to each step. The sum of the three individual scores determines if a stream is a significant contributor to the receiving stream.

- Sum is equal to or greater than eight - Site is a significant source of sediment bed material – all on-site streams must be preserved or by-passed within the site plan. The applicant shall proceed to Step 2 for all onsite streams.

- Sum is greater than five but lower than eight. Site is a source of sediment bed material – some of the on-site streams must be preserved (with identified streams noted). The applicant shall proceed to Step 2 for the identified streams only.
- Sum is equal to or lower than five. Site is not a significant source of sediment bed material. The applicant may advance to Section F.

Table E-2 Triad Assessment Summary

Step	Rating			Total Score
1.A	☐ High (3)	☐ Medium (2)	☒ Low (1)	1
1.B	☐ High (3)	☐ Medium (2)	☒ Low (1)	1
1.C	☐ High (3)	☐ Medium (2)	☒ Low (1)	1
Significant Source Rating of Bed Sediment to the receiving channel(s)				

Step 2: Avoid Development of Critical Coarse Sediment Yield Areas, Potential Sediment Sources Areas, and Preserve Pathways for Transport of Bed Sediment Supply to Receiving Waters

Onsite streams identified as a actual verified Critical Coarse Sediment Yield Areas should be avoided in the site design and transport pathways for Critical Coarse Sediment should be preserved

Check those that apply:

☐ The site design does avoid all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas ***AND***

☐ The drainage design bypasses flow and sediment from onsite upstream drainages identified as actual verified Critical Coarse Sediment Yield Areas to maintain Critical Coarse Sediment supply to receiving waters

(If both are yes, the applicant may disregard subsequent steps of Section E.3 and directly advance directly to Section G)

Or -

Provide in Appendix 7 a site map that identifies all onsite channels and highlights those onsite channels that were identified as a Significant Source of Bed Sediment. The site map shall demonstrate, if feasible, that the site design avoids those onsite channels identified as a Significant Source of Bed Sediment. In addition, the applicant shall describe the characteristics of each onsite channel identified as a Significant Source of Bed Sediment. If the design plan cannot avoid the onsite channels, please provide a rationale for each channel individually.

The site map shall demonstrate that the drainage design bypasses those onsite channels that supply Critical Coarse Sediment to the receiving channel(s). In addition, the applicant shall describe the characteristics of each onsite channel identified as an actual verified Critical Coarse Sediment Yield Area.

Identified Channel #1 - Insert narrative description here

Identified Channel #2 - Insert narrative description here

☐ The site design **does NOT avoid** all onsite channels identified as actual verified Critical Coarse Sediment Yield Areas

OR

☐ The project blocks the potential for Critical Coarse Sediment from migrating to receiving waters.

(If either of these are the case, the applicant shall continue completing this section).

E.3.3 Sediment Supply BMPs to Result in No Net Impact to Downstream Receiving Waters

If impacts to Critical Coarse Sediment Yield Areas cannot be avoided, sediment supply BMPs must be implemented such there is no net impact to receiving waters. Sediment supply BMPs may consist of approaches that permit flux of bed sediment supply from Critical Coarse Sediment Yield Areas within the project boundary. This approach is subject to acceptance by the County of Riverside. It may require extensive documentation and analysis by qualified professionals to support this demonstration.

Appendix H of the San Diego Model BMP Design Manual provides additional information on site-specific investigation of Critical Coarse Sediment Supply areas.

http://www.projectcleanwater.org/download/2018-model-bmp-design-manual/

If applicable, insert narrative description here

Documentation of sediment supply BMPs should be detailed in Appendix 7.

Section F: Alternative Compliance

Alternative Compliance may be used to achieve compliance with pollutant control and/or hydromodification requirements for a given PDP. Alternative Compliance may be used under two scenarios, check the applicable box if the PDP is proposing to use Alternative Compliance to satisfy all or a portion of the Pollutant Control and/or Hydrologic Control requirements (but not sediment supply requirements)

☐ If it is not feasible to fully implement Infiltration or Biofiltration BMPs at a PDP site, Flow-Through Treatment Control BMPs may be used to treat pollutants contained in the portion of DCV not reliably retained on site and Alternative Compliance measures must also be implemented to mitigate for those pollutants in the DCV that are not retained or removed on site prior to discharging to a receiving water.

☐ Alternative Compliance is selected to comply with either pollutant control or hydromodification flow control requirements even if complying with these requirements is potentially feasible on-site. If such voluntary Alternative Compliance is implemented, Flow-Through Treatment Control BMPs must still be used to treat those pollutants in the portion of the DCV not reliably retained on site prior to discharging to a receiving water.

Refer to Section 2.7 of the SMR WQMP and consult the Local Jurisdiction for currently available Alternative Compliance pathways. Coordinate with the Copermittee if electing to participate in Alternative Compliance and complete the sections below to document implementation of the Flow-Through BMP component of the program.

F.1 Identify Pollutants of Concern

The purpose of this section is to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs and to document compliance and.

Utilize Table A-1 from Section A, which noted your project's Receiving Waters, to identify impairments for Receiving Waters (including downstream receiving waters) by completing Table F-1. Table F-1 includes the watersheds identified as impaired in the Approved 2010 303(d) list; check box corresponding with the PDP's receiving water. The most recent 303(d) lists are available from the State Water Resources Control Board website: https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml).https://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml.

Table F-1 Summary of Approved 2010 303(d) listed waterbodies and associated pollutants of concern for the Riverside County SMR Region and downstream waterbodies.

	Water Body	Nutrients[1]	Metals[2]	Toxicity	Bacteria and Pathogens	Pesticides and Herbicides	Sulfate	Total Dissolved Solids
☐	De Luz Creek	X	X				X	
☐	Long Canyon Creek		X		X	X		
☒	Murrieta Creek	X	X	X		X		
☐	Redhawk Channel	X	X		X	X		X
☐	Santa Gertudis Creek	X	X		X	X		
☐	Santa Margarita Estuary	X						
☒	Santa Margarita River (Lower)	X			X			
☒	Santa Margarita River (Upper)	X		X				
☐	Temecula Creek	X	X	X		X		X
☐	Warm Springs Creek	X	X		X	X		

[1] Nutrients include nitrogen, phosphorus and eutrophic conditions caused by excess nutrients.

[2] Metals includes copper, iron, and manganese.

Use Table F-2 to identify the pollutants identified with the project site. Indicate the applicable PDP Categories and/or Project Features by checking the boxes that apply. If the identified General Pollutant Categories are the same as those listed for your Receiving Waters, then these will be your Pollutants of Concern; check the appropriate box or boxes in the last row.

Table F-2 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)		General Pollutant Categories									
		Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease	Total Dissolved Solids	Sulfate
☐	Detached Residential Development	P	N	P	P	N	P	P	P	N	N
☒	Attached Residential Development	P	N	P	P	N	P	P	P(2)	N	N
☐	Commercial/Industrial Development	P(3)	P(7)	P(1)	P(1)	P	P(1)	P	P	N	N
☐	Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P	N	N
☐	Restaurants (>5,000 ft^2)	P	N	N	P(1)	N	N	P	P	N	N
☐	Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P	N	N
☐	Parking Lots (>5,000 ft^2)	P(6)	P(7)	P(1)	P(1)	P(4)	P	P	P	N	N
☐	Streets, Highways, and Freeways	P(6)	P(7)	P(1)	P(1)	P(4)	P	P	P	N	N
☐	Retail Gasoline Outlets	N	P(7)	N	N	P(4)	N	P	P	N	N
Project Priority Pollutant(s) of Concern		☒	☐	☒	☒	☐	☒	☒	☒	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste products; otherwise not expected

(4) Including petroleum hydrocarbons

(5) Including solvents

(6) Bacterial indicators are routinely detected in pavement runoff

(7) A potential source of metals, primarily copper and zinc. Iron, magnesium, and aluminum are commonly found in the environment and are commonly associated with soils, but are not primarily of anthropogenic stormwater origin in the municipal environment.

F.2 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential Pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must be selected to address the Project Priority Pollutants of Concern (identified above) and meet the acceptance criteria described in Section 2.3.7 of the SMR WQMP. Documentation of acceptance criteria must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table F-3 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
Bioclean Area A – Modular Wetland Linear	Bacteria indicators, Nutrients, Pesticides, Sediments, Trash & Debris, Oil & Grease	See attach Modular Wetlands brochure in Appendix

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Copermittee Approved Study and provided in Appendix 6.

F.3 Sizing Criteria

Utilize Table F-4 below to appropriately size flow-through BMPs to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.1 of the SMR WQMP for further information.

Table F-4 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*	
	[A]		[B]	[C]	[A] x [C]		
						Design Storm (in)	*Design Flow Rate (cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP
[E] either 0.2 inches or 2 times the 85th percentile hourly rainfall intensity
[G] = 43,560,.

F.4 Hydrologic Performance Standard – Alternative Compliance Approach

Alternative compliance options are only available if the governing Copermittee has acknowledged the infeasibility of onsite Hydrologic Control BMPs and approved an alternative compliance approach. See Section 3.5 and 3.6 of the SMR WQMP.

Select the pursued alternative and describe the specifics of the alternative:

☐ Offsite Hydrologic Control Management within the same channel system

Insert narrative description here

☐ In-Stream Restoration Project

Insert narrative description here

For Offsite Hydrologic Control BMP Option

Each Hydrologic Control BMP must be designed to ensure that the flow duration curve of the post-development DMA will not exceed that of the pre-existing, naturally occurring, DMA by more than ten percent over a one-year period. Using SMRHM, the applicant shall demonstrate that the performance of each designed Hydrologic Control BMP is equivalent with the Hydrologic Performance Standard for onsite conditions. Complete Table F-5 below and identify, for each Hydrologic Control BMP, the equivalent DMA the Hydrologic Control BMP mitigates, that the SMRHM model passed, the total volume capacity of the BMP, the BMP footprint at top floor elevation, and the drawdown time of the BMP. SMRHM summary reports for the alternative approach should be documented in Appendix 7. Refer to the SMRHM Guidance Document for additional information on SMRHM. You can add rows to the table as needed.

Table F-5 Offsite Hydrologic Control BMP Sizing

BMP Name / Type	Equivalent DMA (ac)	SMRHM Passed	BMP Volume (ac-ft)	BMP Footprint (ac)	Drawdown time (hr)
N/A		☐			
		☐			
		☐			
		☐			

For Instream Restoration Option

Attach to Appendix 7 the technical report detailing the condition of the receiving channel subject to the proposed hydrologic and sediment regimes. Provide the full design plans for the in-stream restoration project that have been approved by the Copermittee. Utilize the San Diego Regional Water Quality Equivalency Guidance Document.

Section G: Implement Trash Capture BMPs

The Santa Margarita Regional Board has required Full Trash Capture compliance thru Order No. R9-2017-007. For the Santa Margarita Watershed, the County is requiring Track 1 full trash capture compliance for projects proposing the following uses as part of their development after **December 3, 2018**.

- High-density residential: all land uses with at least ten (10) developed dwelling units/acre.
- Industrial: land uses where the primary activities on the developed parcels involve product manufacture, storage, or distribution (e.g., manufacturing businesses, warehouses, equipment storage lots, junkyards, wholesale businesses, distribution centers, or building material sales yards).
- Commercial: land uses where the primary activities on the developed parcels involve the sale or transfer of goods or services to consumers (e.g., business or professional buildings, shops, restaurants, theaters, vehicle repair shops, etc.).
- Mixed urban: land uses where high-density residential, industrial, and/or commercial land uses predominate collectively (i.e., are intermixed).
- Public transportation stations: facilities or sites where public transit agencies' vehicles load or unload passengers or goods (e.g., bus stations and stops).

Riverside County Maintenance is generally supportive of United Storm Water – Connector Pipe Screens or equivalent. Equivalent systems or alternative designs shall be on the State of California Approved Trash Capture Device List and requires approval by the Transportation Department for maintenance. Riverside County is developing Trash Capture Device Standards, which are expected to be added to the Transportation Plan Check Policies and Guidelines when available. Design calculations are not expected to be required if the project uses standard sizes per the County's Trash Capture Device Standards. Until the Trash Capture Device Standards are available and the project uses standard sizes, the project shall complete the following tables and furnish hydraulic analysis calculating the flowrate in the catch basin does not exceed the flowrate capacity of the trash capture device in a fully clogged condition.

Trash Capture BMPs may be applicable to Type 'D' DMAs, as defined in Section 2.3.4 of the SMR WQMP. Trash Capture BMPs are designed to treat Q_{TRASH}, the runoff flow rate generated during the 1-year 1-hour precipitation depth. Utilize Table G-1 to size Trash Capture BMP. Refer to Table G-2 to determine the Trash Capture Design Storm Intensity (E).

Table G-1 Sizing Trash Capture BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*	
	[A]		[B]	[C]	[A] x [C]		
See below						*Trash Capture Design Storm Intensity (in)*	*Trash Capture Design Flow Rate (cubic feet or cfs)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]	$[F] = \frac{[D]x[E]}{[G]}$

[B], [C] is obtained as described in Section 2.6.1.b from the SMR WQMP
[G] = 43,560

Table G-2 Approximate precipitation depth/intensity values for calculation of the Trash Capture Design Storm

City	1-year 1-hour Precipitation Depth/Intensity (inches/hr)
Murrieta	0.47
Temecula	0.50
Wildomar	0.37

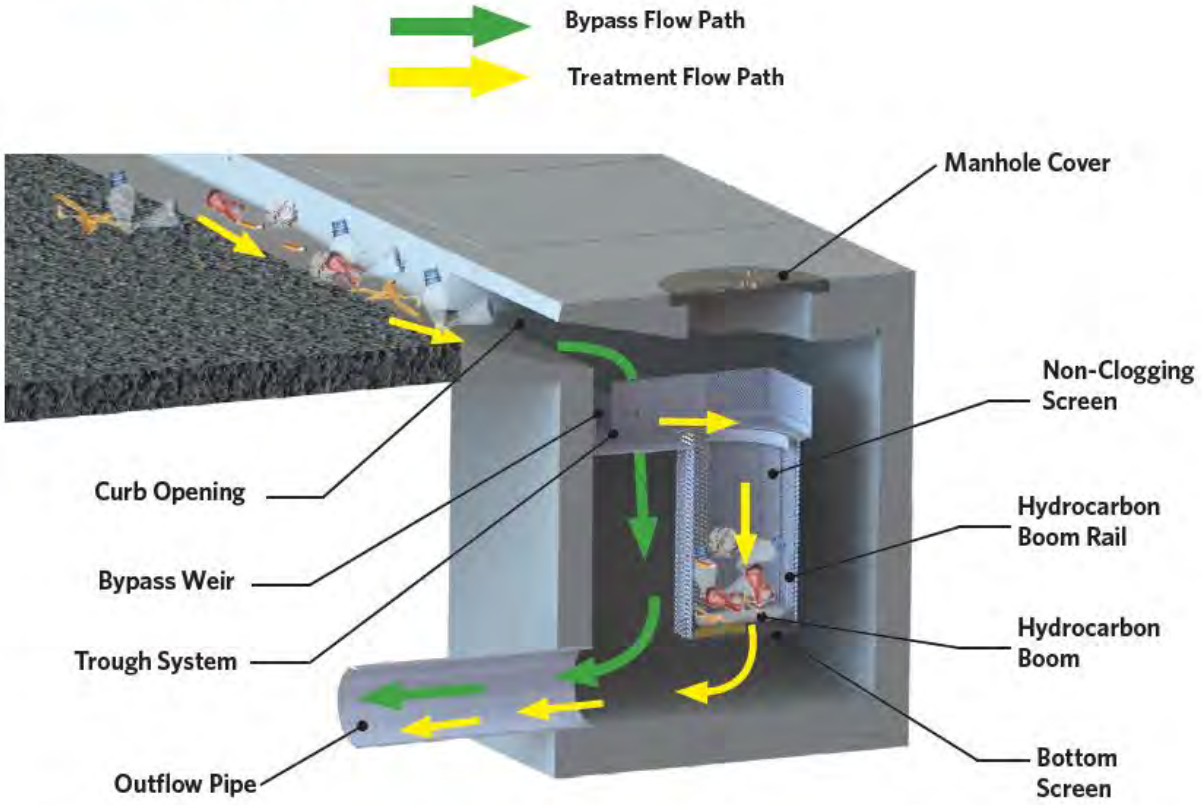
Use Table G-3 to summarize and document the selection and sizing of Trash Capture BMPs.

Table G-3 Trash Capture BMPs

BMP Name / ID	DMA No(s)	BMP Type / Description	Required Trash Capture Flowrate (cfs)	Provided Trash Capture Flowrate (cfs)[1]
A	A	Catch Basin Insert	Total 14.86 cfs 6 – inlets ➔ 2.47 cfs/ea	>2.85 cfs/ea See brochure below

[1] For connector pipe screens, the Trash Capture Flowrate shall be based on a fully clogged condition for the screen, where the water level is at the top of the screen. Then determined the Flowrate based on weir equation (Qweir = C x L x H^(2/3), where C = 3.4). The height used to calculate the weir flow rate shall maintain a 6" freeboard to the invert of the catch basin opening at the road. This analysis is meant to replicate the hydraulic analysis used in the County's Full Trash Capture Device Standards.

OPERATION



APPLICATIONS

- Parking Lots
- Roadways

SPECIFICATIONS

MODEL #	TREATMENT FLOW CAPACITY (cfs)	BYPASS FLOW (cfs)
BIO-CURB-FULL	2.85	UNLIMITED

Note: Treatment flow rate limited to the weir capacity - actual flow rates of the filter basket is greater than 2.85 cfs.
Various depth filter baskets available.

Pre-treatment BMP – catch Basin Insert (or approved equal)

Section H: Source Control BMPs

Section H need only be completed at the Preliminary WQMP phase if source control is critical to the project successfully handling the anticipated pollutants.

Source Control BMPs include permanent, structural features that may be required in your Project plans, such as roofs over and berms around trash and recycling areas, and Operational BMPs, such as regular sweeping and "housekeeping," that must be implemented by the site's occupant or user. The Maximum Extent Practicable (MEP) standard typically requires both types of BMPs. In general, Operational Source Control BMPs cannot be substituted for a feasible and effective Structural Source Control BMP. Complete checklist below to determine applicable Source Control BMPs for your site.

Project-Specific WQMP Source Control BMP Checklist

All development projects must implement Source Control BMPs. Source Control BMPs are used to minimize pollutants that may discharge to the MS4. Refer to Chapter 3 (Section 3.8) of the SMR WQMP for additional information. Complete Steps 1 and 2 below to identify Source Control BMPs for the project site.

STEP 1: IDENTIFY POLLUTANT SOURCES

Review project site plans and identify the applicable pollutant sources. "Yes" indicates that the pollutant source is applicable to project site. "No" indicates that the pollutant source is not applicable to project site.

☒ Yes ☐ No	Storm Drain Inlets		☐ Yes ☒ No	Outdoor storage areas	
☐ Yes ☒ No	Floor Drains		☐ Yes ☒ No	Material storage areas	
☐ Yes ☒ No	Sump Pumps		☐ Yes ☒ No	Fueling areas	
☒ Yes ☐ No	Pets Control/Herbicide Application		☐ Yes ☒ No	Loading Docks	
☐ Yes ☒ No	Food Service Areas		☐ Yes ☒ No	Fire Sprinkler Test/Maintenance water	
☐ Yes ☒ No	Trash Storage Areas		☒ Yes ☐ No	Plazas, Sidewalks and Parking Lots	
☐ Yes ☒ No	Industrial Processes		☒ Yes ☐ No	Pools, Spas, Fountains and other water features	
☐ Yes ☒ No	Vehicle and Equipment Cleaning and Maintenance/Repair Areas				

STEP 2: REQUIRED SOURCE CONTROL BMPS

List each Pollutant source identified above in column 1 and fill in the corresponding Structural Source Control BMPs and Operational Control BMPs by referring to the Stormwater Pollutant Sources/Source Control Checklist included in Appendix 8. The resulting list of structural and operational source control BMPs must be implemented as long as the associated sources are present on the project site. Add additional rows as needed.

Pollutant Source	Structural Source Control BMP	Operational Source Control BMP
Roadways	Provide storm drain stenciling and signage (S1)	Education for property owners, tenants and occupants (N1) Streets and sidewalks will be swept regularly to prevent accumulation or litter and debris. Debris from pressure washing will be collected to prevent entry into the storm drain.

		Washwater containing any cleaning agent or degreaser will be collected and discharge to the sanitary sewer not to a storm drain.
Residential Lots	Roofs designed to runoff into adjoining landscaping. Driveways of minimal widths. Roofing, gutters, and trim will not be made of copper or other unprotected metals that may leach into runoff.	Activity Restrictions (N2)
Man-made & irrigated slopes and landscaped areas	Protect slopes and channels (S5) Hillside Landscaping (S12)	Irrigation System and Landscape Management (N3)
	Irrigation systems and landscape design should follow as a guide the specifications and recommendations of the Water Conservation Act of 2006, AB1881 (Laird) and conform to the standards and requirements of the County' landscape requirements. Irrigation systems shall employ control systems and be designed to conserve water. The landscape design shall incorporate native and drought tolerant vegetation with low irrigation requirements. See CASQA SD-10 and SD-12 BMP Fact Sheets in and other landscape literature in WQMP for additional information.	Performed during design phase.
	Irrigation and landscape maintenance should be performed on a regular basis throughout the year. See CASQA SC-41 or SD-10 and SD-12BMP Fact Sheets in WQMP for additional information.	Inspect landscape areas twice annually (before and after the rainy season) and the irrigation system quarterly for proper functioning. Maintenance should be performed every 2 weeks or as needed. Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-

		vegetation, and removal of cut & dead vegetation. Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in
		Common Area Litter Control (N4)
Park/Recreation Center Site	Efficient Irrigation (S4)	Street Sweeping (N5)
		Drainage Facility Inspection and Maintenance (N6)
On-site storm drain catch basins with insert. Locations are shown on WQMP BMPs Site Map	On-site storm drain signage will utilize language, "No Dumping Drains to River", or equally approved text that is consistent with the County' requirements. Landscape area drains surrounded by vegetation will not be signed. The signs will be located at storm drain inlets in impervious areas and will be either stenciled or placarded.	Inspect the signage once per year. Repair or replace when the signage becomes unreadable. The original owner or developer will be responsible for the first stenciling of the storm drain system. Thereafter when the property is sold, the new owner will assume the responsibility for inspection, maintenance, and funding. See CASQA SD-13 BMP Fact Sheet in WQMP for additional information
	On-site drainage facility inspection and maintenance. On-site drainage structures, including all storm drain clean outs, area drains, inlets, catch basins, inlet & outlet structures, forebays, & water treatment control basins shall be inspected and maintained on a regular basis to insure their operational adequacy. See CASQA SC-44 BMP Fact Sheet in WQMP for additional information.	Inspect at a minimum, once before the onset of the rainy season (Oct 1 to May 1), once during the rainy season, and once after the rainy season. Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality. The property owner will assume the responsibility for all on-site drainage facility inspection, maintenance, and funding.

Section I: Coordinate Submittal with Other Site Plans

For Final WQMPs, populate Table I-1 below to assist the plan checker in an expeditious review of your project. During construction and at completion, County of Riverside inspectors will verify the installation of BMPs against the approved plans. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table I-1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)
In	Final design	
Insert text here	Insert text here	Insert text here
Insert text here	Insert text here	Insert text here

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. The Copermittee with jurisdiction over the Project site can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

Use Table I-2 to identify other applicable permits that may impact design of the site. If yes is answered to any of the items below, the Copermittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Table I-2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act Section 401 Water Quality Certification	☐ Y	☒ N
US Army Corps of Engineers, Clean Water Act Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☐ Y	☒ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)*	☒ Y	☐ N

Section J: Operation, Maintenance and Funding

Applicant is required to state the intended responsible party for BMP Operation, Maintenance and Funding at the Preliminary WQMP phase. The remaining requirements as outlined above are required for Final WQMP only.

The Copermittee with jurisdiction over the Project site will periodically verify that BMPs on your Project are maintained and continue to operate as designed. To make this possible, the Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement maintenance of BMPs in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized Operations and Maintenance or inspections but will require typical landscape maintenance as noted in Chapter 5, in the SMR WQMP. Include a brief description of typical landscape maintenance for these areas.

The Copermittee with jurisdiction over the Project site will also require that you prepare and submit a detailed BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a BMP Operation and Maintenance Plan are in Chapter 5 of the SMR WQMP.

Maintenance Mechanism: HOA will have ongoing maintenance responsibilities. Site design and treatment BMPs have been designed to keep maintenance efforts in line with TTM 38155 project maintenance activities.

Will the proposed BMPs be maintained by a Homeowners' Association (HOA) or Property Owners Association (POA)?

☒ Y ☐ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9, **see Appendix 9 for additional instructions.** Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Section K: Acronyms, Abbreviations and Definitions

Regional MS4 Permit	Order No. R9-2013-0001 as amended by Order No. R9-2015-0001 and Order No. R9-2015-0100 an NPDES Permit issued by the San Diego Regional Water Quality Control Board.
Applicant	Public or private entity seeking the discretionary approval of new or replaced improvements from the Copermittee with jurisdiction over the project site. The Applicant has overall responsibility for the implementation and the approval of a Priority Development Project. The WQMP uses consistently the term "user" to refer to the applicant such as developer or project proponent. The WQMP employs also the designation "user" to identify the Registered Professional Civil Engineer responsible for submitting the Project-Specific WQMP, and designing the required BMPs.
Best Management Practice (BMP)	Defined in 40 CFR 122.2 as schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. In the case of municipal storm water permits, BMPs are typically used in place of numeric effluent limits.
BMP Fact Sheets	BMP Fact Sheets are available in the LID BMP Design Handbook. Individual BMP Fact Sheets include sitting considerations, and design and sizing guidelines for seven types of structural BMPs (infiltration basin, infiltration trench, permeable pavement, harvest-and-use, bioretention, extended detention basin, and sand filter).
California Stormwater Quality Association (CASQA)	Publisher of the California Stormwater Best Management Practices Handbooks, available at www.cabmphandbooks.com.
Conventional Treatment Control BMP	A type of BMP that provides treatment of stormwater runoff. Conventional treatment control BMPs, while designed to treat particular Pollutants, typically do not provide the same level of volume reduction as LID BMPs, and commonly require more specialized maintenance than LID BMPs. As such, the Regional MS4 Permit and this WQMP require the use of LID BMPs wherever feasible, before Conventional Treatment BMPs can be considered or implemented.
Copermittees	The Regional MS4 Permit identifies the Cities of Murrieta, Temecula, and Wildomar, the County, and the District, as Copermittees for the SMR.
County	The abbreviation refers to the County of Riverside in this document.

CEQA	California Environmental Quality Act - a statute that requires state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.
CIMIS	California Irrigation Management Information System - an integrated network of 118 automated active weather stations all over California managed by the California Department of Water Resources.
CWA	Clean Water Act - is the primary federal law governing water pollution. Passed in 1972, the CWA established the goals of eliminating releases of high amounts of toxic substances into water, eliminating additional water pollution by 1985, and ensuring that surface waters would meet standards necessary for human sports and recreation by 1983. CWA Section 402(p) is the federal statute requiring NPDES permits for discharges from MS4s.
CWA Section 303(d) Waterbody	Impaired water in which water quality does not meet applicable water quality standards and/or is not expected to meet water quality standards, even after the application of technology based pollution controls required by the CWA. The discharge of urban runoff to these water bodies by the Copermittees is significant because these discharges can cause or contribute to violations of applicable water quality standards.
Design Storm	The Regional MS4 Permit has established the 85th percentile, 24-hour storm event as the "Design Storm". The applicant may refer to Exhibit A to identify the applicable Design Storm Depth (D85) to the project.
DCV	Design Capture Volume (DCV) is the volume of runoff produced from the Design Storm to be mitigated through LID Retention BMPs, Other LID BMPs and Volume Based Conventional Treatment BMPs, as appropriate.
Design Flow Rate	The design flow rate represents the minimum flow rate capacity that flow-based conventional treatment control BMPs should treat to the MEP, when considered.
DCIA	Directly Connected Impervious Areas - those impervious areas that are hydraulically connected to the MS4 (i.e. street curbs, catch basins, storm drains, etc.) and thence to the structural BMP without flowing over pervious areas.
Discretionary Approval	A decision in which a Copermittee uses its judgment in deciding whether and how to carry out or approve a project.
District	Riverside County Flood Control and Water Conservation District.
DMA	A Drainage Management Area - a delineated portion of a project site that is hydraulically connected to a common structural BMP or conveyance point. The Applicant may refer to Section 3.3 for further guidelines on how to delineate DMAs.

Drawdown Time	Refers to the amount of time the design volume takes to pass through the BMP. The specified or incorporated drawdown times are to ensure that adequate contact or detention time has occurred for treatment, while not creating vector or other nuisance issues. It is important to abide by the drawdown time requirements stated in the fact sheet for each specific BMP.
Effective Area	Area which 1) is suitable for a BMP (for example, if infiltration is potentially feasible for the site based on infeasibility criteria, infiltration must be allowed over this area) and 2) receives runoff from impervious areas.
ESA	An Environmental Sensitive Area (ESA) designates an area "in which plants or animals life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which would be easily disturbed or degraded by human activities and developments". (Reference: California Public Resources Code § 30107.5).
ET	Evapotranspiration (ET) is the loss of water to the atmosphere by the combined processes of evaporation (from soil and plant surfaces) and transpiration (from plant tissues). It is also an indicator of how much water crops, lawn, garden, and trees need for healthy growth and productivity
FAR	The Floor Area Ratio (FAR) is the total square feet of a building divided by the total square feet of the lot the building is located on.
Flow-Based BMP	Flow-based BMPs are conventional treatment control BMPs that are sized to treat the design flow rate.
FPPP	Facility Pollution Prevention Plan
HCOC	Hydrologic Condition of Concern - Exists when the alteration of a site's hydrologic regime caused by development would cause significant impacts on downstream channels and aquatic habitats, alone or in conjunction with impacts of other projects.
HMP	Hydromodification Management Plan – Plan defining Performance Standards for PDPs to manage increases in runoff discharge rates and durations.
Hydrologic Control BMP	BMP to mitigate the increases in runoff discharge rates and durations and meet the Performance Standards set forth in the HMP.
HSG	Hydrologic Soil Groups – soil classification to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSGs are A (very low runoff potential/high infiltration rate), B, C, and D (high runoff potential/very low infiltration rate)
Hydromodification	The Regional MS4 Permit identifies that increased volume, velocity, frequency and discharge duration of storm water runoff from developed areas has the potential to greatly accelerate downstream erosion, impair stream habitat in natural drainages, and negatively impact beneficial uses.

JRMP	A separate Jurisdictional Runoff Management Plan (JRMP) has been developed by each Copermittee and identifies the local programs and activities that the Copermittee is implementing to meet the Regional MS4 Permit requirements.
LID	Low Impact Development (LID) is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques. LID site design BMPs help preserve and restore the natural hydrologic cycle of the site, allowing for filtration and infiltration which can greatly reduce the volume, peak flow rate, velocity, and pollutant loads of storm water runoff.
LID BMP	A type of stormwater BMP that is based upon Low Impact Development concepts. LID BMPs not only provide highly effective treatment of stormwater runoff, but also yield potentially significant reductions in runoff volume – helping to mimic the pre-project hydrologic regime, and also require less ongoing maintenance than Treatment Control BMPs. The applicant may refer to Chapter 2.
LID BMP Design Handbook	The LID BMP Design Handbook was developed by the Copermittees to provide guidance for the planning, design and maintenance of LID BMPs which may be used to mitigate the water quality impacts of PDPs within the County.
LID Bioretention BMP	LID Bioretention BMPs are bioretention areas are vegetated (i.e., landscaped) shallow depressions that provide storage, infiltration, and evapotranspiration, and provide for pollutant removal (e.g., filtration, adsorption, nutrient uptake) by filtering stormwater through the vegetation and soils. In bioretention areas, pore spaces and organic material in the soils help to retain water in the form of soil moisture and to promote the adsorption of pollutants (e.g., dissolved metals and petroleum hydrocarbons) into the soil matrix. Plants use soil moisture and promote the drying of the soil through transpiration. The Regional MS4 Permit defines "retain" as to keep or hold in a particular place, condition, or position without discharge to surface waters.
LID Biofiltration BMP	BMPs that reduce stormwater pollutant discharges by intercepting rainfall on vegetative canopy, and through incidental infiltration and/or evapotranspiration, and filtration, and other biological and chemical processes. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants, and collected through an underdrain.
LID Harvest and Reuse BMP	BMPs used to facilitate capturing Stormwater Runoff for later use without negatively impacting downstream water rights or other Beneficial Uses.

LID Infiltration BMP	BMPs to reduce stormwater runoff by capturing and infiltrating the runoff into in-situ soils or amended onsite soils. Typical LID Infiltration BMPs include infiltration basins, infiltration trenches and pervious pavements.
LID Retention BMP	BMPs to ensure full onsite retention without runoff of the DCV such as infiltration basins, bioretention, chambers, trenches, permeable pavement and pavers, harvest and reuse.
LID Principles	Site design concepts that prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
MEP	Maximum Extent Practicable - standard established by the 1987 amendments to the CWA for the reduction of Pollutant discharges from MS4s. Refer to Attachment C of the Regional MS4 Permit for a complete definition of MEP.
MF	Multi-family – zoning classification for parcels having 2 or more living residential units.
MS4	Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or designated and approved management agency under section 208 of the CWA that discharges to waters of the United States; (ii) Designated or used for collecting or conveying storm water; (iii) Which is not a combined sewer; (iv) Which is not part of the Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.26.
New Development Project	Defined by the Regional MS4 Permit as 'Priority Development Projects' if the project, or a component of the project meets the categories and thresholds described in Section 1.1.1.
NPDES	National Pollution Discharge Elimination System - Federal program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits, and imposing and enforcing pretreatment requirements, under Sections 307, 318, 402, and 405 of the CWA.
NRCS	Natural Resources Conservation Service
PDP	Priority Development Project - Includes New Development and Redevelopment project categories listed in Provision E.3.b of the Regional MS4 Permit.

Priority Pollutants of Concern	Pollutants expected to be present on the project site and for which a downstream water body is also listed as Impaired under the CWA Section 303(d) list or by a TMDL.
Project-Specific WQMP	A plan specifying and documenting permanent LID Principles and Stormwater BMPs to control post-construction Pollutants and stormwater runoff for the life of the PDP, and the plans for operation and maintenance of those BMPs for the life of the project.
Receiving Waters	Waters of the United States.
Redevelopment Project	The creation, addition, and or replacement of impervious surface on an already developed site. Examples include the expansion of a building footprint, road widening, the addition to or replacement of a structure, and creation or addition of impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Redevelopment does not include trenching and resurfacing associated with utility work; resurfacing existing roadways; new sidewalk construction, pedestrian ramps, or bike lane on existing roads; and routine replacement of damaged pavement, such as pothole repair. Project that meets the criteria described in Section 1.
Runoff Fund	Runoff Funds have not been established by the Copermittees and are not available to the Applicant. If established, a Runoff Fund will develop regional mitigation projects where PDPs will be able to buy mitigation credits if it is determined that implementing onsite controls is infeasible.
San Diego Regional Board	San Diego Regional Water Quality Control Board - The term "Regional Board", as defined in Water Code section 13050(b), is intended to refer to the California Regional Water Quality Control Board for the San Diego Region as specified in Water Code Section 13200. State agency responsible for managing and regulating water quality in the SMR.
SCCWRP	Southern California Coastal Water Research Project
Site Design BMP	Site design BMPs prevent or minimize the causes (or drivers) of post-construction impacts, and help mimic the pre-development hydrologic regime.
SF	Parcels with a zoning classification for a single residential unit.
SMC	Southern California Stormwater Monitoring Coalition
SMR	The Santa Margarita Region (SMR) represents the portion of the Santa Margarita Watershed that is included within the County of Riverside.

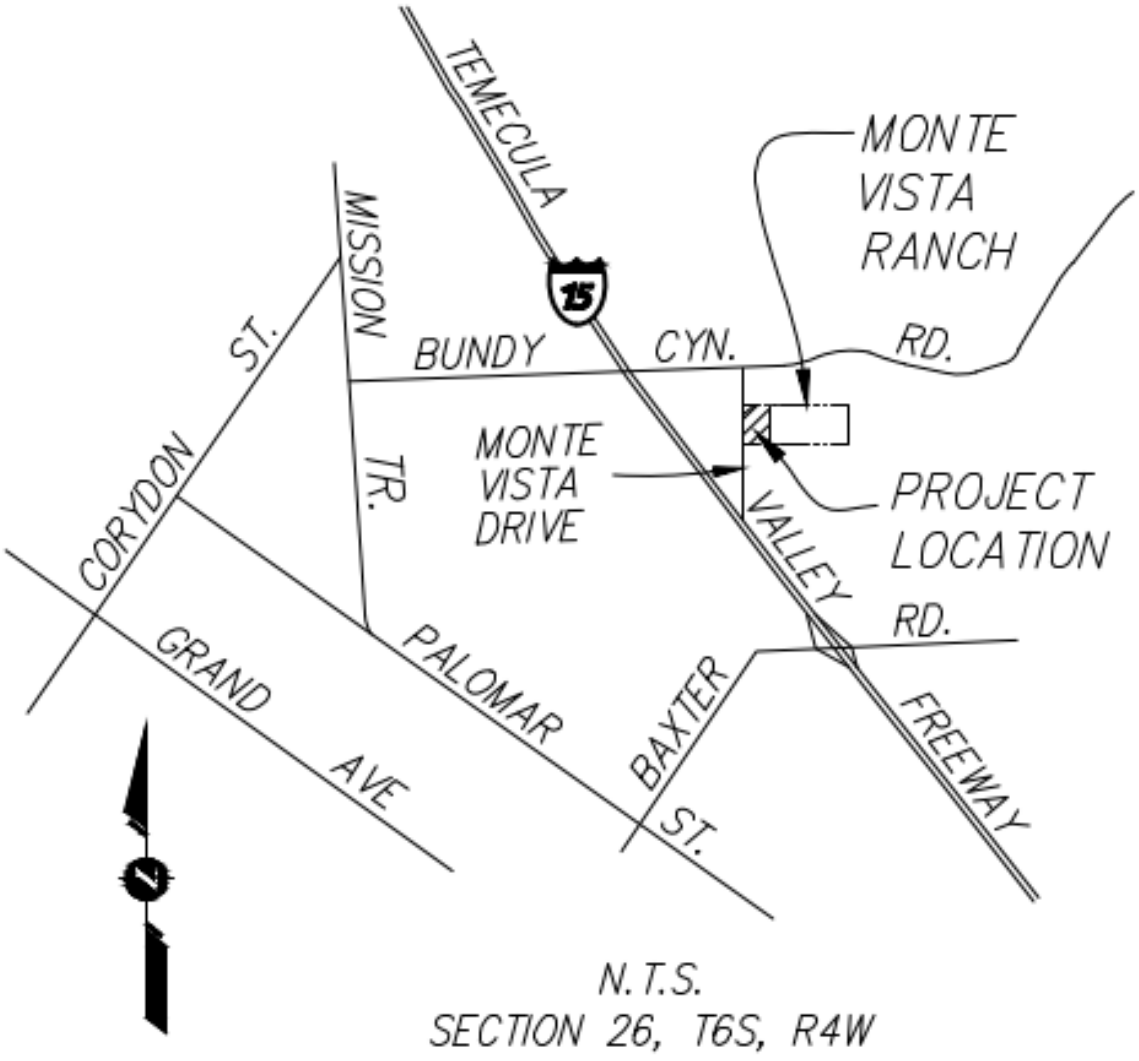
Source Control BMP	Source Control BMPs land use or site planning practices, or structural or nonstructural measures that aim to prevent runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between Pollutants and runoff.
Structural BMP	Structures designed to remove pollutants from stormwater runoff and mitigate hydromodification impacts.
SWPPP	Storm Water Pollution Prevention Plan
Tentative Tract Map	Tentative Tract Maps are required for all subdivision creating five (5) or more parcels, five (5) or more condominiums as defined in Section 783 of the California Civil Code, a community apartment project containing five (5) or more parcels, or for the conversion of a dwelling to a stock cooperative containing five (5) or more dwelling units.
TMDL	Total Maximum Daily Load - the maximum amount of a Pollutant that can be discharged into a waterbody from all sources (point and non-point) and still maintain Water Quality Standards. Under CWA Section 303(d), TMDLs must be developed for all waterbodies that do not meet Water Quality Standards after application of technology-based controls.
USEPA	United States Environmental Protection Agency
Volume-Based BMP	Volume-Based BMPs applies to BMPs where the primary mode of pollutant removal depends upon the volumetric capacity such as detention, retention, and infiltration systems.
WQMP	Water Quality Management Plan
Wet Season	The Regional MS4 Permit defines the wet season from October 1 through April 30.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

Complete the checklist below to verify all exhibits and components are included in the Project-Specific WQMP. Refer Section 4 of the SMR WQMP and Section D of this Template.

Map and Site Plan Checklist
Indicate all Maps and Site Plans are included in your Project-Specific WQMP by checking the boxes below.
☒ Vicinity and Location Map
☒ Existing Site Map (unless exiting conditions are included in WQMP Site Plan)
☒ WQMP Site Plan
☒ Parcel Boundary and Project Footprint
☒ Existing and Proposed Topography & Drainage Management Areas (DMAs)
☒ Proposed Structural Best Management Practices (BMPs), with cross sections
☒ Drainage Paths
☒ Drainage infrastructure, inlets, overflows
☒ Source Control & Site Design BMPs (notes can be used for BMPs that can't be depicted)
☐ Buildings, Roof Lines, Downspouts
☐ Impervious Surfaces
☐ Pervious Surfaces (i.e. Landscaping)
☒ Standardized Labeling
☒ Use Riverside County Flood Control CB-110 for outlet structure with block outs for a trash screen out the outside, and an orifice/weir plate(s) on the inside of the structure or other design that is as easy to maintain. The screen should be as large as possible to minimize clogging.
☐ If BMPs are in the road R/W (only with CFD/CSA maintenance or LID Principals) add "BMP" paddle markers at the start and end of each BMPs and LID principals
☐ When underdrain are proposed, gravel shall be clean washed gravel, AASHTO #57 stone preferred. Underdrains shall be Schedule 40 PVC, with a minimum slope of 0.005, with cleanouts equal in diameter of the subdrain that extends 6 inches above the media with a lockable screw cap, spaced every 50 feet, at the collector drain line connection, and at any bends.
☐ When BSM is proposed, BSM shall consist of 60-80% clean sand, up to 20% clean topsoil, and 20% of a nutrient-stabilized organic amendment. BSM shall be placed on top of 3-inches of Choker Sand placed on top of 3-inches of ASTM No. 8 stone (1/4 to 1/2-inch pea gravel), and placed on top of 12 to 24-inches of a clean, open-graded drain rock layer.
☐ For Tracts, the Regional Board requires fully functioning WQMP BMPs for opening model home complexes, sales offices, or use of roads (i.e. prior to occupancy or intended use of any portion of the project). The County encourages phasing post-construction BMPs, small structural BMPs (e.g. specifically for sales offices), or self-retaining areas. This phasing can be shown on the WQMP site map and sequencing shall be included on the Grading plans, so that a fully functioning WQMP BMP is addressing any portion of the project that has been granted occupancy or granted the intended use.



Vicinity Map



Aerial Map – Current Condition



BMPs LEGEND:

DMA Area A

BMP-A, BIOFILTRATION MODULAR WETLANDS
SEE SHEET 2 FOR DETAILS

OTHER PROJECT BMPs LIST:

CATCH BASIN – MS4 STENCILING AND SIGNAGE
LANDSCAPE AND IRRIGATION SYSTEM
OPEN SPACE, REFUSE AREAS
STREET TREES AND PARKWAY

LID PRACTICES TO BE IMPLEMENTED FOR THIS PROJECT:
- CONSERVATION DESIGN
- RUNOFF CONVEYANCE
- ROOF DOWNSPOUT DISCONNECTION
- EFFICIENT / LOW IMPACT LANDSCAPING
- NON STORMWATER DISCHARGES

County Project Specific Water Quality Management Plan

Project Title:	**Monte Vista Ranch II**
Development No:	**Tentative Tract Map No. 38155**
Design Review/Case No:	PA 21-0045
BMP (Latitude, Longitude):	33°37'20.03" N, 117°15'56.50" W

K&A Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92878
TEL. (951) 279-1800
FAX (951) 279-4380

OWNER
PACIFIC COVE INVESTMENT, LLC
1200 QUAIL STREET, SUITE 200
NEWPORT BEACH, CA 92660
PHONE: (714)318-3500
PROJECT MANAGER: ERIK LUNDE

ENGINEER
K & A ENGINEERING, INC.
357 N. SHERIDAN STREET, SUITE 117
CORONA, CA 92880
PHONE: (951) 279-1800
PROJECT MANAGER: AMIR FALLAHI, P.E.

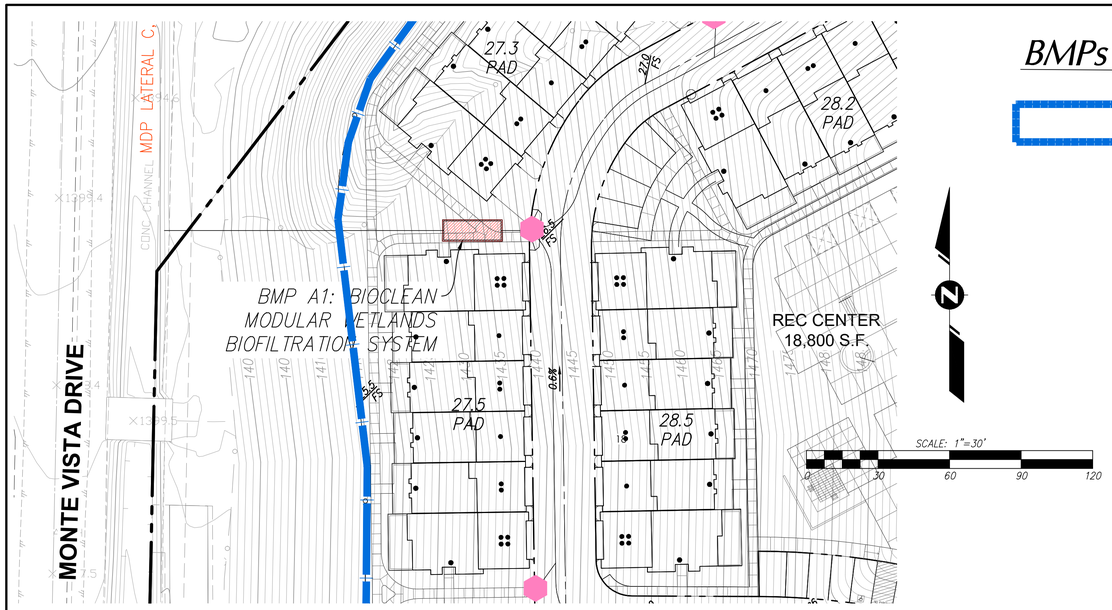
CITY OF WILDOMAR

MONTE VISTA RANCH II - TTM 38155

BMP SITE PLAN

Drawn By:
Checked By:
Scale: AS SHOWN

Drawing: C:\K&A projects\453 915 MV ranch 2\915 - BMP SITE PLAN-Jun 2021.dwg Layout: 24x36 L Saved: 6/15/2021 9:02 AM Plotted: 6/15/2021 9:25 AM By: JY

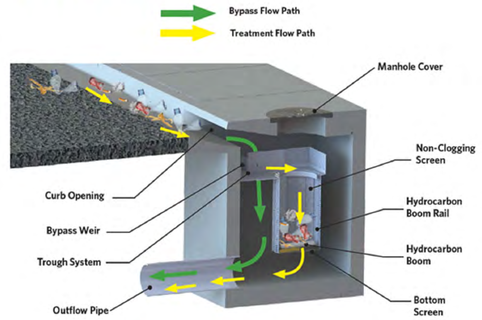


BMPs LEGEND:

DMA Area A

BMP–A, BIOFILTRATION MODULAR WETLANDS
SEE SHEET 2 FOR DETAILS

OPERATION



APPLICATIONS

- Parking Lots
- Roadways

SPECIFICATIONS

MODEL #	TREATMENT FLOW CAPACITY (cfs)	BYPASS FLOW (cfs)
BIO-CURB-FULL	2.85	UNLIMITED

Note: Treatment flow rate limited to the weir capacity - actual flow rates of the filter basket is greater than 2.85 cfs.
Various depth filter baskets available.

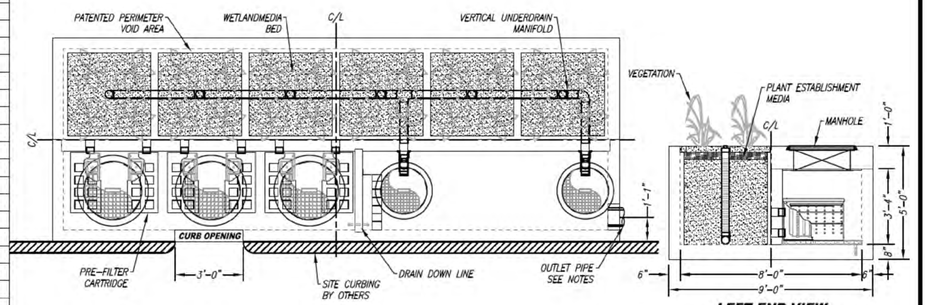
PROPOSED PRE-TREATMENT BMP - CB INSERT

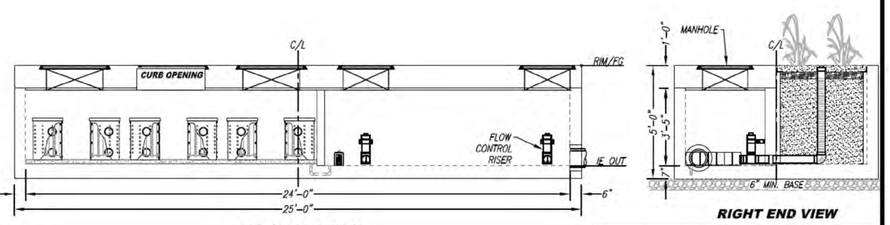
Bio Clean
A Forterra Company

Modular Wetlands® Linear
A Stormwater Biofiltration Solution

PROPOSED BIOFILTRATION MODULAR WETLANDS

SITE SPECIFIC DATA			
PROJECT NUMBER			
ORDER NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	3 EA ø30"	N/A	2 EA ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION.			





TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERIAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262, 7,615,156, 8,satisfied, 8,292,518, 8,satisfied, PATENTS PENDING

PROPRIETARY AND CONFIDENTIAL:
THE INFORMATION CONTAINED IN THIS DOCUMENT IS THE SOLE PROPERTY OF FORTERRA AND ITS COMPANIES. THIS DOCUMENT, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITH OUT THE WRITTEN CONSENT OF FORTERRA.

MWS-L-8-24-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Santa Margarita Watershed BMP Design Flow Rate, Q_{BMP} (Rev. 03-2012)	Legend:	Required Entrie Calculated Cell

Company Name K&A Engineering, Inc. Date 6/11/2021
Designed by JY County/City Case No
Company Project Number/Name Monte Vista Ranch 2
Drainage Area Number/Name Area A – 5.13 Ac

Enter the Area Tributary to this Feature A_T = 5.13 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover (use pull down menu): Mixed Surface Types

Effective Impervious Fraction I_f = 0.80

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.60

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ Q_{BMP} = 0.6 ft^3/s

Notes:

K&A Engineering, Inc.
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OWNER
PACIFIC COVE INVESTMENT, LLC
1200 QUAIL STREET, SUITE 200
NEWPORT BEACH, CA 92660
PHONE: (714)318-3500
PROJECT MANAGER: ERIK LUNDE

ENGINEER
K & A ENGINEERING, INC.
357 N. SHERIDAN STREET, SUITE 117
CORONA, CA 92880
PHONE: (951) 279-1800
PROJECT MANAGER: AMIR FALLAHI, P.E.

CITY OF WILDOMAR

MONTE VISTA RANCH II - TTM 38155

BMP SITE PLAN

Drawn By:
Checked By:
Scale: AS SHOWN

Drawing: C:\K&A projects\453 915 MV ranch 2\915 – BMP SITE PLAN-Jun 2021.dwg Layout: 24x36 L Saved: 6/15/2021 9:02 AM Plotted: 6/15/2021 9:26 AM By: JY

Appendix 2: Construction Plans

*The latest set of Grading, Drainage Plans, and Street Improvement plans **shall be included***

Bioretention/Biofiltration BMPs construction notes (Santa Margarita Region only). For Bioretention and Biofiltration facilities, the **following construction notes shall be shown on the Grading and/or Drainage plans:**

1. *The Engineer shall furnish to the County a copy of the source testing and a signed certification that the fully blended Bioretention/Biofiltration Soil Media (BSM) material meets all of the WQMP requirements before material is imported or if the material is mixed onsite prior to installation.*
2. *As BSM material is being installed, Quality Assurance (QA) tests shall be conducted or for every 1,200 tons or 800 cubic yards mixed on-site from a completely mixed stockpile or windrow, with a minimum of three tests. For imported material from a supplier with a quality control program the QA tests shall be conducted 2,400 tons or 1,600 cubic yards from the supplier.*
3. *The Engineer conducting the Quality Control testing shall furnish to the County copy of the QA testing and a certification that the BSM for the project meets all of the following requirements. Certified mitigation plans can be used for exceedances, as long as all requirements are designed to be met.*
    a. *BSM shall not be compacted. BSM shall consist of 60-80% clean sand, up to 20% clean topsoil, and 20% of a nutrient-stabilized organic amendment. The initial infiltration rate shall be greater than 8 inches per hour per laboratory test.*
    b. *pH: 6.0 – 8.5; Salinity: 0.5 to 3.0 mmho/cm as electrical conductivity; Sodium absorption ratio: < 6.0; Chloride: < 800 ppm in saturated extract; Cation Exchange Capacity (CEC): > 10 meq/100 g; Organic Matter: 2 to 5-percent on a dry weight basis; Carbon: Nitrogen Ratio: 12 to 40, preferably 15 to 40; Gravel larger than 2mm: 0 to 25-percent of the total sample; Clay smaller than 0.005mm: 0 to 5 percent of the non-gravel fraction.*
    c. *BSM shall be tested to limit the leaching of potential inherent pollutants. BSM used in Biofiltration BMPs shall conform to the following limits for pollutant concentrations in saturated extract: Phosphorus: < 1 mg/L; Nitrate < 3 mg/L, Copper < 0.025 mg/L. These pollutant limits are for the amount that is leached from the sample, not from the soil sample itself. Testing may be performed after laboratory rinsing of media with up to 15 pore volumes of water. Equivalent test results will be accepted if certified by a laboratory or appropriate testing facility.*
    d. *Low nutrient compost used in BSM shall be sourced from a facility permitted through CalRecycle, preferably through USCC STA program. Compost shall conform to the following requirements: Physical contaminants <1% by dry weight; Carbon:Nitrogen ratio: 12:1 to 40:1; Maturity/Stability shall conform to either: Solvita Maturity Index: ≥ 5.5, CO2 Evolution: < 2.5 mg CO2-C per g compost organic matter per day, or < 5 mg CO2-C per g compost C per day; Select Pathogens and Trace metals shall pass US EPA Class A Standard. Testing shall be no more than 6 months old and representative of current stockpiles.*
    e. *Coconut coir pith used in BSM shall be thoroughly rinsed with freshwater and screened to remove coarse fibers as part of production and aged > 6 months. Peat used in BSM shall be sphagnum peat.*

Please notify the County if additional sources and laboratories can be added to this list. The Potential Sources and Laboratories are not part of the construction note - **Potential BSM sources may include**: Gail Materials (Temescal Valley), Agriservice (Oceanside), and Greatsoils (Escondido). Earthworks (Riverside); **Potential Laboratories may include**: Fruit Growers Laboratory, Inc. (Santa Paula, http://www.fglinc.com/) Wallace Laboratories (El Segundo, http://us.wlabs.com/). Control Labs (Watsonville, http://www.controllabs.com) and A&L Western Laboratories (Modesto, http://www.al-labs-west.com/).

Appendix 3: Soils Information

Geotechnical Study, Other Infiltration Testing Data, and/or Other Documentation

Examples of material to provide in Appendix 3 may include but are not limited to the following:

- Geotechnical Study/Report prepared for the project,
- Additional soils testing data (if not included in the Geotechnical Study),
- Exhibits/Maps/Other Documentation of the Hydrologic Soils Groups (HSG)s at the project site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections A and D of this Template.

The County will accept explicit recommendations from the Geotechnical Engineer, such as specifying a design infiltration rate (unfactored) when infiltration rates vary, recommendations for impermeable liners due to concerns about seepage in fill areas/near gas tanks, or other site specific recommendations based on physical conditions.

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

February 24, 2016
J.N.: 1338.01

Mr. Eric Lunde
Pacific Coves Investments, LLC
1200 Quail Street, Suite 220
Newport Beach, California 92660

Subject: **Updated 40-Scale Rough Grading Plan Review, Tract No. 32024 (Monte Vista Ranch Property), Riverside County, California.**

Dear Mr. Lunde:

At your request, *Albus-Keefe & Associates, Inc*. has completed an updated grading plan review for the subject development. This firm initially completed a grading plan review report for the site in 2007. The report was submitted to County of Riverside (the reviewing agency at the time) and provided specific recommendation for site development based the building codes at that time and on an earlier version of the grading plans. Subsequent responses to review comments by the County of Riverside were also prepared (see references). This correspondence addresses the changes made to the previous grading plans and addresses any revisions to our previous recommendations. We have also updated our design recommendations based on the most current building code requirements.

REVIEW OF GRADING PLAN

We have reviewed the updated grading plan prepared by K & A Engineering, Inc., plot dated February 4, 2016. Sheets 5 through 7 of the plans are attached herein as Plates 1 through 3. Based on our review, the proposed grading modifications are generally very similar to the grading depicted on the previous plan used in our referenced Grading Plan Review dated June 7, 2007. However, within the western portion of the site where a super pad was initially proposed, the proposed grading has been significantly revised. The proposed grading now shows a much smaller pad with 3:1 (H:V) graded fill and cut slopes descending from all four sides of the pad. The proposed maximum height of the 3:1 (H:V) slopes is 93 feet. We understand that this area is to be used as a temporary balance site during site construction and has no specified future use. Earlier plans also indicated proposed widening of the eastern shoulder of Monte Vista Street and relocation of an existing concrete-lined storm drain channel located on the east side of Monte Vista Street. The street improvements and storm drain modifications at Monte Vista Street have been eliminated on the current grading plans.

EXISTING SITE CONDITIONS

We recently visited the site on February 19, 2016 to compare existing site conditions with those conditions described in our previous reports for the subject site. Other than the presence of some additional debris piles and dirt access roads, the conditions of the site are relatively similar to the conditions described in our referenced reports.

ANALYSES

SLOPE STABILITY

At the time of our previous report, the maximum heights of proposed fill slopes were 30 feet. Stability analyses were performed to evaluate the gross stability of the proposed 3:1 (H:V) fill slope up to 93 feet in maximum height. As a conservative approach, the analyses were performed for a 95 feet high fill slope using the computer program Slope/W. Based on result of analyses, the proposed slopes are anticipated to be grossly stable under static and pseudo-static conditions. Details of the analysis are provided in Appendix A. Selection of shear strength parameters used in the analyses was based on results of direct shear tests and previous experience with similar materials. A summary of the values utilized is provided in Table A-1 in Appendix A. A summary of the calculated factors of safety is provided in Table A-2 in Appendix A and plots of the analyses are presented on Plates A-1 and A-2 in Appendix A.

CONCLUSIONS

Based on our review of the updated grading plans, our recent site visit and results of our analyses, the conclusions and recommendations presented in our previous grading plan review report dated June 7, 2007, remain applicable except as modified in the next section. We have revised our Geologic Map, Plates 1 through 3 from our report dated June 7, 2007, and have attached them herein.

UPDATED RECOMMENDATIONS

SEISMIC DESIGN PARAMETERS

In our previous report we recommended to design the project in accordance with the 2001 C.B.C., seismic design factors as defined by Chapter 16. As such, the seismic design parameters provided in Section 5.4 of our June 7, 2007 report should be updated as indicated below:

For design of the project in accordance with Chapter 16 of the 2013 CBC, the following table presents the seismic design factors:

2013 CBC Seismic Design Parameters

Parameter	Value
Site Class	D
Mapped MCE_R Spectral Response Acceleration, short periods, S_S	2.285
Mapped MCE_R Spectral Response Acceleration, at 1-sec. period, S_1	0.918
Site Coefficient, Fa	1.0
Site Coefficient, Fv	1.5
Adjusted MCE_R Spectral Response Acceleration, short periods, S_{MS}	2.285
Adjusted MCE_R Spectral Response Acceleration, at 1-sec. period, S_{M1}	1.376
Design Spectral Response Acceleration, short periods, S_{DS}	1.523
Design Spectral Response Acceleration, at 1-sec. period, S_{D1}	0.918

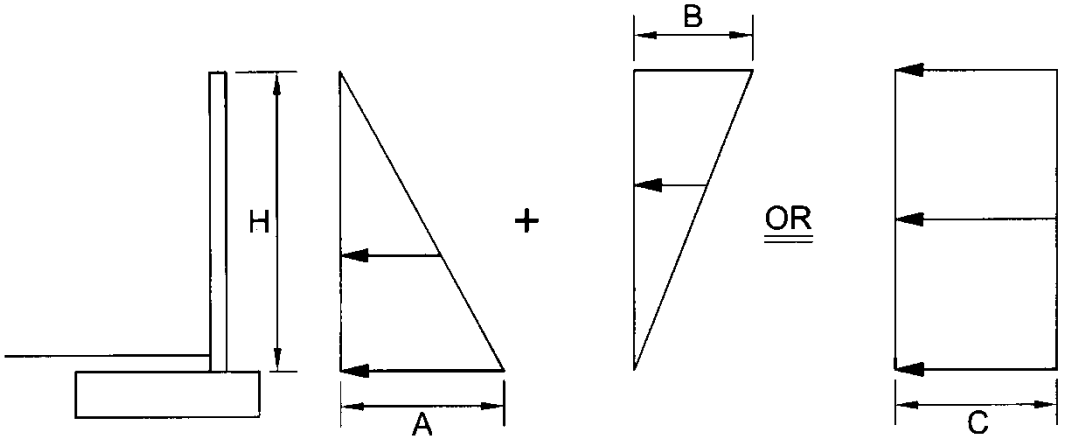
MCE_R = Risk-Targeted Maximum Considered Earthquake

RETAINING WALL EARTH PRESSURES

Retaining wall design parameters presented in our earlier report were based on the 2001 California Building Code (CBC). As such, the retaining wall earth pressure parameters provided in Section 5.6 of our June 7, 2007 report should be updated as indicated below:

Retaining walls supporting more than 6 feet of soils should be designed for both of static and seismic earth pressures. Retaining walls supporting less than 6 feet of soils may be designed for static earth pressure only. Static and seismic earth pressures for level and 2:1 (H:V) backfill conditions are provided in the following table. Seismic earth pressures provided herein are based on the method provided by Seed & Whitman (1970) using peak ground acceleration of 0.6g which corresponds to a seismic event with 10% probability of exceedance in 50 years. The values provided in the following table do not consider hydrostatic pressure. Retaining walls should also be designed to support adjacent surcharge loads imposed by other nearby footings or traffic loads in addition to the earth pressure.

SEISMIC EARTH PRESSURES
Pressure Diagram



Active Pressure Values

Value	Level Backfill	2:1 Backfill
A	26.0H	35.5H
B	19.0H	19.0H
C	33.0H	52.0H

Notes:
H is in feet and resulting pressure is in psf. Design may utilize either the sum of the static component and the seismic component force diagrams or the total force diagram above. SEAOSC has suggested using a load factor of 1.7 for the static component and 1.0 for the seismic component. The actual load factors should be determined by the structural engineer.

CONCRETE MIX DESIGN

In our previous report we recommended that the procedures provided in C.B.C. Section 1904.3 and Table 19A-A-4, 1997 Edition, for concrete exposed to sulfate-containing solutions be followed for Negligible Sulfate Exposure. As such, Section 5.8 of our June 7, 2007 report should be updated as indicated below:

Laboratory testing of on-site soils indicates soluble sulfate content less than 0.1%. We recommend following the procedures provided in ACI 318, Section 4.3, Table 4.3.1 for **negligible** sulfate exposure. Upon completion of rough grading, an evaluation of as-graded conditions and further laboratory testing should be completed for the site to confirm or modify the recommendations provided in this section.

CLOSING

We hope this correspondence provides the necessary information at this time. If there are any questions regarding the contents discussed herein, please do not hesitate to call.

Sincerely yours,

ALBUS-KEEFE & ASSOCIATES, INC.

Michael O. Spira
Principal Engineering Geologist
C.E.G. 1976

Andrew J Atry
Project Engineer
P.E. C 84728



Attachments:
- References
- Plates 1 through 3 - Geologic Map
- Appendix A - Stability Analyses
  - Table A-1 – Summary of Shear Strengths
  - Table A-2 – Summary of Stability Analyses
  - Plates A-1 and A-2– Plots of Stability Analyses

REFERENCES

Reports

Albus-Keefe & Associates (2007A), *Second Response to County of Riverside Department of Building And Safety Plan Check Review, Tract No. 32024, dated 6-14-2007, (BGR: 061137)*, dated August 1, 2007, (J.N. 1338.00).

Albus-Keefe & Associates (2007B), *Response to County of Riverside Department of Building And Safety Plan Check Review, Tract No. 32024, dated 12-13-2006, (BGR: 061137), (BGR: 061137)*, dated June 8, 2007, (J.N. 1338.00).

Albus-Keefe & Associates (2007B), *40-Scale Rough Grading Plan Review, Tract No. 32024 (Monte Vista Ranch Property), Riverside County, California (BGR: 061137)*, dated June 7, 2007, (J.N. 1338.00).

Albus-Keefe & Associates (2005), *Response to the County of Riverside, Planning Department, DRT Correction Letter dated May 31, 2005 and the Department of Building and Safety, Fault Hazard Report Review Letter dated May 13, 2005 (County Geologic Report No. 1464), Tentative Tract No. 32024, County of Riverside, California*, dated June 10, 2005, (J.N.: 1338.00)

Albus-Keefe & Associates (2004), *Geotechnical Feasibility Investigation, Tentative Tract No. 32024, Monte Vista Ranch Property, County of Riverside, California*, dated September 3, 2004, (J.N.: 1338.00).

Plans

K & A Engineering, Inc. (2016), *Rough Grading Plan, Tract No. 32024, Monte Vista Ranch, City of Wildomar, California*, plot dated February 4, 2016, scale: 1"= 40' (City Project #12-0059).



ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.01 | Date: 02/24/16 | Plate: 1

EXPLANATION

(LOCATIONS APPROXIMATE)

SURFICIAL UNITS:

- **Qaf** - Artificial Fill
- **Qal** - Alluvium/Colluvium (undifferentiated)

BEDROCK UNIT:

- **Qp** - Bedrock: Pauba Formation
- **Kgr** - Bedrock: Granitic Rock

LINES:

- - Geologic Contact (querried where uncertain)
- - Dike Contact
- **S-4** - Seismic Line (this investigation)
- - Existing Graded Slope
- - Tentative Subdrain Location

SYMBOLS:

- - Vertical Dike Attitude
- **46** - Joint Attitude
- - Verticle Joint Attitude
- **TP-23** - Exploratory Trench
- **FT-1** - Fault Trench
- **B-6** - Exploratory Boring
- **31** - Estimated Depth of Unsuitable Materials (in feet)

SCALE: 1"=40'
0 40 80 120 160

CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL SHEET 2
3. CONSTRUCT TERRACE DRAIN PER DETAIL SHEET 2
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL SHEET 2
7. CONSTRUCT 3" THICK AC OVER NATIVE
8. INSTALL PIPE SWING GATE PER R.C.F.C.W.C.D. STD DWG NO. MB20
11. RETAINING WALL PER SEPARATE PLAN

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE DIAL 811
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after city acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the city.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — FARRIS N. HADWAD — No. 65931 — CIVIL — STATE OF CALIFORNIA

K&A ENGINEERING LAND PLANNING SURVEYING
Engineering, Inc.
357 N. SHERIDAN STREET STE. 117
CORONA, CALIFORNIA 92880
TEL (951) 279-1800
FAX (951) 279-4380

PREPARED BY:
R.C.E. No. 65931

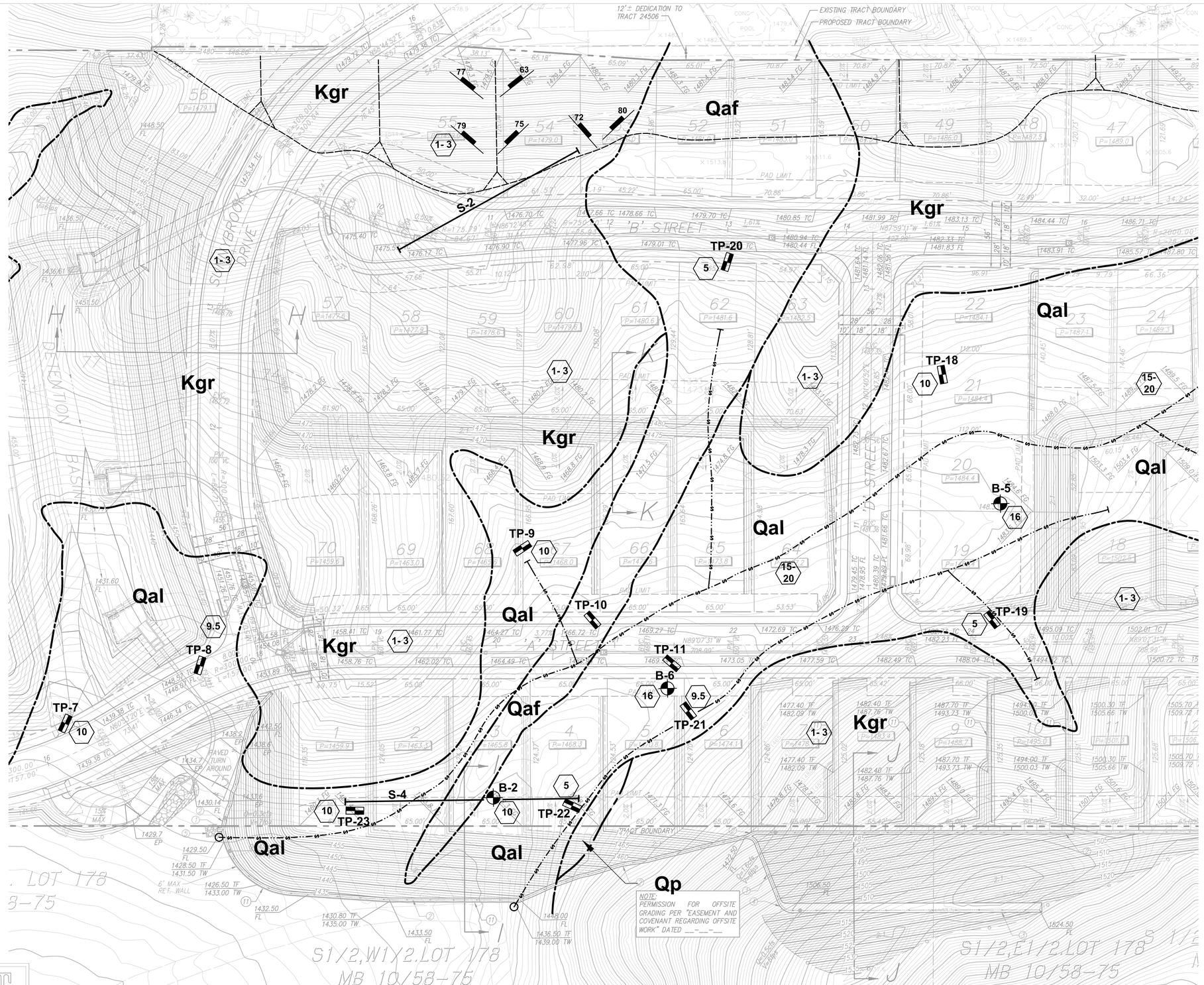
BENCHMARK:
RIVERSIDE COUNTY BM E-7-70
BRASS MONUMENT IN ELSINORE, LOCATED 352 FEET NORTH OF THE INTERSECTION OF ORANGE AND WALNUT.

SCALE:
H: As Noted V: As Noted

TRACT 32024 (CITY PROJECT # 12-0059)
CITY OF WILDOMAR
MONTE VISTA RANCH
ROUGH GRADING PLAN

SHEET No. 5 OF 7 SHTS

Drawing: T:\CAD Files\CAD\1300\1338.01 Monte Vista Ranch\Preconstruction\1338.01 GPR Plate 1.dwg Layout: Plate 1 Saved: 2/24/2016 11:51 AM Plotted: 2/24/2016 11:58 AM By: Ronda W. DeRuiter



CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL SHEET 2
2. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL SHEET 2
3. CONSTRUCT TERRACE DRAIN PER DETAIL SHEET 2
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL SHEET 2
5. CONSTRUCT RIP-RAP ENERGY DISSIPATER (1/4 TON GRADATION) PER DETAIL SHEET 2
6. CONSTRUCT SPLASH WALL PER DETAIL SHEET 2
11. RETAINING WALL PER SEPARATE PLAN

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.01	Date: 02/24/16	Plate: 2

(see Plate 1 for Explanation)

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE DIAL 811
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

The private engineer signing these plans is responsible for assuring the accuracy and acceptability of the design hereon. In the event of discrepancies arising after city acceptance or during construction, the private engineer shall be responsible for determining an acceptable solution and revising the plans for acceptance by the city.

MARK	BY	DATE	REVISIONS	APPR.	DATE
				ENGINEER	
				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

SEAL-ENGINEER:
REGISTERED PROFESSIONAL ENGINEER — ARNIS N. HADUNG — No. 65931 — CIVIL — STATE OF CALIFORNIA

K/A ENGINEERING LAND PLANNING SURVEYING
Engineering, Inc.
357 N. SHERIDAN STREET STE. 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

PREPARED BY:
R.C.E. No. 65931

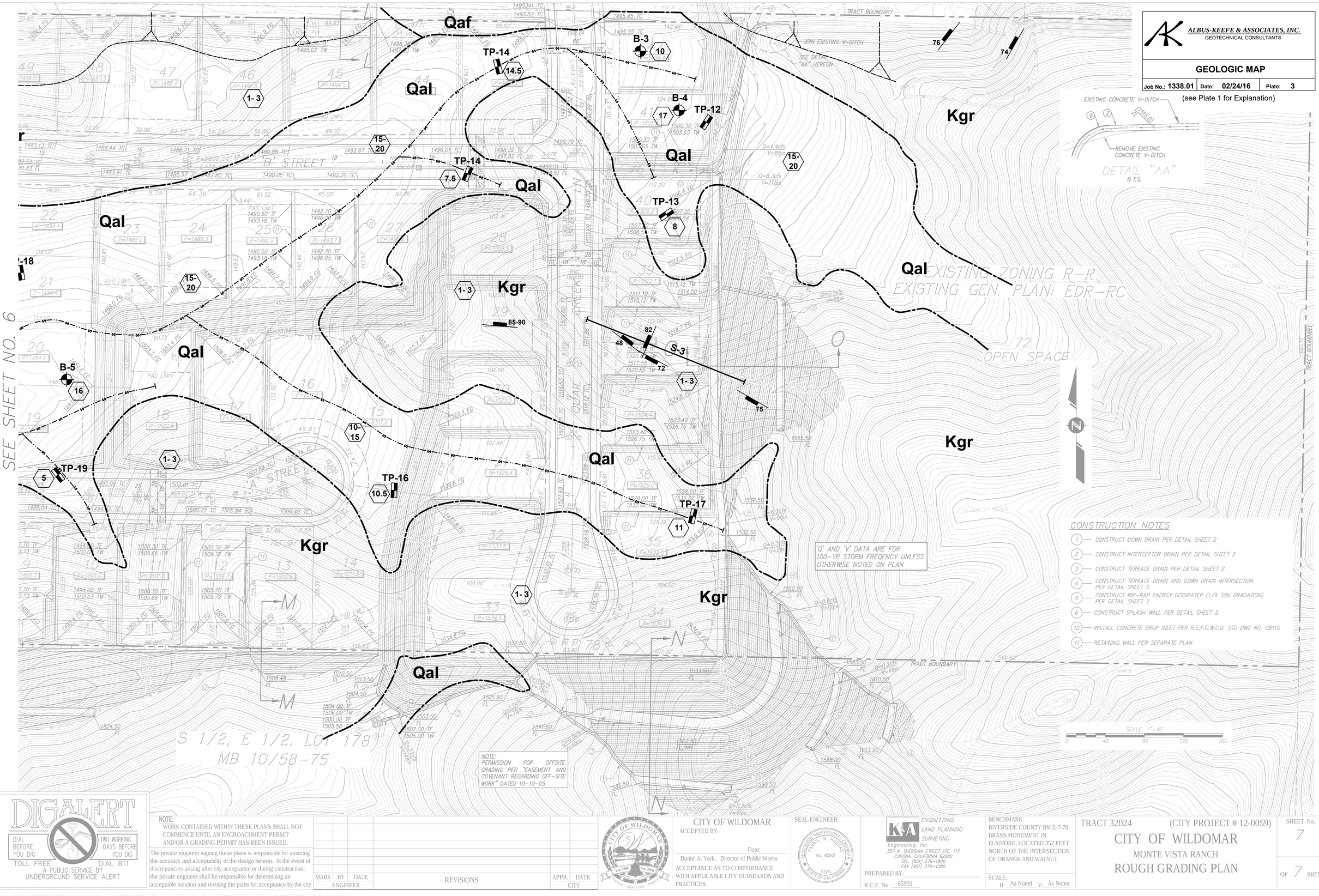
BENCHMARK:
RIVERSIDE COUNTY BM E-7-70 BRASS MONUMENT IN ELSINORE, LOCATED 352 FEET NORTH OF THE INTERSECTION OF ORANGE AND WALNUT.

SCALE:
H: As Noted V: As Noted

TRACT 32024 (CITY PROJECT # 12-0059)
CITY OF WILDOMAR
MONTE VISTA RANCH
ROUGH GRADING PLAN

SHEET No. 6
OF 7 SHTS

Drawing: T:\CAD Files\CAD\1300\1338.01 Monte Vista Ranch\Preconstruction\1338.01 GPR Plate 2.dwg Layout: Plate 2 Saved: 2/24/2016 11:16 AM Plotted: 2/24/2016 11:58 AM By: Ronald W. DeFuller



ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.01 | Date: 02/24/16 | Plate: 3

(see Plate 1 for Explanation)

CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL SHEET 2
2. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL SHEET 2
3. CONSTRUCT TERRACE DRAIN PER DETAIL SHEET 2
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL SHEET 2
5. CONSTRUCT RIP-RAP ENERGY DISSIPATER (1/4 TON GRADATION) PER DETAIL SHEET 2
6. CONSTRUCT SPLASH WALL PER DETAIL SHEET 2
10. INSTALL CONCRETE DROP INLET PER R.C.F.C.W.C.D. STD DWG NO. CB110
11. RETAINING WALL PER SEPARATE PLAN

DIGALERT
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MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

CITY OF WILDOMAR
ACCEPTED BY:
Date:
Daniel A. York, Director of Public Works
ACCEPTANCE AS TO CONFORMANCE WITH APPLICABLE CITY STANDARDS AND PRACTICES

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TRACT 32024 (CITY PROJECT # 12-0059)

CITY OF WILDOMAR

MONTE VISTA RANCH

ROUGH GRADING PLAN

SHEET No. 7
OF 7 SHTS

Drawing: T:\CAD Files\CAD\1300\1338.01 Monte Vista Ranch\Preconstruction\1338.01 GPR Plate 3.dwg Layout: Plate 3 Saved: 2/24/2016 11:16 AM Plotted: 2/24/2016 12:00 PM By: Ronald W. DeRuiter

APPENDIX A

STABILITY ANALYSES

Computer Program

Stability analyses were performed using the computer program SLOPE/W (Ver. 6.0) by Geo-Slope. The program analyzes slope stability problems by a two-dimensional limit equilibrium methods including Bishop's, Janbu, Morgenstern & Price, and general limit equilibrium (GLE). The particular method used for each analysis is indicated on the output plots.

Soil strength can be modeled in a variety of ways including standard Mohr-Coulomb, bilinear Mohr-Coulomb, and general shear strength relationships. Where materials strengths have anisotropic properties, the program allows the strength to be modeled by introducing a strength function. The function allows the user to define a weighting factor that is applied to the standard Mohr-Coulomb strength depending upon the angle of inclination of the slice base. With this function, anisotropic conditions typically found in bedrock materials can be modeled.

Potential failure surfaces are determined by circular surfaces, block-specified surfaces, or fully-specified surfaces. For circular surfaces, the user provides a grid of radius points and upper and lower bounds for the radius search. The program calculates the factor of safety for each radius grid point and all increments between the upper and lower boundaries. For block-specified surfaces, the user provides two grids of points, one for points of entry and one for points of exit. The program calculates the factor of safety for all possible combinations of surfaces defined by connecting pairs of grid points. For fully-specified surfaces, the user defines a specific failure surface for which the program calculates the factor of safety. The program can also model other factors such as groundwater, earthquake loads, and external loads.

Shear Strengths

The shear strengths used in our analyses were based on direct shear testing and previous experience. The strength values used are summarized In Table A-1 below:

TABLE A-1
Summary of Shear Strengths

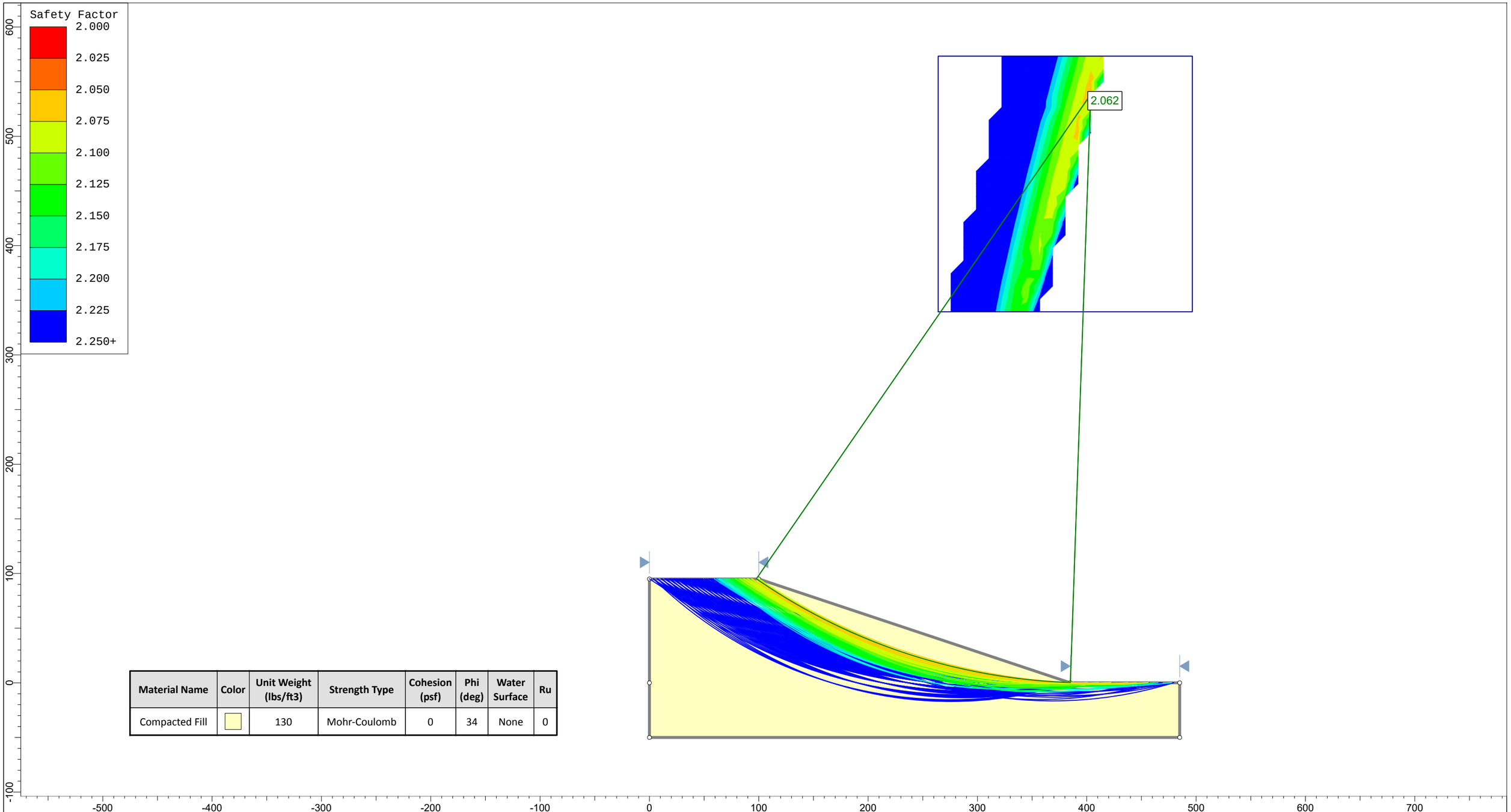
Material	Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
Compacted Fill	130	0	34

Summary of Results

Results of the analyses are summarized in Table A-2 below. Plots of the results are attached as Plates A-1 through A-2.

TABLE A-2
Summary of Stability Analyses

Section	Search Type	Analysis Method	Plates	Static Factor of Safety	Seismic Factor of Safety
95' Fill Slope	Circular	Janbu	A-1 thru A-2	2.06	1.21



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Compacted Fill		130	Mohr-Coulomb	0	34	None	0

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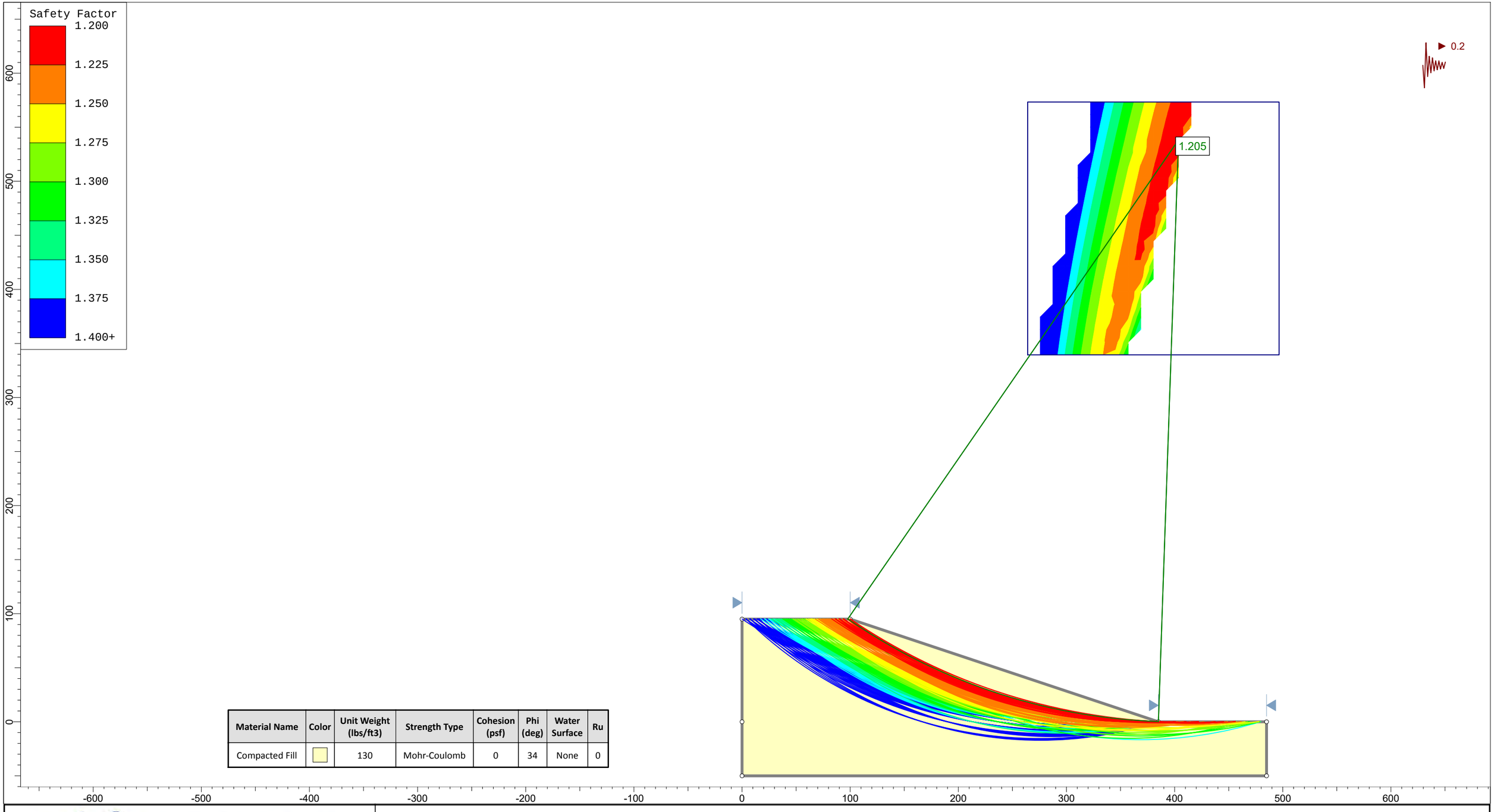
SLIDEINTERPRET 6.033

1338.01 - Tentative Tract No. 32024, Monte Vista Ranch Property

Static Stability Analysis of 95 ft Fill Slope (Janbu)

Albus-Keefe & Associates, Inc.

Date: 2/23/2016 2/23/2016, 2:39:18 PM PLATE A-1



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
Compacted Fill		130	Mohr-Coulomb	0	34	None	0

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SLIDEINTERPRET 6.033

1338.01 - Tentative Tract No. 32024, Monte Vista Ranch Property

Seismic Stability Analysis of 95 ft Fill Slope (Janbu)

Albus-Keefe & Associates, Inc.

Date: 2/23/2016 2/23/2016, 2:39:18 PM PLATE A-2

ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

June 7, 2007
J.N.: 1338.00

Mr. Eric Lunde
Monte Vista Ranch LLC.
5075 Shoreham Place, Suite 240
San Diego, California 92122

Subject: **40-Scale Rough Grading Plan Review, Tract No. 32024 (Monte Vista Ranch Property), Riverside County, California (BGR: 061137).**

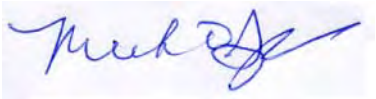
Dear Mr. Lunde:

Pursuant to your request, ***Albus-Keefe & Associates, Inc***., is pleased to present to you our 40-scale rough grading plan review report for the subject property. This report presents the results of our review of our previous geotechnical reports for the site, engineering and geologic analyses, and conclusions and recommendations pertaining to proposed site development as indicated on the referenced rough grading plans. This report also contains information that addresses comments presented in the Riverside County Department of Building and Safety Plan Check Review Sheet dated December 13, 2006.

We appreciate this opportunity to be of service to you. If you have any questions regarding the contents of this report, please do not hesitate to call.

Sincerely,

Albus-Keefe & Associates, Inc.



Michael O. Spira
Associate Engineering Geologist

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APPENDIX B - Seismic Refraction Survey (Albus-Keefe & Associates, Inc., 2004)

APPENDIX C - Laboratory Test Results (Albus-Keefe & Associates, Inc., 2004)

APPENDIX D - Typical Grading Details
Plates D-1 through D-7

MAPS

Plates 1 through 3 Geologic Maps (pocket enclosures)

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of our rough grading plan review was to verify the recommendations contained in our feasibility report (Albus-Keefe 2004) have been properly interpreted and incorporated into the 40-scale rough grading plans and to provide updated and/or specific recommendations as required. As such, the recommendations contained within this report supersede those in our feasibility report. Additionally, our objective was to address some of the comments presented in the Riverside County Review Sheet dated December 13, 2006, as further explained in our separate response letter.

The scope of this review included the following:

- Review of our previous geotechnical reports for the site
- Site reconnaissance
- Review of the referenced 40-scale Rough Grading Plans
- Engineering and geologic analyses
- Preparation of this report.

1.2 PROPOSED DEVELOPMENT

Based on our review, the referenced 40-scale Rough Grading Plans prepared by K & A Engineering, dated June 4, 2007, closely resembles the tentative tract map utilized in our previous investigation of the site. The referenced 40-scale Rough Grading Plans indicates the construction of 70 single-family dwellings, associated interior streets, a detention basin and a super pad for an unspecified future use. The far eastern portion of the site is to remain as open space. The plan also indicates the widening of the eastern shoulder of Monte Vista Street and the relocation of an existing concrete-lined storm drain channel located on the east side of Monte Vista Street.

Rough grading of the site will consist of cuts and fills up to approximately 53 feet and 37 feet, respectively. Cut and fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) and maximum heights of approximately 90 feet and 30 feet, respectively. Some of the proposed cut and fill slopes are to extend offsite. Retaining walls up to a maximum height of 6.5 feet are also proposed.

Details of the proposed residential structures are not known at this time. However, we understand residential structures will consist of slabs-on-grade, one- and/or two-story, wood-framed structures yielding light structural loads. We have assumed that continuous wall loads will not exceed 2.5 kips/ft and column loads will not exceed 25 kips. Other site improvements are anticipated to include utility services, asphalt and concrete pavements, decorative hardscape, and masonry walls.

The Rough Grading Plans utilized for the basis of this report are enclosed herein as Plates 1 through 3 (Geologic Maps).

1.3 PREVIOUS GEOTECHNICAL WORK

This firm completed a geotechnical investigation for the site (Albus-Keefe 2004) based on a tentative tract map that closely resembles the current plans. Our work involved exploratory trenching, exploratory borings, seismic refraction survey lines, and laboratory testing. The locations of the exploratory excavations and seismic refraction survey lines from our previous work conducted within the site have been compiled on the Geologic Maps, Plates 1 through 3. This firm also completed a response (Albus-Keefe 2005) to a County of Riverside, Planning Department, DRT Correction Letter dated May 31, 2005, and a Department of Building and Safety, Fault Hazard Report Review Letter dated May 13, 2005 (County Geologic Report No. 1464).

2.0 GEOLOGIC CONDITIONS

Cretaceous-age granitic bedrock (Kgr) is extensively exposed within the hillsides and underlies the lower elevations of the site. To a much lesser extent, Late Pleistocene-age, non-marine sediments assigned to the Pauba Formation exist within the south-central margin of the site. Surficial units consisting of artificial fill (Qaf), topsoil (no map symbol), and alluvium and colluvium, undifferentiated (Qal) generally mantle the granitic bedrock and the Pauba Formation.

The approximate surficial distribution of the geologic units is illustrated on the enclosed Geologic Maps, Plates 1 through 3. Detailed descriptions of each of the geologic units as well as discussions regarding faulting, landsliding and groundwater are provided in our previous report (Albus-Keefe 2004), and remain applicable.

3.0 ANALYSES

3.1 SETTLEMENT

Results of our subsurface exploration, laboratory testing, and our experience with similar projects indicates the existing artificial fills, topsoil, colluvium/alluvium and weathered bedrock would undergo significant settlement due to the weight of new fills and introduction of water. If these materials are left in place, we estimate total settlement would be up to several inches.

Engineering analyses were performed to evaluate settlement potential of compacted fills. The fill is assumed to only undergo secondary compression shortly after finish grades are achieved. Since the fill soils are placed in a partially saturated state, they would not follow the classic consolidation theory whereby excess pore water pressure is expelled to cause consolidation. Instead, primary settlement is primarily dictated by the compression and/or expulsion of air from the pore space, which can be assumed to happen instantaneously as subsequent layers of fill are placed above. By the time the entire fill is placed to grade, only secondary compression remains. The rate of secondary compression, $C\alpha$, was estimated using the correlations of natural water content to

coefficient of secondary consolidation presented in NAVFAC 7.1-144. Using "natural" water content of the fill equal to 8% to 10%, we obtain a Cα equals to 0.0016. Using this coefficient, the maximum magnitude of secondary settlement for 60 feet of fill (the anticipated maximum fill thickness) is estimated to be a total of 2.6 inches. The expressed equation is:

$$60' \bullet {}^{12''}\!/_{1'} \bullet 0.0016 \bullet \left(LOG(365 \bullet 50) - LOG(100)\right) = 2.6''$$

Note- this calculation assumes the fill will remain undeveloped for a period of 100 days.

The underlying fill/bedrock contact is not anticipated to exceed a slope ratio of approximately 2 to 1 (H:V). Ignoring the three dimensional effects of canyon fills, differential settlement was estimated assuming the magnitude was directly proportional to the thickness of fill. On this basis, we estimate the maximum differential settlement due to secondary compression is approximately 0.65 inches over 30 feet (L/600). The expressed equation is:

$${}^{30'}\!/_{2} \bullet {}^{12''}\!/_{1'} \bullet 0.0016 \bullet \left(LOG(365 \bullet 50) - LOG(100)\right) = 0.65''$$

4.0 CONCLUSIONS

4.1 FEASIBILITY OF PROPOSED DEVELOPMENT

From a geotechnical point of view, the proposed site development is considered feasible provided the recommendations presented in this report are incorporated into the design and construction of the project.

4.2 SETTLEMENT

Provided that grading is performed in accordance with the recommendations provided herein, and based on the anticipated light foundation loads discussed herein, total and differential settlement is not anticipated to exceed approximately 2.6 inches and ½-inch over 20 feet, respectively (Tolerable level of post-construction angular distortions is 1/480 as defined in Section III.1.H of the Technical Guidelines for Review of Geotechnical and Geologic Reports 2000 Edition). The maximum estimated differential settlement assumes the fill/bedrock contact will not exceed a gradient of 2 to 1 (H:V). This settlement is anticipated to occur as engineered fill materials undergo long-term consolidation over the life of the structures. The estimated magnitudes of settlement are considered within tolerable limits for the proposed structures.

4.3 SLOPE STABILITY

Cut slopes are proposed at a maximum gradient of 2 to 1 (H:V) and at a maximum height of approximately 90 feet. The cut slopes are expected to expose granitic bedrock and are **not** anticipated to expose adversely-oriented geologic structure. Considering the proposed slope gradient (2:1), the strength values of the in-place granitic bedrock, and the favorable orientations of geologic structure in the bedrock, proposed cut slopes are anticipated to be grossly stable under static and seismic conditions.

Fill slopes are proposed at a maximum gradient of 2 to 1 (H:V) and at a maximum height of 30 feet. Based on our slope stability analyses performed in our referenced report (2004) for a 70-foot-high, 2:1 (H:V) fill slope, the proposed fill slopes are anticipated to be grossly and surficially stable under static and seismic conditions. Although the fill slopes are anticipated to be grossly and surficially stable, significant portions of site materials are relatively cohesionless. As such, fill slopes may be prone to erosion during periods of rain. This condition can be mitigated by the use of surface stabilizing methods. Specific recommendations are provided in Section 5.3.4.

5.0 RECOMMENDATIONS

5.1 GENERAL

The recommendations contained within this report are comprehensive and supersede those in our previous report (Albus-Keefe 2004).

5.2 EARTHWORK

5.2.1 General Earthwork and Grading Specifications

All earthwork and grading should be performed in accordance with all applicable requirements of CALOSHA and the Grading Code of the County of Riverside, California, in addition to recommendations presented herein.

5.2.2 Pre-Grade Meeting and Geotechnical Observation

Prior to commencement of grading, we recommend a meeting be held between the owner, County inspector, grading contractor, civil engineer, and geotechnical consultant, to discuss proposed work and logistics.

We also recommend that a geotechnical consultant be retained to provide soil engineering and engineering geologic services during site grading. This is to observe compliance with the design specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction. If conditions are encountered during construction that appears to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

5.2.3 Site Clearing

All vegetation and other deleterious materials should be removed from the site. The project geotechnical consultant should be notified at the appropriate times to provide observation services during clearing operations to verify compliance with the above recommendations. Voids created by clearing should be left open for observation by the geotechnical consultant. Should any unusual soil conditions or subsurface structures such as wells and onsite sewage disposal systems be encountered during site clearing and/or grading that are not described or anticipated herein, these conditions

should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

5.2.4 Ground Preparation

All existing exploratory trench backfill, artificial fill, topsoil, and alluvium/colluvium, and weathered bedrock are considered unsuitable for support of proposed structural fills and site development. These materials should be removed through excavation or benching to expose competent bedrock. Where removals are limited due to property line constraints, such as in the vicinity of Lots 42 through 44 and "E" Street, shoring, or other acceptable measures may be required. Estimated depths of unsuitable materials, based on subsurface exploration and this firm's experience with similar sites, are indicated on the Geologic Maps, Plates 1 through 3.

All removal excavations should be evaluated by the geotechnical consultant during grading to confirm the exposed conditions are as anticipated and to provide supplemental recommendations if required.

5.2.5 Geometry of Bedrock/Fill Contact

To mitigate excessive differential settlement, the overall geometry of the bedrock/fill contact should be no steeper than 2 to 1 (H:V). Where the overall gradient is steeper, the contact should be laid back to a maximum overall gradient of 2 to 1 (H:V). Locally steeper gradients can be allowed provided the local over-steepened condition is no more than 15 feet vertically and the overall gradient of 2 to 1 is not exceeded. If steeper overall gradients are created, the area may require a waiting period to obtain a tolerable long-term differential settlement.

5.2.6 Lot Capping

Transition Lots: Proposed rough grading will create cut to fill transition lots and shallow fill lots. These lots should be overexcavated to a depth of 5 feet below final pad grade and replaced with a fill blanket. The overexcavation should extend across the entire lot and the removal bottom should slope at a minimum 2% toward the deeper fill portion of the lot or other direction recommended by the geotechnical consultant. This provision is intended to mitigate future water build up upon completion of site development. Additional recommendations to mitigate nuisance seepage are provided in later sections of this report. A transition lot capping detail is provided on Plate D-1 in Appendix D.

Where side yard and rear yard retaining walls are proposed, the lot capping overexcavations should extend at least 5 feet behind the face of wall or at least 2 feet beyond the back of footing, whichever is greater.

Cut Lots: Future rough grading will create cut lots that will expose hard bedrock conditions. These lots will be very difficult to impossible to trench with conventional trenching equipment for future footings as well as being very difficult to landscape. Therefore, all cut lots should be overexcavated to a depth of 3 feet at the rear of the lot to 5 feet at the front of the lot and replaced with a fill blanket. Cut lots situated below cut slopes greater than 10 feet in height should be overexcavated to a depth of 4 feet at the rear of the lot to 6 feet at the front of the lot and replaced with a fill blanket. The overexcavation should create a relatively uniform gradient of the bedrock surface across the lot.

Isolated low or flat spots should be avoided to mitigate future water build up upon completion of site development. Additional recommendations to mitigate nuisance seepage are provided in later sections of this report. A cut lot capping detail is provided on Plate D-2 in Appendix D.

Where side yard and rear yard retaining walls are proposed, the lot capping over excavations should extend at least 5 feet behind the face or wall or at least 2 feet beyond the back of footing, whichever is greater.

5.2.7 Street Capping

Granitic bedrock materials exposed within the streets could be very difficult to impossible to trench with conventional backhoe equipment for the installation of future underground improvements. Therefore, we recommend the cut and shallow fill portions of the future streets be overexcavated at least 18 inches below the invert of the deepest utility line where hard rock is encountered. The overexcavation should also consider future utility hook-ups to residences and any utilities behind curb. A typical street capping detail is provided on Plate D-3 in Appendix D.

5.2.8 Temporary Excavations

Temporary excavations in soil materials, including trench excavations and retaining wall backcuts, may be cut vertically up to a height of 4 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in soil materials that are greater than 4 feet but less than 15 feet in height should be laid back at a maximum gradient of 1:1 (H: V). If temporary excavations greater than 15 feet in depth are required in soil materials, the project geotechnical consultant should provide specific recommendations based on proposed work and site conditions.

Temporary excavations in bedrock materials may be cut vertically up to a height of 10 feet provided that no adverse geologic conditions or surcharging of the excavations are present. Temporary excavations in bedrock materials that are greater than 10 feet in height should be laid back at a maximum gradient of 1/2:1 (H:V). If cuts in bedrock create a rock fall hazard for workers, the excavation should be laid back as recommended by the project engineering geologist or soil engineer.

The project geologist or soil engineer should observe all temporary cuts to confirm that conditions are as anticipated herein and to provide specific recommendations in the event conditions differ. All temporary excavations should conform to the requirements of CAL OSHA.

5.2.9 Scarification

Prior to placement of compacted fill, the prepared ground should be scarified where practical to a depth of 6 inches, brought to a uniform moisture content of 100 to 125 percent of optimum, then compacted to at least 90 percent of the laboratory standard. If the ground surface exposes rock that has been disturbed and contains voids, a 6-inch layer of granular soil should be placed over the ground surface and flooded until the voids are filled.

5.2.10 Canyon Subdrains

Subdrains should be installed within all significant drainage courses following overexcavation. The subdrains should consist of a 6-inch-diameter PVC schedule 40 perforated pipe or 8-inch-diameter PVC schedule 40 perforated pipe when over 500 feet in length. The pipe should be embedded in 9 cubic feet per linear foot of 3/4-inch gravel wrapped in Mirafi 140N, or equivalent. The subdrain, where possible, should be placed on the bottom of the cleanout area. Within the lower portions of the drainage course, the subdrain may be placed on a bench in the sidewall of the canyon, above the cleanout bottom, to permit the subdrain to daylight. The subdrain should be set to drain generally at a minimum gradient of 1 percent. The outlets should consist of similar solid pipe and should daylight approximately 2 feet above the toe of slope or into a storm drain device. Tentative canyon subdrain locations are indicated on the enclosed Geologic Maps, Plates 1 through 3. The actual locations of the canyons subdrains will be determined in the field by the geotechnical consultant during rough grading. A typical canyon subdrain detail is provided on Plate D-4 in Appendix D.

5.2.11 Fill Materials and Placement

In general, materials excavated from the site may be used as fill provided they are free of deleterious materials and rocks greater than 12 inches in maximum dimension**.** *Within the* upper *5 feet of building pads, the fill material should not contain rocks greater than 6 inches in maximum dimension.* Rock size criteria for fill materials to be placed within street undercut sections or within influence of future underground utilities should also be evaluated to avoid costly screening and/or importing of future trench backfill materials.

Fill materials should be placed in lifts no greater than approximately 8 inches in thickness. The fills should contain sufficient finer granular materials to eliminate nesting of rock fragments as recommended by the geotechnical consultant during grading. Each lift should be watered or air dried as necessary to achieve a uniform moisture content of 100 to 125 percent of optimum, and then compacted in place to at least 90 percent of the laboratory standard. *Where fills are placed below a depth of 50 feet from finish grade, fills should be compacted to at least 95 percent of the laboratory standard.* Each lift should be treated in a similar manner. Each lift should be treated in a similar manner. Subsequent lifts should not be placed until the project geotechnical consultant has approved the preceding lift. Lifts should be maintained relatively level and should not exceed a gradient of 20 to 1 (H:V). When placing fill on ground sloping steeper than 5:1 (H:V), vertical benches should be excavated into the adjacent slope. Typical benching details are provided on Plates D-5 and D-6, in Appendix D.

The laboratory standard for maximum dry density and optimum moisture content for each soil type should be determined in accordance with ASTM D 1557-02.

5.2.12 Over-sized Materials

Rocks over 12 inches in diameter should be reduced in size, where practical, and incorporated within the fill materials provided they are mixed with granular materials and spread throughout the fill to eliminate nesting. Rocks greater than 12 inches but less than 3 feet in diameter may be placed within engineered fills at least 10 feet below proposed grades as well as at least 18 inches below

deepest utilities within streets, as presented on Plate D-7 in Appendix D. Rocks greater than 3 feet in diameter that cannot be reduced in size should be removed from the site.

5.2.13 Fill Slopes

Fill slopes (fill over natural slopes, fill over cut slopes) should be constructed with a keyway having a minimum width of 15 feet and a minimum embedment of 2 feet into competent bedrock. Details for fill slope construction are presented on Plate D-5 in Appendix D.

Where practical, fill slopes should be constructed by over filling and trimming to a compacted core. The face of slopes that are not over-built should be backrolled with a sheepsfoot roller at least every 4 vertical feet of slope construction. The process should provide compacted fill to within 12 inches of the slope face. Finished slopes should be track-walked with a small dozer in order to compact the slope face. The slope face materials will tend to dry out prior to final face compaction. As such, the addition of water to the slope face will likely be required prior to compaction to achieve the required degree of compaction at the time of slope face compaction.

5.2.14 Cut Slopes

All cut slopes into bedrock should be cleared of loose rock fragments and inspected at intervals not exceeding 10 feet during grading by an engineering geologist, to evaluate the competency of the slope. Heavy ripping or blasting should be designed in a manner as to minimize disturbing the bedrock below proposed slope grades. Disturbed bedrock or core stones exposed in the cut slope that pose a rock fall hazard will require stabilization by means of rock anchors or other acceptable alternatives.

5.2.15 Stabilization Fills

Cut slopes exposing rock that pose a rock fall hazard and cannot be locally mitigated as discussed in Section 5.2.14 may require replacement with stabilization fill slopes. Cut slopes exposing bedrock will also be very difficult to landscape. If desired, such slopes could also be replaced with stabilization fills. General details for stabilization fill slope construction are presented on Plate D-6 in Appendix D. However, specific recommendations should be provided by the geotechnical consultant during grading depending on the actual conditions exposed.

5.2.16 Slope Backdrains

Slope backdrains are generally recommended in all fill key excavations and stabilization fill slopes. The locations and necessity of the slope backdrains should be determined by the project geotechnical consultant in the field during rough grading. General details for slope backdrains are presented on Plate D-8 in Appendix D.

5.2.17 Lot Subdrains

Lot subdrains or other acceptable alternatives should be installed at the rear of building pads if groundwater seeps are encountered during lot capping. Lot subdrains should also be considered if geologic conditions are encountered during grading that would make a building pad prone to future nuisance groundwater seepage. Such conditions could include faults, joints, or very hard rock zones which can collect and transmit groundwater over long distances. General details for lot subdrains

are presented on Plate D-9 in Appendix D. The need for such drains and specific recommendations should be provided by the geotechnical consultant during grading.

5.2.18 Rock Fall Protection During Rough Grading

Rough grading along the hilltops may result in rock falls. Special precautions such as fencing or other acceptable measures should be taken to mitigate rock falls, particularly along the north perimeter of the site above the existing residential development.

5.2.19 Import Material

If earth materials are imported to the site in order to balance the cut and fill rough grading operations or is needed to provide necessary soil for mixing with rock fragments, the proposed import soil should have an Expansion Index less than 20 (UBC Standard 18-2). Import sources should be indicated to the geotechnical consultant prior to hauling the materials to the site so that appropriate testing and evaluation of the fill material can be performed in advance.

5.2.20 Settlement Monitoring

The site may have fills that are greater than 50 feet in depth depending on actual removal depths. Fills over 50 feet in depth, in accordance with the guidelines of the county of Riverside, will require settlement monitoring. Specific recommendations for settlement monitoring should be provided by the geotechnical consultant during grading depending on the actual conditions exposed. A settlement monument detail is provided in Appendix D, Plate D-10.

In general, the monuments should be installed as soon as practically possible following completion of grading in this area. The monuments should be surveyed for elevation once each week for the first month then every other week for at least two additional months. The data should be provided to the soils engineer for review to confirm that actual post construction differential settlement is within tolerable limits of proposed structures. Once monitoring confirms post construction differential settlement is less than ½-inch in 20 feet, the lots may be released for building construction. The benchmark used for the survey should be coordinated with the soils engineer to confirm its suitability.

5.3 POST GRADING CONSIDERATIONS

5.3.1 Site Drainage

Drainage should be designed to carry surface water away from all structures in accordance with local code requirements. No rain or excess water should be allowed to pond against building walls or foundations. Sufficient drainage should be provided to ensure water does not pond or cause erosion.

5.3.2 Utility Trenches

Trench excavations should be constructed in accordance with the recommendations contained in Section 5.2.8 of this report. The project geologist or soil engineer should observe all trench excavations to provide specific recommendations. All trench excavations should conform to the requirements of CAL OSHA.

Trench backfill materials and compaction criteria should conform to the requirements of the local municipalities. As a minimum, utility trench backfill should be compacted to at least 90 percent of the laboratory standard. Trench backfill should be brought to a uniform moisture content of 100 to 125 percent of optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. The project geotechnical consultant should perform density testing, along with probing, to verify adequate compaction. Jetting in lieu of mechanical compaction may be considered provided specific recommendations are provided by the project geotechnical engineer for the conditions exposed and is allowed by the appropriate agencies.

Within shallow trenches (less than 18 inches deep) where pipes may be damaged by heavy compaction equipment, imported clean sand having a SE of 30 or greater may be utilized. The sand should be placed in the trench then thoroughly flooded.

Where utility trenches are proposed parallel to any building footing (interior and/or exterior trenches), the bottom of the trench should not be located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base. For utility trenches located below a 1:1 (H:V) plane projecting downward from the outside edge of the adjacent footing base or crossing footing trenches, the utility should be encased in concrete or slurry or an alternate mitigation should be recommended by the geotechnical consultant.

5.3.3 Irrigation Considerations

Excessive irrigation water can be detrimental to the performance of proposed site development. Water applied in excess of the needs of vegetation will tend to percolate into the ground. Such percolation can lead to nuisance seepage and shallow perched groundwater. Seepage can form on slope faces, on the faces of retaining walls, in streets, or other low-lying areas. These conditions could lead to adverse effects such as the formation of stagnant water that breeds insects, distress or damage of trees, surface erosion, slope instability, discoloration and salt buildup on wall faces, and premature failure of pavement. Excessive watering can also lead to elevated vapor emissions within homes that can damage flooring finishes or lead to mold growth inside the home.

Key factors that can help mitigate the potential for adverse effects of overwatering include the judicious use of water for irrigation, use of irrigation systems that are appropriate for the type of vegetation and geometric configuration of the planted area, the use of soil amendments to enhance moisture retention, use of low-water demand vegetation, regular use of appropriate fertilizers, and seasonal adjustments of irrigation systems to match vegetation needs for water. Specific recommendations should be provided by a landscape architect or other knowledgeable professional. Future homebuyers should be made aware of these issues and consequences.

5.3.4 Slope Maintenance

The long-term performance and stability of slopes can be greatly affected by maintenance. Initially, slopes should be provided with erosion resistance in the form of an herbaceous plant material, jute matting, polymer coating, or other suitable method as recommended by the landscape architect. Slopes should also be planted with deep-rooting, drought-tolerant, woody vegetation material as recommended by the landscape architect. The initial protection should be maintained until the woody material has become fully mature. Areas of slopes where vegetation becomes particularly

distressed or dies should be replaced promptly. Watering of slopes should make judicious use of water by providing only that amount required to support the vegetation and adjusting the watering seasonally. Over watering must be avoided. Excessive drying of the soils is also detrimental to long-term slope performance and stability. The moisture content of soils should be maintained at a relatively uniform level. Rodent activity should be monitored and kept to a minimum. Excessive rodent burrowing can be detrimental to long-term slope performance and stability and should be repaired promptly. Drainage devices, such as V-ditches and backdrain outlet pipes installed on the slope face, should be periodically inspected to confirm they are clear and functional. Any accumulated debris should be removed promptly.

5.3.5 Footing Observations

All footing trenches should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture softened materials and debris should be removed prior to placing concrete.

5.4 SEISMIC DESIGN PARAMETERS

For design of the project in accordance with the 2001 C.B.C., seismic design factors as defined by Chapter 16 for areas underlain by bedrock and compacted fill are presented in Table 6.1.

TABLE 6.1
CBC Seismic Design Parameters

Parameter	Value
Seismic Zone Factor, Z	0.4
Soil Profile Type, S	S_D
Fault Distance	3.6 km
Seismic Source Type	B
Near Source Factor , Na	1.1
Near Source Factor , Nv	1.4
Seismic Coefficient, Ca	0.50
Seismic Coefficient, Cv	0.88

The seismic design parameters utilized for final design of the project should be based on the as-built geologic conditions of the site.

5.5 PRELIMINARY CONVENTIONAL FOUNDATION RECOMMENDATIONS

5.5.1 General

Recommendations for conventional structural systems are provided herein for your use. These recommendations were based on typical site materials exposed during our investigation and our experience with similar projects in the vicinity. The project geotechnical consultant, following observation and testing of site materials during rough grading, should provide final recommendations. Depending upon actual site conditions encountered during grading, the recommendations contained herein may require modification.

The project structural engineer in the design of the foundations should consider the estimated settlement potential discussed in Section 4.2.

5.5.2 Soil Expansion

The recommendations presented herein for foundations and slabs on grade are based on soils with a Very Low expansion potential. Following site grading, additional testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. If site soils with a higher expansion potential are encountered, the recommendations contained herein may require modification.

The expansion index of site materials is less than 20. As such, special design for expansive soils in accordance with Section 1815 of the 2001 CBC is not required.

5.5.3 Allowable Bearing Value

Provided site grading is performed as recommended herein, a bearing value of 2000 pounds per square foot (psf) may be used for spread and continuous footings having a minimum width of 24 and 12 inches, respectively, and founded at a minimum depth of 12 inches below the lowest adjacent grade. The bearing value may be increased by 250 psf and 500 psf for each additional foot in width and depth, respectively, up to a maximum value of 4000 psf. Recommended allowable bearing values include both dead and live loads, and may be increased by one-third for wind and seismic forces.

5.5.4 Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth up to a maximum value of 2000 pounds per square foot may be used to determine lateral bearing for footings. A coefficient of friction of 0.40 times the dead load forces may also be used between concrete and the supporting soils to determine lateral sliding resistance. An increase of one-third of the above values may also be used when designing for short duration wind and seismic forces.

The above values are based on footings placed directly against native soils or compacted fill. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard.

5.5.5 Footing Reinforcement and Dimensions

All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

All footings should have a minimum embedment of 12 inches below lowest adjacent grade. Widths of footings should conform to the requirements of the UBC, Chapter 18.

5.5.6 Slab on Grade

Interior concrete slabs constructed on grade should be a nominal 4 inches thick and should be reinforced with 6-inch by 6-inch, W2.9 by W2.9 reinforcing wire mesh or No. 3 bars spaced 24 inches each way. Care should be taken to ensure the placement of reinforcement at mid-slab height.

Concrete floor slabs in areas to receive carpet, tile, or other moisture sensitive coverings should be underlain with a moisture vapor barrier consisting of a poly-vinyl chloride membrane such as 10-mil Visqueen, or equal. The membrane should be properly lapped, sealed, and protected with at least 2 inches of sand. This vapor barrier system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 4 pounds of water per 1000 sq. ft. and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes. Consideration should be given to providing a vapor barrier below the garage slab to mitigate the potential for effervescence on the slab surface.

Special consideration should be given to slabs in areas to receive ceramic tile or other rigid, crack-sensitive floor coverings. Design and construction of such areas should mitigate hairline cracking as recommended by the structural engineer.

Block-outs should be provided around interior columns to permit relative movement and mitigate distress to the floor slabs due to differential settlement that will occur between column footings and adjacent floor subgrade soils as loads are applied.

Prior to placing concrete, subgrade soils below slab-on-grade areas should be thoroughly moistened to provide a moisture content that is equal to or greater than 100% of the optimum moisture content to a depth of 12 inches.

5.6 MASONRY RETAINING AND FREE-STANDING WALLS

5.6.1 General

The following design and construction recommendations are provided for general masonry retaining and free-standing walls supported by engineered compacted fill or bedrock. Where removal of unsuitable soils is limited by property line constraints or other factors, foundations for retaining walls may require modification such as the use of caissons and grade beams. Under such conditions, specific recommendations should be provided by the geotechnical consultant based on conditions exposed during grading.

5.6.2 Bearing Capacity, Lateral Bearing, and Reinforcement

Retaining and free-standing walls supported by competent native soils or compacted fill, may utilize the bearing capacities and lateral-bearing values provided for conventional foundations as discussed in Sections 5.5.3 and 5.5.4 of this report. In the case where footing sides are formed, all backfill against the footings should be compacted to at least 90 percent of the laboratory standard. Where a wall is within 5 feet of the top of a descending slope, the passive pressure should be reduced by 50%.

All continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

All footing trenches should be observed by the project geotechnical consultant to verify that they have been excavated into competent bearing soils and to the minimum embedment recommended herein. These observations should be performed prior to placement of forms or reinforcement. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture-softened materials and debris should be removed prior to placing concrete.

5.6.3 Active Earth Pressures

Conventional retaining walls should be designed for the pressures as indicated in the table below. The values are based on typical onsite materials as well as on drained backfill conditions and do not consider hydrostatic pressures. Relatively clayey materials should not be used for wall backfill. All walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings in addition to the earth pressures provided in Table 6.2.

TABLE 6.2
Retaining Wall Earth Pressures

Backfill Condition	Active Pressure Wall Height up to 6 feet (pcf)	Restrained Walls all Heights (pcf)
Level	35	64
2 to 1 slope	50	97

5.6.4 Drainage and Moisture-Proofing

All retaining walls supporting more than 3 feet of compacted fill should be provided a perforated pipe and gravel subdrain to prevent entrapment of water in the backfill. The perforated pipe should consist of 4-inch-diameter, ABS SDR-35 or PVC Schedule 40 with the perforations laid down. The pipe should be embedded in ¾- to 1½-inch open-graded gravel wrapped in filter fabric. The gravel should be at least one foot wide and extend at least one foot up the wall above the footing. Filter

fabric should consist of Mirafi 140N, or equal. Outlets should discharge into suitable collection structures.

Retaining walls supporting backfill should also be coated with a waterproofing compound or covered with such material to inhibit infiltration of moisture through the walls. The water proofing should cover all portions of the wall that may come in contact with soil and should overlap down over the top of footing. The top of footing should be finished smooth with a trowel to inhibit the infiltration of water into the footing and through the wall. The project structural engineer should provide specific recommendations for water proofing, water stops, and joint details.

The use of weepholes may be considered in locations where aesthetic issues from potential nuisance water are not a concern. Weepholes should be 2 inches in diameter and provided at least every 6 feet on center. Where weepholes are used, perforated pipe may be omitted from the gravel subdrain.

5.6.5 Wall Backfill

Onsite soils possessing a Very Low expansion potential may be used for backfill of retaining walls. The project geotechnical consultant should approve all backfill used for retaining walls. All wall backfill should be brought to relatively uniform moisture content slightly over optimum, placed in lifts no greater than 12 inches in thickness, and then mechanically compacted with appropriate equipment to at least 90 percent of the laboratory standard. Flooding or jetting of backfill material is not recommended.

5.7 EXTERIOR FLATWORK

Concrete sidewalks, patios, and similar flatwork should be a nominal 4 inches thick and provided with saw cuts or expansion joints at spacing no greater than 10 feet in each direction. Special jointing details should be provided in areas of block-outs, notches, or other irregularities to avoid cracking at points of high stress.

Drainage from flatwork areas should be directed to local area drains and/or other appropriate collection devices designed to carry runoff water to the street or other approved drainage structures. The concrete flatwork should also be sloped at a minimum gradient of 2% away from building foundations and masonry walls.

Subgrade soils below flatwork areas should be thoroughly moistened prior to placing concrete. The moisture content of the soils should be at least 100 percent of the optimum moisture content and penetrate to a depth of approximately 12 inches into the subgrade. Flooding or ponding of the subgrade is not recommended. Moisture conditioning should be achieved by a light application of water to the subgrade just prior to pouring concrete.

5.8 CEMENT TYPE

Laboratory testing for soluble sulfate content was completed on a representative onsite sample. The test result indicates onsite soils contain less than 0.10% soluble sulfate. We recommend that the procedures provided in C.B.C. Section 1904.3 and Table 19A-A-4, 1997 Edition, for concrete exposed to sulfate-containing solutions be followed for **Negligible** Sulfate Exposure. We further recommend that additional testing for soluble sulfate content be performed on site soils subsequent to rough grading and prior to construction of foundations and other concrete work.

5.9 PRELIMINARY PAVEMENT DESIGN

5.9.1 Subgrade Preparation

Prior to placement of pavement elements, subgrade soils should be moisture-conditioned to slightly over the optimum moisture content and compacted to at least 90 percent of the laboratory standard. Areas observed to pump or yield under vehicle traffic should be removed and replaced with firm and unyielding compacted soil or aggregate base materials.

5.9.2 Preliminary Pavement Design

The preliminary pavement design criteria presented in Table 6.3 are based on an R-Value of 50 and assumed Traffic Indexes. Final pavement design sections should be determined by the project soil engineer upon completion of rough grading. Pavement sections should be determined based on R-value testing of actual subgrade soils and Traffic Indexes determined by the project civil engineer or County of Riverside.

TABLE 6.3
Preliminary Pavement Design

Location	Assumed T.I.	A.C. (inches)	A.B. (inches)
Interior Streets	5.0-5.5	3	6

A.C. = Asphalt Concrete, A.B. = Aggregate Base

Prior to placement of aggregate base, subgrade surfaces should be scarified to a depth of 6 inches, brought to uniform moisture slightly over optimum, then compacted to at least 90 percent of the laboratory standard. Aggregate base should be placed in lifts no greater than 6 inches in thickness, brought to relatively uniform moisture content slightly over optimum, then compacted to at least 95 percent of the laboratory standard.

Aggregate base materials should be either Crushed Aggregate Base or Crushed Miscellaneous Base conforming to Section 200-2 of the Standard Specification for Public Works Construction (Greenbook). The materials should be brought to a uniform moisture content near optimum then

compacted to at least 95 percent of ASTM D1557-91. Asphalt concrete materials should conform to Section 203-6 of the Greenbook. Construction of asphalt concrete materials should conform to Section 302-5 of the Greenbook.

5.10 PLAN REVIEW AND CONSTRUCTION SERVICES

We recommend *Albus-Keefe & Associates, Inc*. be engaged to review any modifications made to the 40- scale rough grading plans and to review precise and foundation plans prior to construction. This is to verify that the recommendations contained in this report have been properly interpreted and are incorporated into the project specifications and to provide detailed recommendations. If we are not provided the opportunity to review these documents, we take no responsibility for misinterpretation of our conclusions and recommendations.

We recommend that a geotechnical consultant be retained to provide soils engineering services during construction of the project. These services are to observe compliance with the design, specifications or recommendations, and to allow design changes in the event that subsurface conditions differ from those anticipated prior to the start of construction.

If the project plans change significantly, the project geotechnical consultant should review our original design recommendations and their applicability to the revised construction. If conditions are encountered during construction that appear to be different than those indicated in this report, the project geotechnical consultant should be notified immediately. Design and construction revisions may be required.

6.0 LIMITATIONS

This report is based on the proposed development and geotechnical data as described herein and in the reference reports. The materials encountered on the project site and utilized in our previous laboratory testing are believed representative of the total project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil and bedrock materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could effect the conclusions and recommendations contained herein. As such, observation and testing by a geotechnical consultant during the grading and construction phases of the project are essential to confirming the basis of this report.

This report has been prepared consistent with that level of care being provided by other professionals providing similar services at the same locale and time period. The contents of this report are professional opinions and as such, are not to be considered a guaranty or warranty.

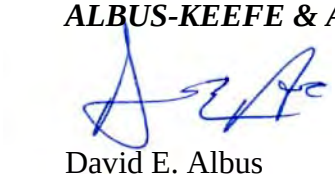
This report should be reviewed and updated after a period of one year or if the site ownership or project concept changes from that described herein.

This report has been prepared for the exclusive use of **Monte Vista Ranch LLC.** to assist the project consultants in the design of the proposed development. This report has not been prepared for use by parties or projects other than those named or described herein. This report may not contain sufficient information for other parties or other purposes.

This report is subject to review by the controlling governmental agency.

Respectfully submitted,

ALBUS-KEEFE & ASSOCIATES, INC







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REFERENCES

Albus-Keefe & Associates (2004), *Geotechnical Feasibility Investigation, Tentative Tract No. 32024, Monte Vista Ranch Property, County of Riverside, California,* dated September 3, 2004, (J.N.: 1338.00).

Albus-Keefe & Associates (2005), *Response to the County of Riverside, Planning Department, DRT Correction Letter dated May 31, 2005 and the Department of Building and Safety, Fault Hazard Report Review Letter dated May 13, 2005 (County Geologic Report No. 1464), Tentative Tract No. 32024, County of Riverside, California,* dated June 10, 2005, (J.N.: 1338.00)

K & A Engineering, Inc. (2007), *Rough Grading Plan, Tract No. 32024, County of Riverside, California,* dated June 4, 2007, scale: 1"= 40'.

County of Riverside Department of Building and Safety, *Plan Check Review, Tract 32024,* dated 12-13-2006 (BGR: 061137).

APPENDIX A

Exploratory Boring and Trench Logs (Albus-Keefe & Associates, Inc., 2004)

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**LEGEND**
Location:	**See Plan**	**Elevation:**	
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:** **05/26/04**
Drill Method:	**(drill rig type)**	**Driving Weight: (hammer wt. and drop)**	**Logged by:** **JJC**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
		EXPLANATION							
		Heavy solid lines separate geologic units.							
		Thin solid Lines separate material types within geologic unit.							
		Dashed lines indicate unknown depth of material type change.							
5		**Heavy double line** indicates bottom of boring.							
		Solid black rectangle in Core column represents California Split-Spoon sampler (2.5in. ID, 3in. OD).							
		Gray shaded rectangle in Core column represents SPT sampler.							
10		**Cross-out rectangle** in Core column represents sample not recovered.							
		Light gray Rectangle in Bulk column represents large bag sample.							
		Other Laboratory Tests:							
15		MAX = Maximum Dry Density/Optimum Moisture Content							
		SO4 = Soluble Sulfate Content							
		DSR = Direct Shear, Remolded							
		DS = Direct Shear, Undisturbed							
		SA = Sieve Analysis (1" through #200 sieve)							
		PSA = Particle Size Analysis (SA with Hydrometer)							
		-200 = Percent Passing #200 Sieve							
		AL = Atterberg Limits							
		R - R-value							

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-1**
Location:	**See Plan**	**Elevation:**	**1396**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	USCS Symb.	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine grained, some scattered medium to coarse sand, brown, dry							MAX DSR SO4 R
5		@ 5': **Silty SAND:** Fine to medium grained, some scattered coarse sand and gravel, brown, dry, loose, slightly porous.		14	■		2.7	106.7	
10		@10': Cobble in tip, sample disturbed		34	X				
15		@15': **Silty SAND:** Fine to medium grained, some coarse sand and gravel, brown, dry to damp, loose.		8		▒	3.4		
20		@20': **Silty SAND:** Fine to coarse grained, brown, damp, trace fine gravel, loose		13	■	▒	5.7	114.0	DS

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-1**
Location:	**See Plan**	**Elevation:**	**1396**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
25	Qal	@ 25': Same as above		9			4.5		
30		@ 30': **Silty SAND - Gravelly SAND:** Fine to coarse grained, with fine gravel, brown, damp to moist, loose to medium dense, micaceous.		15			4.8	111.1	
	Kgr	**BEDROCK; GRANITE** Coarse grained, gray white, moderately hard.		50 for 5"	X				
35		Bottom of boring at 35.5' No groundwater Boring backfilled with soil cuttings							
40									
45									

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-2**
Location:	**See Plan**	**Elevation:**	**1439.5**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine to medium grained, some coarse sand and trace fine gravel, brown, dry, loose.							
5		@ 5': loose to medium dense, dry to damp.		15	■		4.3		
10	Qp	**BEDROCK; PAUBA FORMATION (Qp):** **Silty SANDSTONE :** Fine to coarse grained, trace clay and fine gravel, mottled gray-brown with orange oxidation staining, damp, moderatly hard.		71	■		6.9	126.4	
15		@ 15': **Clayey SANDSTONE:** Fine to medium grained with scattered coarse sand and trace gravel, gray and olive brown with rusty oxidation staining, moist, moderately hard.		20	■		13.8		
20		@20': **Clayey SANDSTONE and SANDSTONE:** Fine to coarse grained, trace gravel and clay, gray-rusty brown, moist, moderately hard.		75	■		8.7	124.4	
	Kgr	**BEDROCK; GRANITE** (continued on next page)							

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-2**
Location:	**See Plan**	**Elevation:**	**1439.5**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	Litho-logy	Material Description	Samples: Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
25	Kgr	**BEDROCK; GRANITE** Coarse grained, gray-white, hard.		50 for 6"			1.5		
		Bottom of boring at 25.5' No groundwater Boring backfilled with soil cuttings.							
30									
35									
40									
45									

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-3**
Location:	**See Plan**	**Elevation:**	**1498**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine to medium grained, some coarse sand and trace fine gravel, yellow brown, damp, loose.							
5				9	■		3.4	107.9	
10	Kgr	**BEDROCK; GRANITE** Coarse grained, yellow-gray, weathered, moderately hard.		42	▒		6.3		
15		Bottom of boring at 15.0' No groundwater Boring backfilled with soil cuttings.							
20									

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-4**
Location:	**See Plan**	**Elevation:**	**1504**
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:**	**08/05/04**
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:**	**MOS**

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine to medium grained, some coarse sand and trace fine gravel, yellow-brown, dry to damp, loose.							
10		@ 10': **Silty SAND:** Fine to medium grained, some coarse sand and trace fine gravel, yellow-brown, damp, loose.		6			3.5		
15		@ 15': **Silty SAND:** fine to coarse grained, damp, loose, porous.		10			4.3	105.7	
	Kgr	**BEDROCK; GRANITE** Coarse grained, yellow-gray, moderately hard.							
20		Bottom of boring at 20.0' No groundwater Boring backfilled with soil cuttings.							

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-5**
Location:	**See Plan**	**Elevation:**	
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:** 08/05/04
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:** MOS

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine to coarse grained, reddish brown, dry to damp, medium dense.							
5				18	■		2.4	112.6	
10		@ 10': **Silty SAND:** Fine to coarse grained, gray brown to reddish brown, dry to damp, medium dense.		30	▒				
15	Kgr	**WEATHERED GRANITIC BEDROCK:** Medium to coarse grained, gray white with yellow, damp, moderately hard, weathered.		24	■		4.8	110.2	
		GRANITIC BEDROCK: hard.		23 50/5"	■				
20		Bottom of boring at 18.0' No groundwater Boring backfilled with soil cuttings.							

BORING LOG

Project:	**Monte Vista Ranch**	**Boring No.:**	**B-6**
Location:	**See Plan**	**Elevation:**	
J.N.:	**1338.00**	**Client: Monte Vista L.L.C.**	**Date:** 08/05/04
Drill Method:	**8" Hollow-stem**	**Driving Weight: 140-lb Autohammer**	**Logged by:** MOS

Depth (Feet)	Litho-logy	Material Description	Water	Samples: Blows Per Foot	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0	Qal	**ALLUVIUM (Qal)** **Silty SAND (SM):** Fine to coarse grained, reddish brown, dry to damp, medium dense.							
5									
10									
15									
	Kgr	**WEATHERED GRANITE (Kgr):** Medium to coarse grained, gray white with yellow, damp, moderately hard, weathered.							
20		Bottom of boring at 17.0' No groundwater Boring backfilled with soil cuttings.							

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-1	0-7.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots. @ 2.0', trace gravel @ 4.0', increase in gravel and some cobbles
	7.0-7.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 7.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-2	0-15.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet. @ 4.0', becomes dry to damp.
			Total Depth: 15.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-3	0-9.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	9.0-9.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 9.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-4	0-13.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots. @ 2.0', trace gravel and cobbles
	13.5-14.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 14.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-5	0-7.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	7.0-8.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 8.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-6	0-5.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	5.0-6.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 6.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-7	0-10.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	10.0-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-8	0-9.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
	9.5-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-9	0-10.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 1.5 feet.
	10.0-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-10	0-1.5	SP	ARTIFICIAL FILL (Qaf): Sand, fine to coarse grained, light gray white, dry to damp, medium dense.
	1.5-4.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, damp, loose.
			Total Depth: 4.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-11	0-7.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
			Total Depth: 7.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-12	0-15.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, roots in upper 2 feet.
			Total Depth: 15.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-13	0-8.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 1.5 feet.
	8.0-8.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 8.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-14	0-1.5	SM	ARTIFICIAL FILL (Qaf): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, medium dense, some construction debris.
	1.5-14.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, damp, loose.
	14.5-15.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 15.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (feet)	U.S.C.S. Symbol	Field Description
TP-15	0-7.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 2 feet.
	7.5-8.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 8.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (feet)	U.S.C.S. Symbol	Field Description
TP-16	0-10.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 2 feet.
	10.5-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-17	0-11.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 2 feet.
	11.0-12.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 12.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-18	0-10.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 1.5 feet.
	10.0-11.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (feet)	U.S.C.S. Symbol	Field Description
TP-19	0-5.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 1.5 feet.
	5.0-7.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 7.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (feet)	U.S.C.S. Symbol	Field Description
TP-20	0-5.0	SP	ARTIFICIAL FILL (Qaf): Sand, fine to coarse grained, light gray white, damp to moist, dense. Contact with bedrock is nearly level.
	5.0-6.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, very hard.
			Total Depth: 6.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

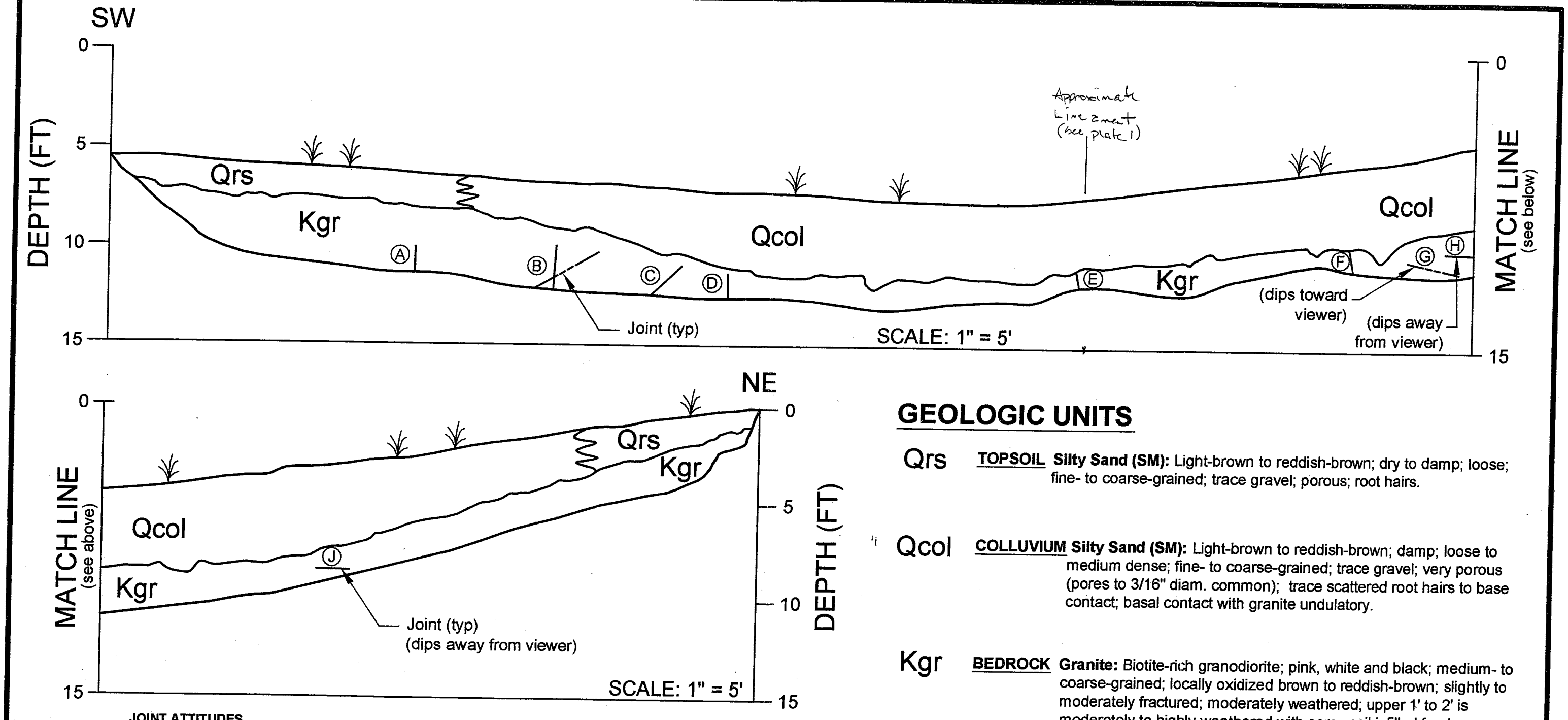
DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-21	0-8.5	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose, very porous, rodent borrows, roots in upper 1.5 feet.
	8.5-9.5		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 9.5 feet No Caving No Groundwater Trench Backfilled Without Compaction

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-22	0-5.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose.
	5.0-11.0		BEDROCK: Pauba Formation (Qp): Silty Sandstone, fine grained with some scattered medium to coarse grained sand, dark gray brown to olive brown, damp to moist, moderately hard.
			Total Depth: 11.0 feet No Caving No Groundwater Trench Backfilled Without Compaction

DESCRIPTIVE LOG OF TRENCH EXCAVATION

Trench Number	Depth (Feet)	U.S.C.S. Symbol	Field Description
TP-23	0-10.0	SM	ALLUVIUM (Qal): Silty Sand, fine to coarse grained, brown to reddish brown, dry to damp, loose.
	10.0-12.0		BEDROCK: Granite (Kgr): coarse grained, pinkish gray white, moderately hard to hard, highly weathered.
			Total Depth: 12.0 feet No Caving No Groundwater Trench Backfilled Without Compaction



JOINT ATTITUDES

- Ⓐ E-W, 87N
- Ⓑ N20E, 90 — SET
  N55W, 48SW — SET
- Ⓒ N55W, 56SW
- Ⓓ N20E, 88SE
- Ⓔ N20E, 82SE
- Ⓕ N-S, 80E
- Ⓖ N38E, 73SE
- Ⓗ N60E, 63NW
- Ⓙ N63E, 78NW

GEOLOGIC UNITS

Qrs **TOPSOIL** **Silty Sand (SM):** Light-brown to reddish-brown; dry to damp; loose; fine- to coarse-grained; trace gravel; porous; root hairs.

Qcol **COLLUVIUM** **Silty Sand (SM):** Light-brown to reddish-brown; damp; loose to medium dense; fine- to coarse-grained; trace gravel; very porous (pores to 3/16" diam. common); trace scattered root hairs to base contact; basal contact with granite undulatory.

Kgr **BEDROCK** **Granite:** Biotite-rich granodiorite; pink, white and black; medium- to coarse-grained; locally oxidized brown to reddish-brown; slightly to moderately fractured; moderately weathered; upper 1' to 2' is moderately to highly weathered with some soil infilled fractures.

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LOG OF FAULT TRENCH FT-1

Job No.: 1338.00 | Date: 9/03/04 | Plate: A-21

APPENDIX B

Seismic Refraction Survey (Albus-Keefe & Associates, Inc., 2004)

FILE 1850-1.SIP
SEISMIC LINE S-1

SPREAD 1

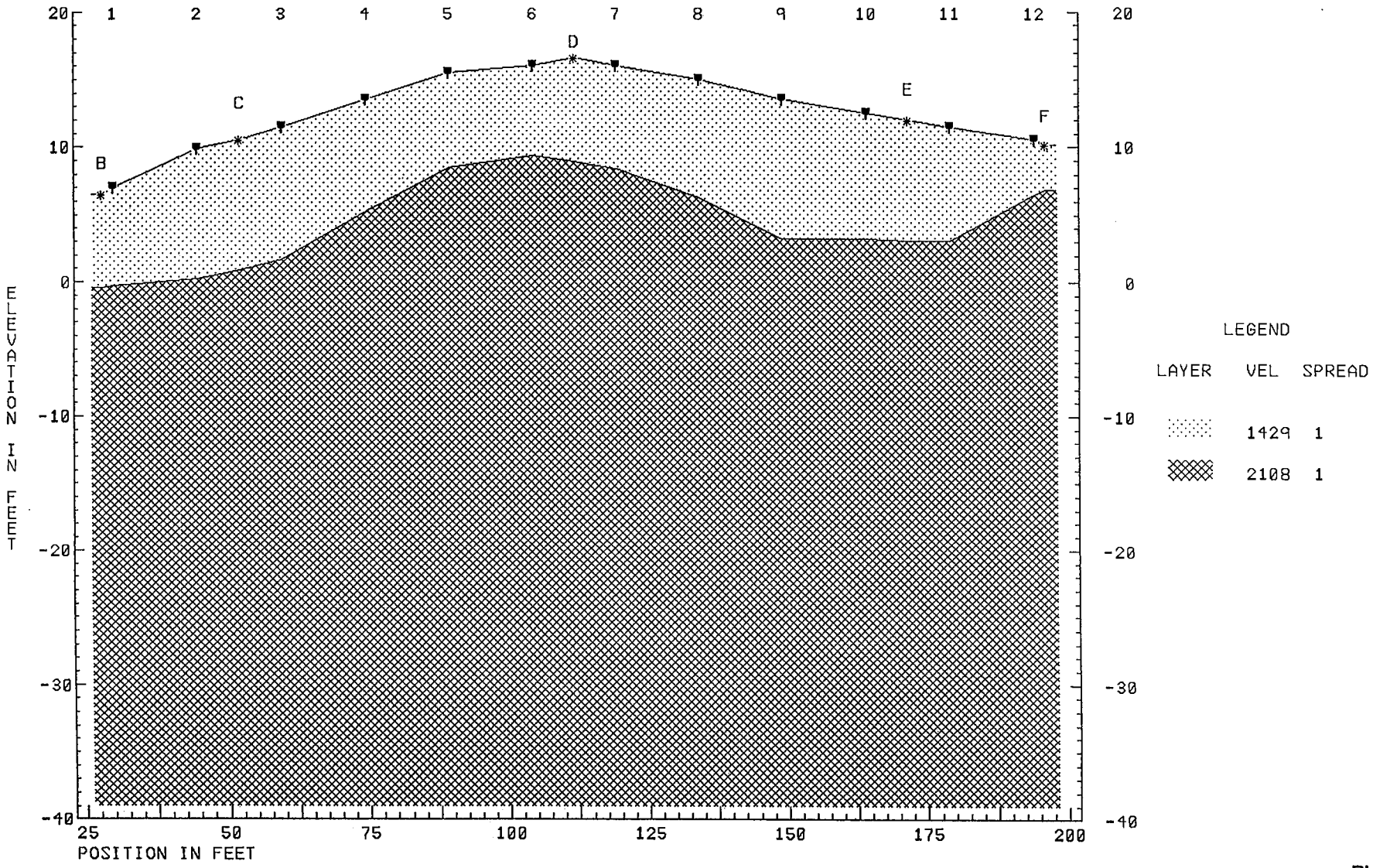


PLATE B-1

FILE 1850-2.SIP
SEISMIC LINE S-2

SPREAD 2

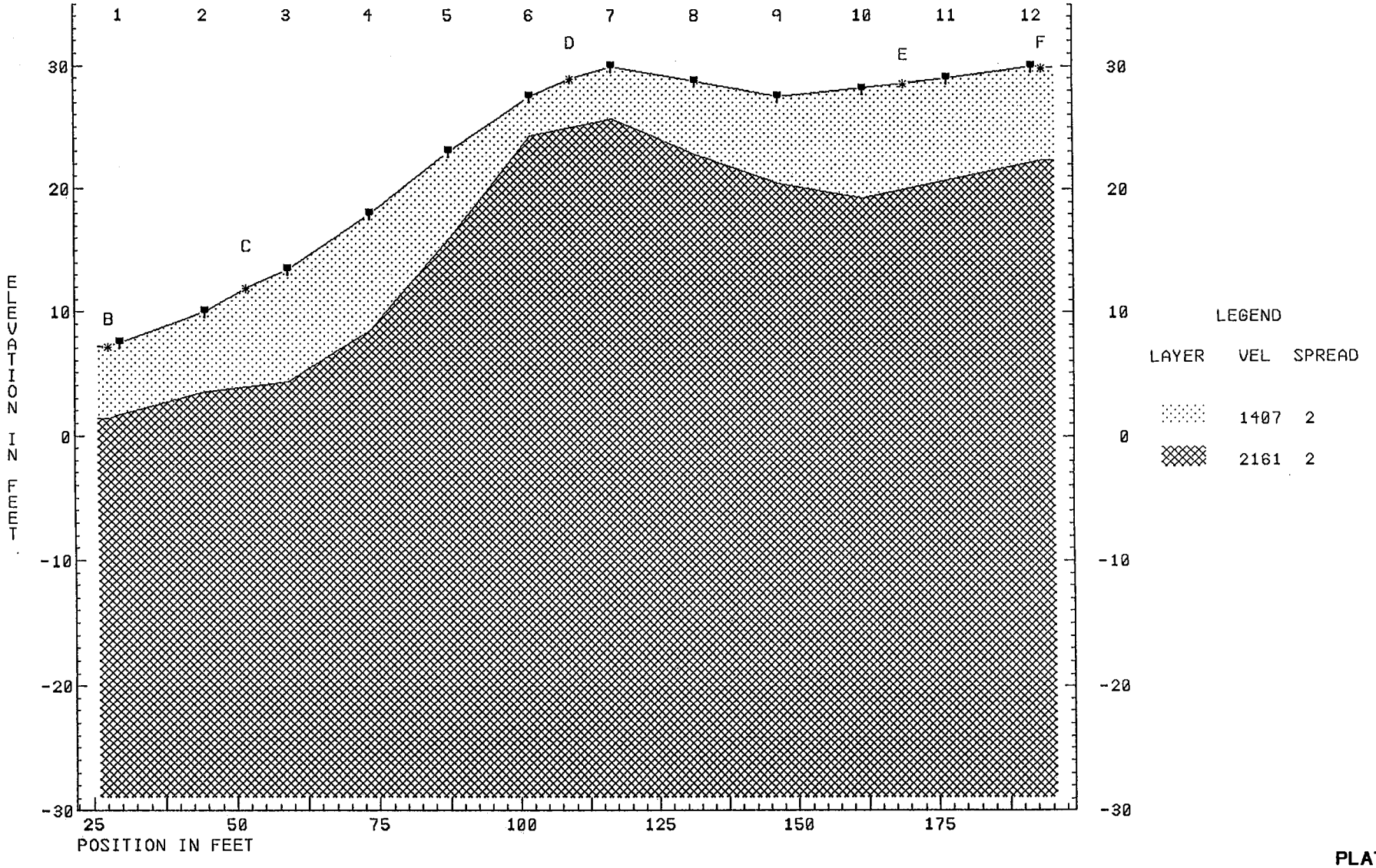


PLATE B-2

FILE 1850-3.SIP
SEISMIC LINE S-3

SPREAD 3

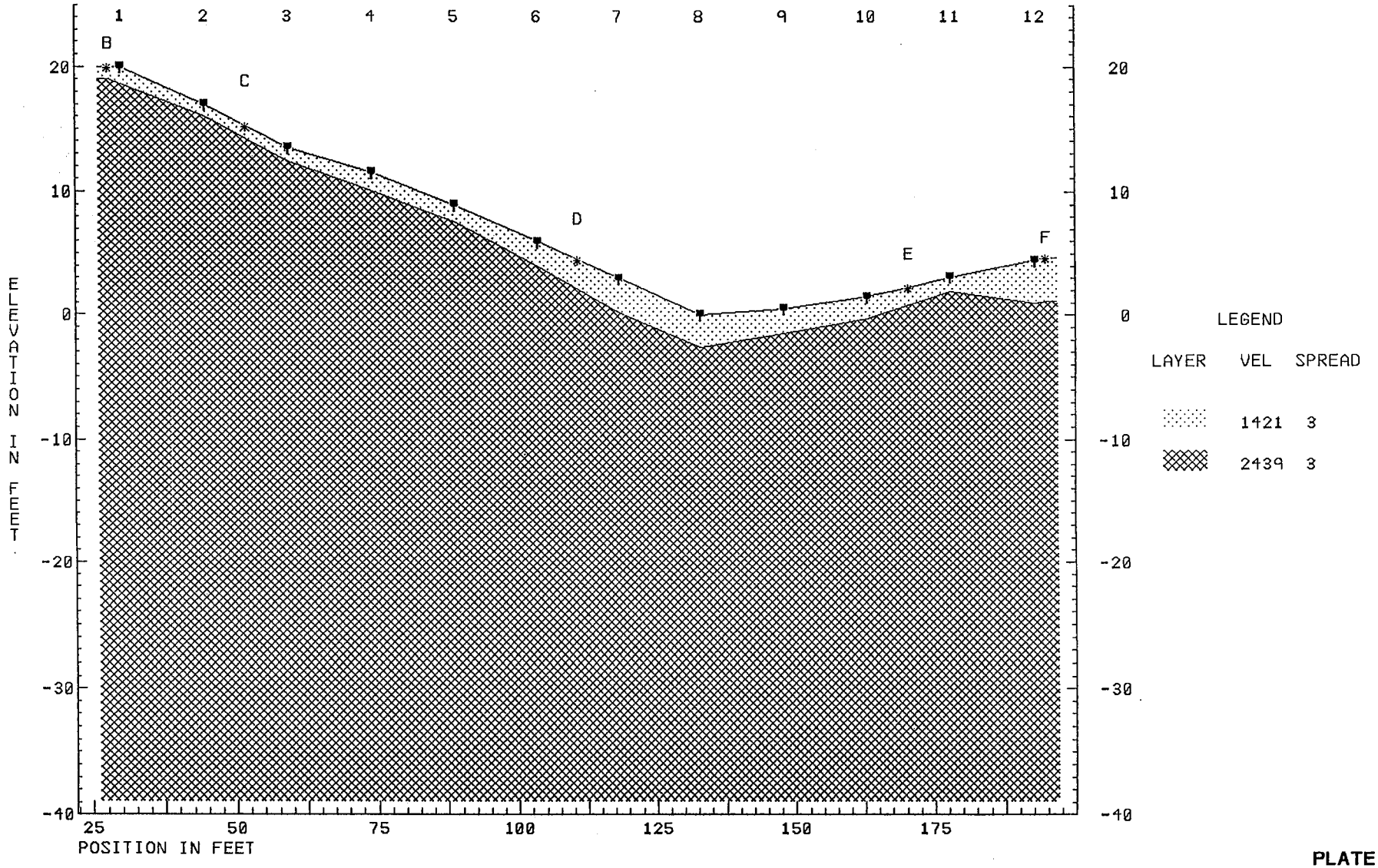


PLATE B-3

FILE 1850-4A.SIP
SEISMIC LINE S-4

SPREAD 4

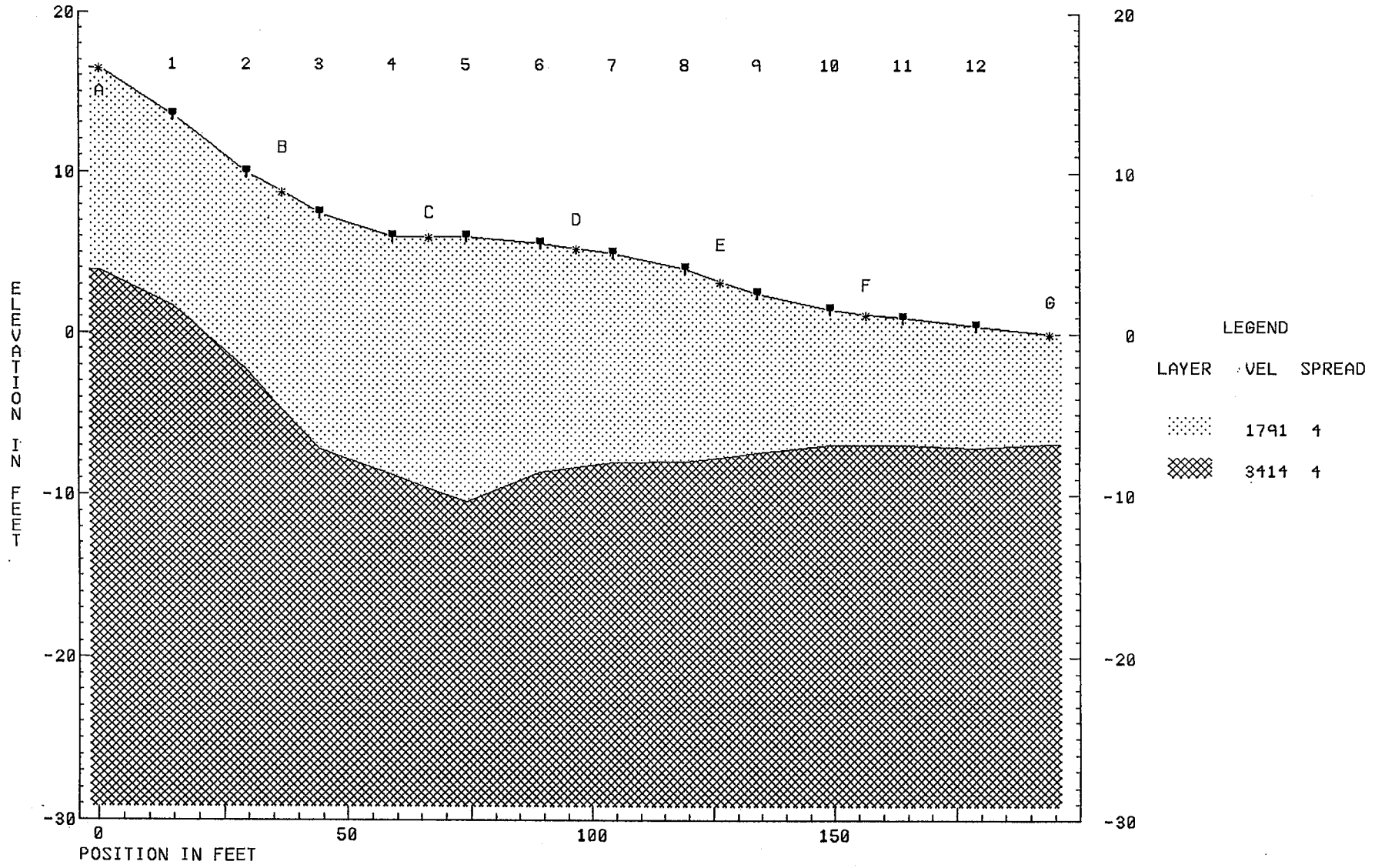


PLATE B-4

APPENDIX C

Laboratory Test Results (Albus-Keefe & Associates, Inc., 2004)

LABORATORY TESTING PROGRAM

Soil Classification

Soils encountered within the exploratory borings and trenches were initially classified in the field in general accordance with the visual-manual procedures of the Unified Soil Classification System (ASTM D2488-93). The samples were re-examined in the laboratory and classifications reviewed and then revised where appropriate. The assigned group symbols are presented in the Exploration Logs provided in Appendix A.

In Situ Moisture and Density

Moisture content and unit dry density testing of in-place soil materials encountered in selected trenches were determined in accordance with ASTM D2922/D 3017 (nuclear gauge) during our field investigation. Moisture content and unit dry density testing were also determined in the laboratory on undisturbed samples obtained from exploratory excavations. Test data are summarized in Table C-2 and on boring logs in Appendix A.

Laboratory Maximum Dry Density

Maximum dry density and optimum moisture content were performed on representative samples of the site materials. The tests were performed in accordance with Method A of ASTM D 1557-91. Pertinent test values are given on Table C-1.

Particle Size Analyses

A particle size analysis was performed on a representative sample of site materials. The test was performed in accordance with ASTM D 422-63. The result is presented graphically on the attached Plate C-1.

Direct Shear

The Coulomb shear strength parameters, angle of internal friction and cohesion, were determined for bulk and relatively undisturbed samples obtained from our subsurface exploration. AMEC Earth & Environmental of Anaheim, California, performed the tests in general conformance with ASTM D 3080-80. The bulk samples were remolded to 90 percent of maximum dry density and 2 percentage over optimum. Three specimens were prepared for each test, artificially saturated, and then sheared under varied loads at an appropriate constant rate of strain. Results are graphically presented on Plates C-2 through C-4.

Soluble Sulfate Analysis

A chemical analysis was performed on a selected sample to determine soluble sulfate content. The test was performed in accordance with California Test Method No. 417. The test result is included on Table C-1.

R-Value

An R-Value test was performed by AMEC Earth & Environmental of Anaheim, California, on a representative soil sample. The test was performed in general conformance with California Test Method No. 301. The test result is presented on Table C-1.

TABLE C-1
Summary of Laboratory Test Results

Trench No.	Sample Depth (ft)	Soil Description	Test Results	
B-1	0.0-10.0	Alluvium (Qal) Silty F-C Sand (SM)	Maximum Dry Density: Optimum Moisture Content: Soluble Sulfate Content: R-Value:	135.0 pcf 8.0 % 0.015 % 52
FT-1	4.0-5.0	Bedrock: Granite (Kgr)	Maximum Dry Density: Optimum Moisture Content:	130.0 pcf 8.0 %

TABLE C-2
Summary of In-situ Dry Density and Moisture Content Test Results

Trench No.	Depth (ft)	Soil Description	Test Results
TP-1	2.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 92.1 pcf In-situ Moisture Content: 5.4 %
TP-3	3.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 93.0 pcf In-situ Moisture Content: 7.2 %
TP-6	2.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.3 pcf In-situ Moisture Content: 5.3 %
TP-7	2.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 95.3 pcf In-situ Moisture Content: 5.9 %
TP-9	1.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 98.1 pcf In-situ Moisture Content: 4.1 %
TP-9	3.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 105.9 pcf In-situ Moisture Content: 4.6 %
TP-9	4.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 100.4 pcf In-situ Moisture Content: 5.3 %
TP-11	2.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 101.2 pcf In-situ Moisture Content: 4.5 %
TP-11	4.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 95.1 pcf In-situ Moisture Content: 6.9 %
TP-11	5.5	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.5 pcf In-situ Moisture Content: 6.5 %
TP-11	7.0	Alluvium: Silty F-C Sand (SM)	In-situ Dry Density: 99.4 pcf In-situ Moisture Content: 5.7 %

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GRAIN SIZE DISTRIBUTION

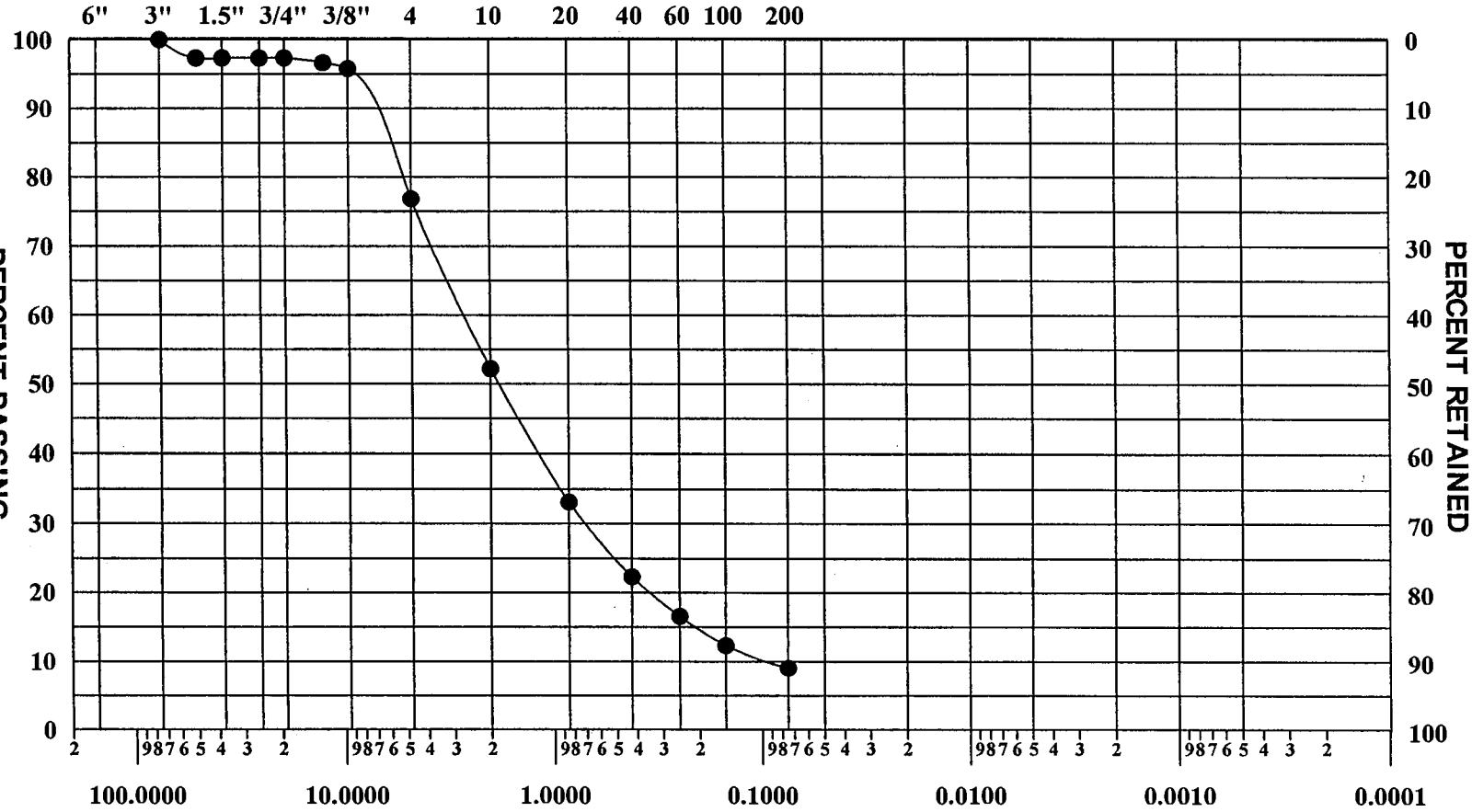
Job No: 1338.00

Plate No: C-1

UNIFIED SOIL CLASSIFICATION

COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

U.S. STANDARD SIEVE SIZES



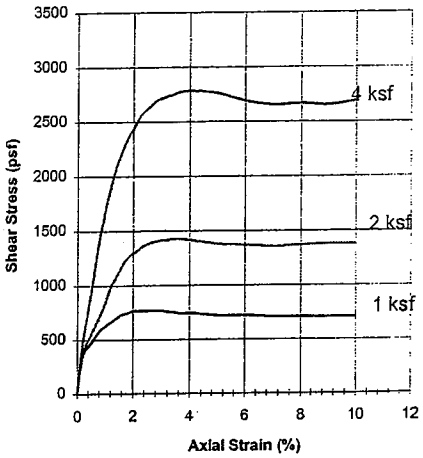
LOCATION	DEPTH	SYMBOL	LL	PI	CLASSIFICATION
FT-1	4' - 5'	●——●			Silty Sand (SP-SM) w/ gravel
		■- - -■			
		▲—- -▲			
		◆—·—◆			

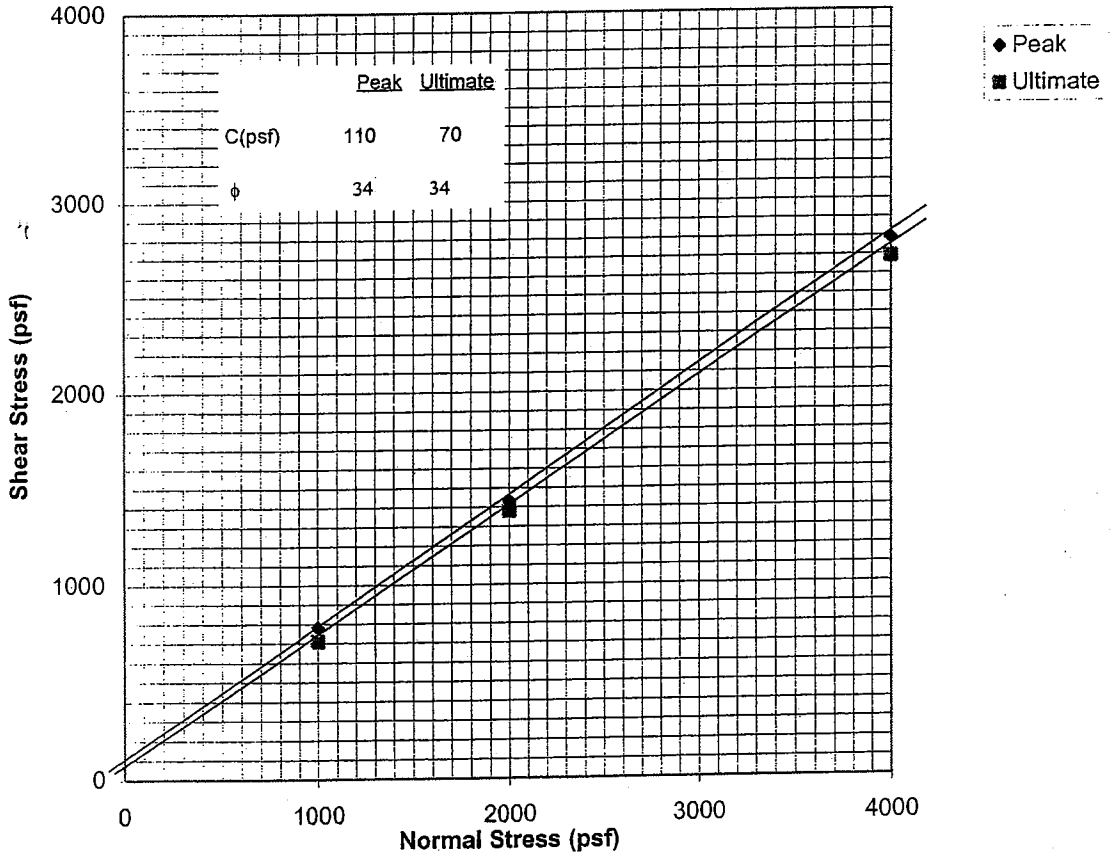
DIRECT SHEAR TEST

PROJECT:	Albus-Keefe #1338.00
JOB NO.:	0-212-102200
SAMPLE LOCATION:	B-1 @ 0-10'
SAMPLE TYPE:	Remolded/Saturated
DESCRIPTION:	Brown Silt

Date: 08/27/2004

Specimen No.	1	2	3
Normal Stress, psf	1000	2000	4000
Peak Stress, psf	780	1428	2784
Displacement, in.	0.058	0.079	0.094
Ultimate Stress, psf	708	1380	2688
Displacement, in.	0.250	0.250	0.250
Initial Dry Density, pcf	121.5	121.5	121.5
Initial Water Content, %	10.0	10.0	10.0
Strain Rate, in/min.	0.0083	0.0083	0.0083





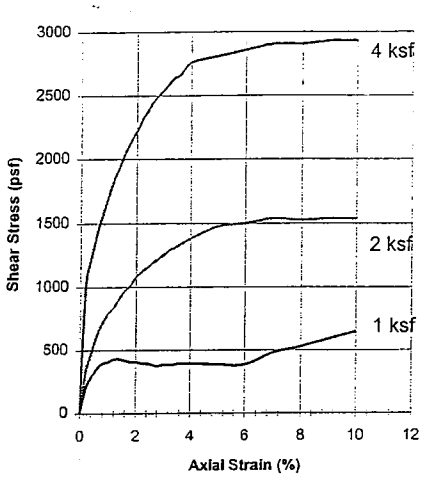
amec

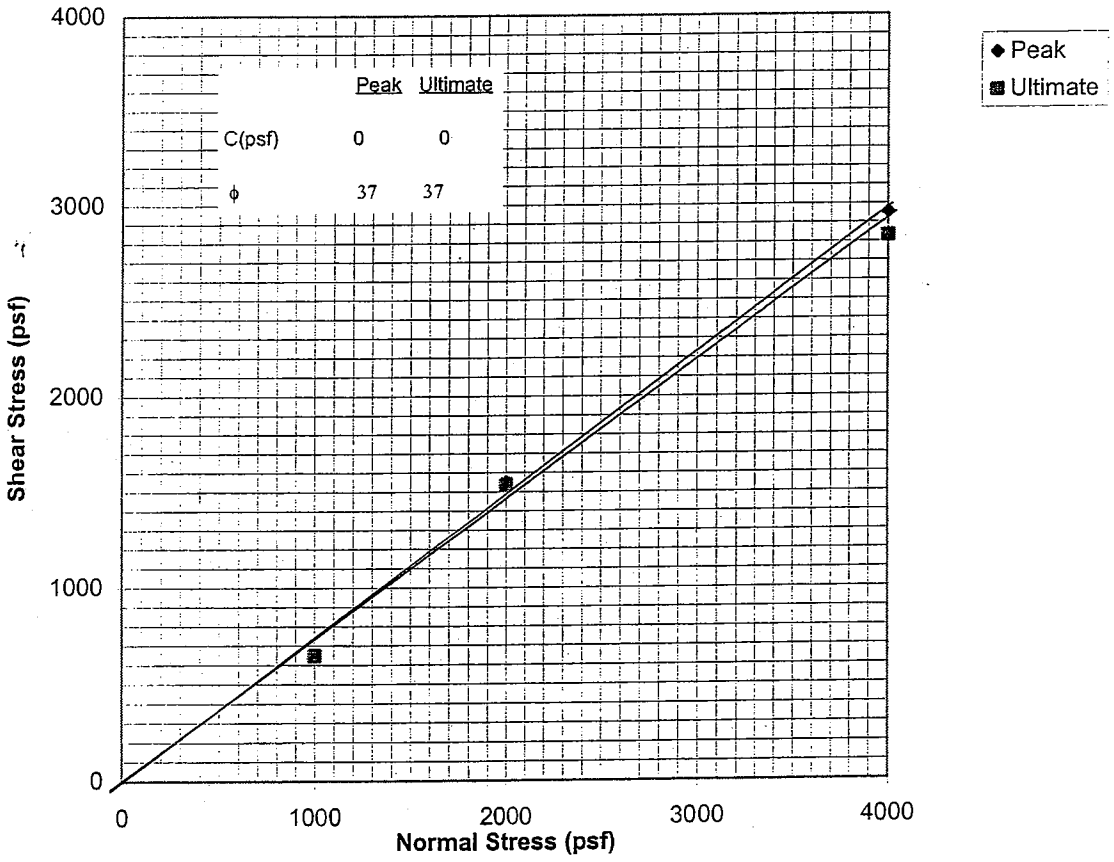
PLATE C-2

DIRECT SHEAR TEST

PROJECT:	Albus-Keefe #1338.00	Date:	08/17/2004
JOB NO.:	0-212-102200		
SAMPLE LOCATION:	B-1 @ 20'		
SAMPLE TYPE:	Undisturbed/Saturated		
DESCRIPTION:	Brown Silt w/Sand		

Specimen No.		1	2	3
Normal Stress,	psf	1000	2000	4000
Peak Stress,	psf	648	1548	2952
Displacement,	in.	0.248	0.189	0.242
Ultimate Stress,	psf	648	1536	2829
Displacement,	in.	0.250	0.250	0.250
Initial Dry Density,	pcf	114.0	114.0	114.0
Initial Water Content, %		5.7	5.7	5.7
Strain Rate,	in/min.	0.0083	0.0083	0.0083





amec

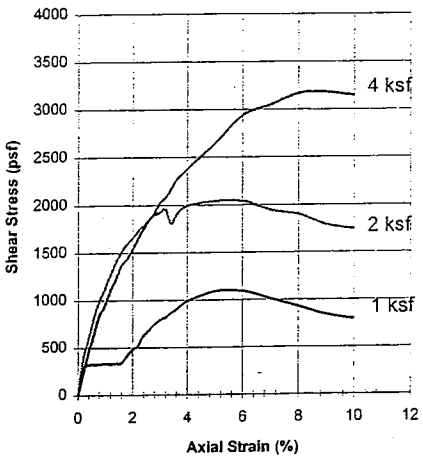
PLATE C-3

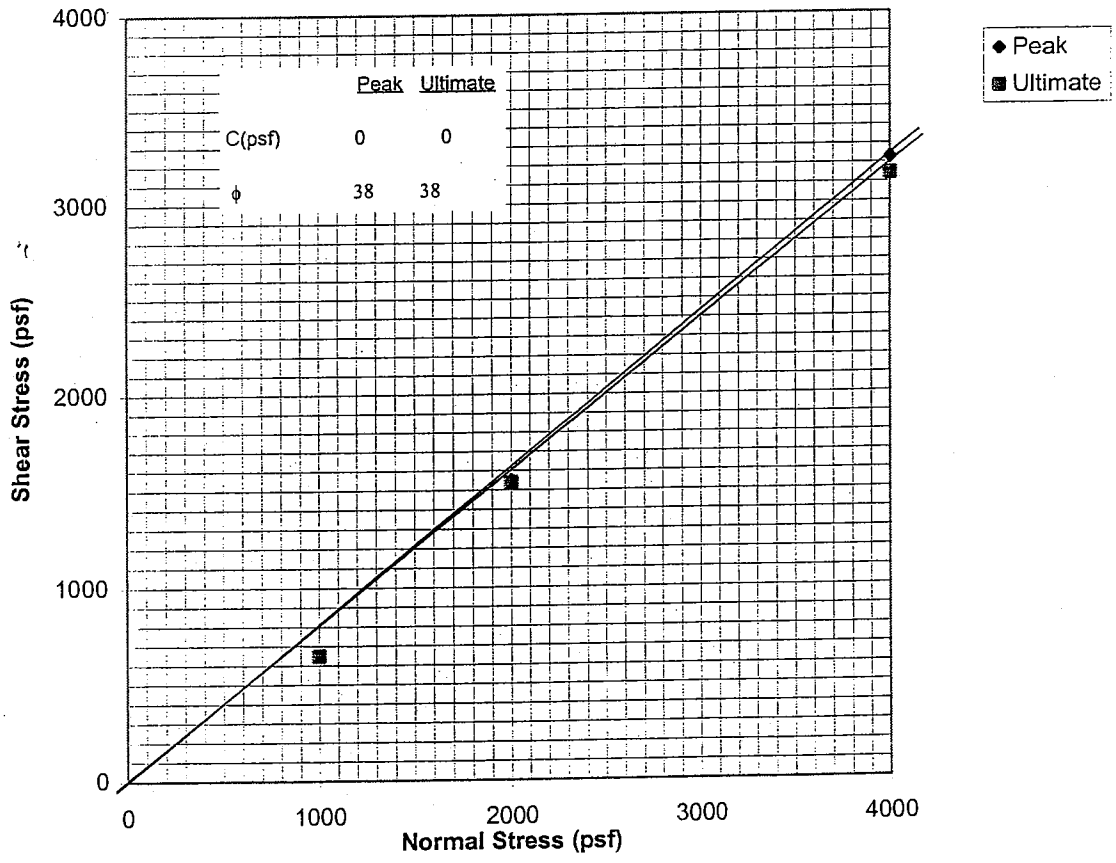
DIRECT SHEAR TEST

PROJECT:	Albus-Keefe #1338.00
JOB NO.:	0-212-102200
SAMPLE LOCATION:	T-1 @ 4-5'
SAMPLE TYPE:	Remolded/Saturated
DESCRIPTION:	Brown Silt w/Sand

Date: 08/17/2004

Specimen No.	1	2	3
Normal Stress, psf	1000	2000	4000
Peak Stress, psf	648	1548	3228
Displacement, in.	0.248	0.189	0.220
Ultimate Stress, psf	648	1536	3144
Displacement, in.	0.250	0.250	0.250
Initial Dry Density, pcf	117.0	117.0	117.0
Initial Water Content, %	10.5	10.5	10.5
Strain Rate, in/min.	0.0083	0.0083	0.0083





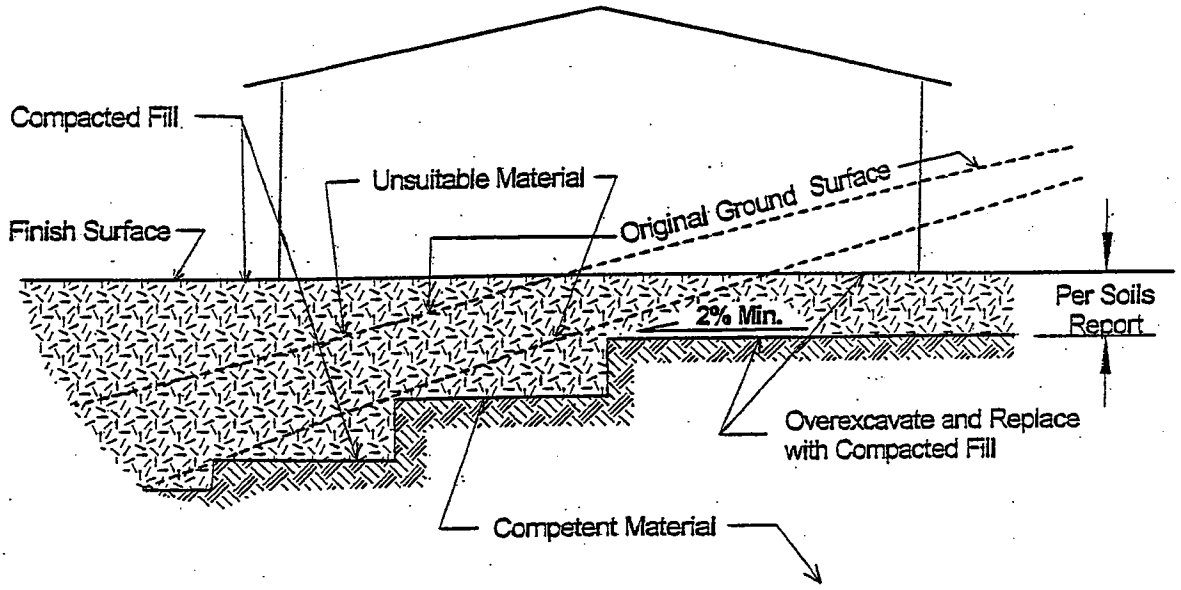
amec

PLATE C-4

APPENDIX D

STANDARD GRADING DETAILS

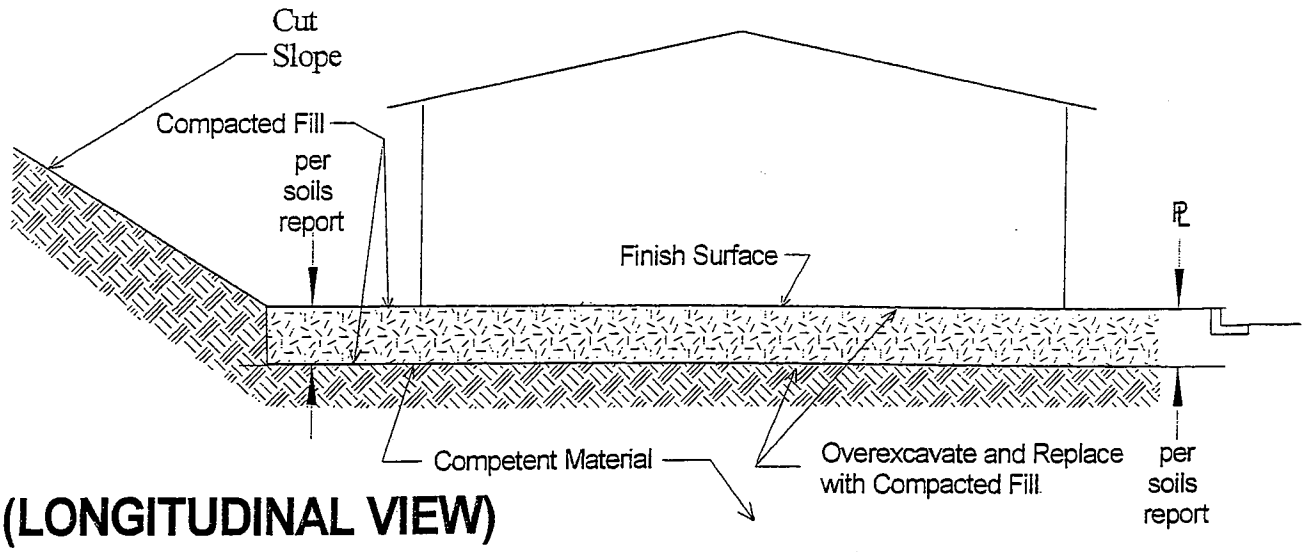
CUT/FILL TRANSITION LOT



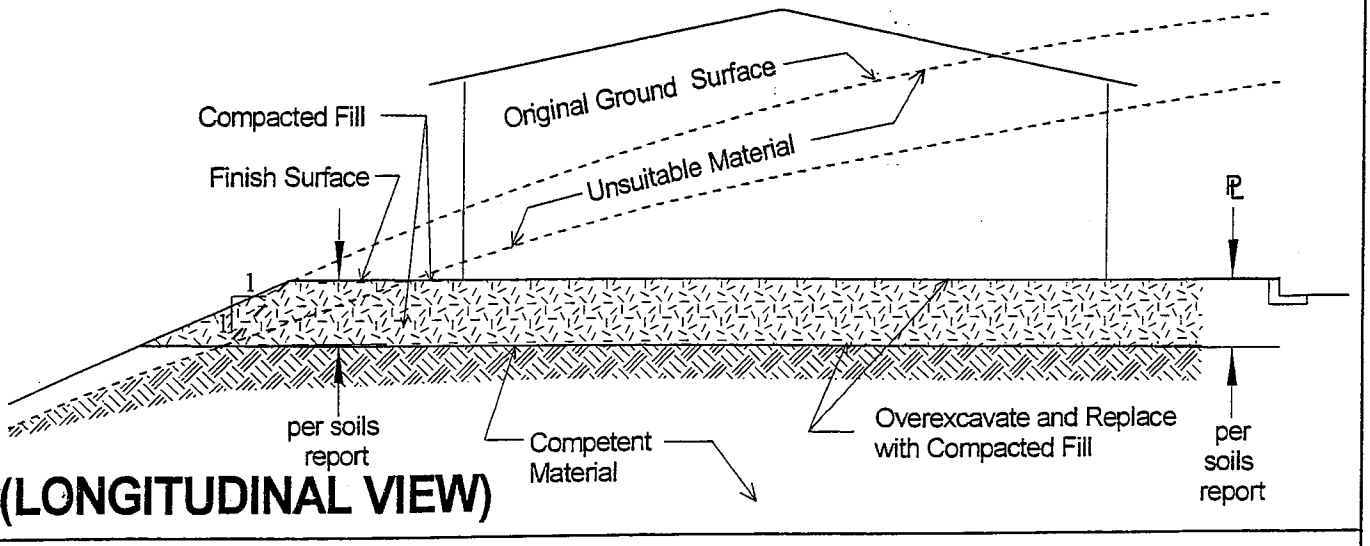
TRANSITION LOT CAPPING

Not To Scale
See attached soils report for specific recommendations.

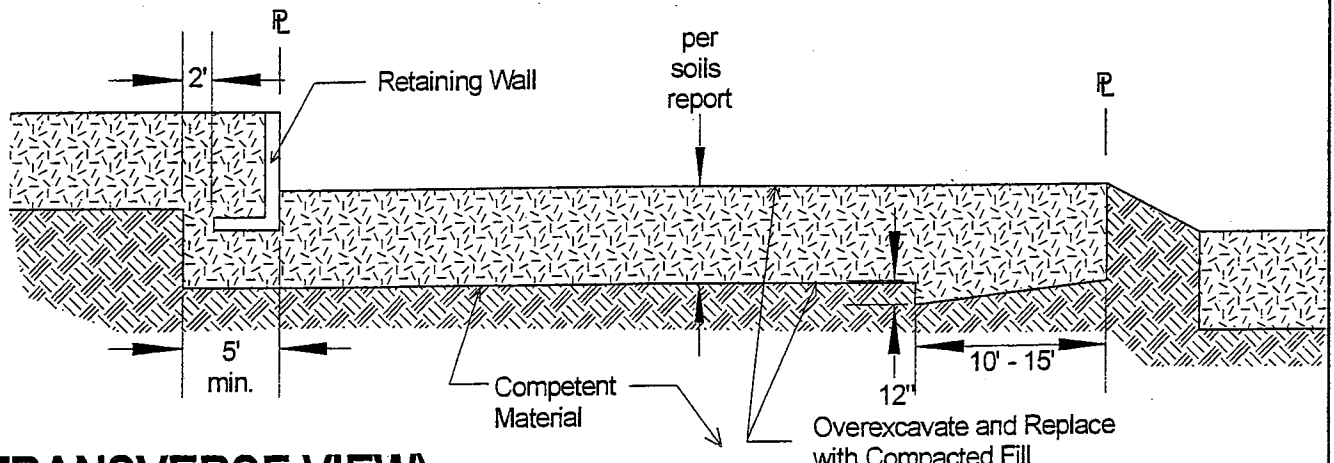
Detail No. 14



(LONGITUDINAL VIEW)



(LONGITUDINAL VIEW)



(TRANSVERSE VIEW)

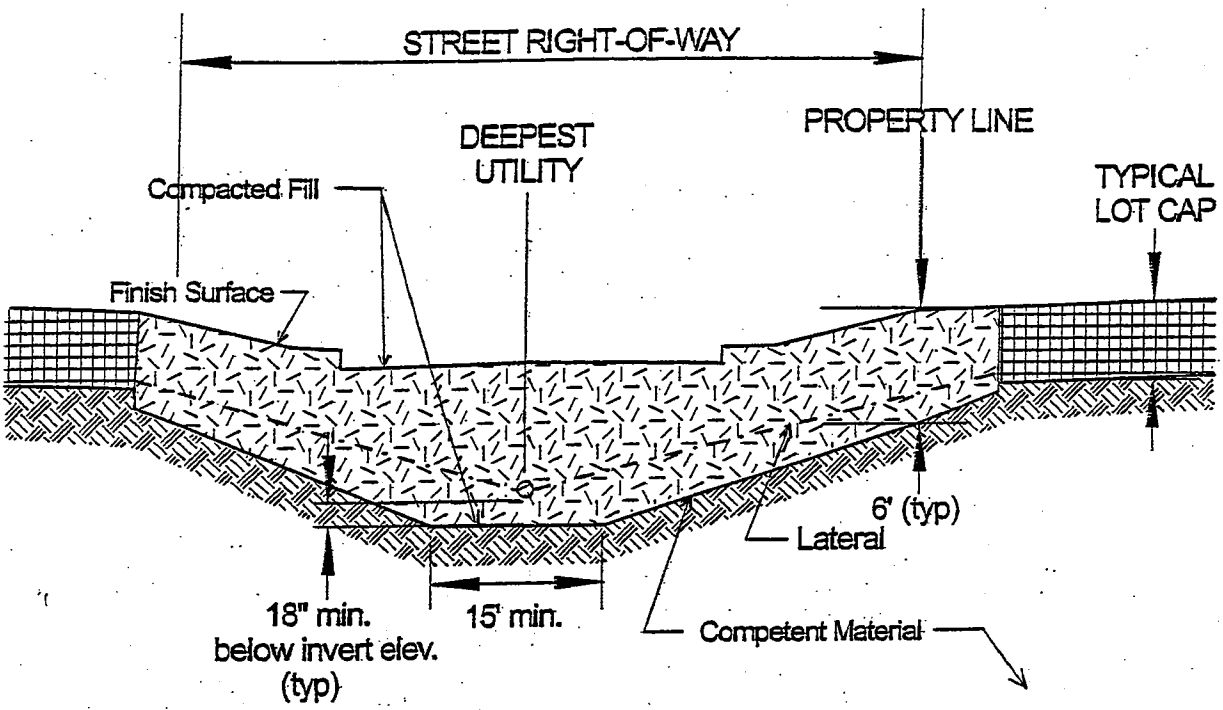
CUT LOT CAPPING

Not To Scale
See attached soils report for specific recommendations.

17

ALBUS-KEEFE & ASSOCIATES, INC.

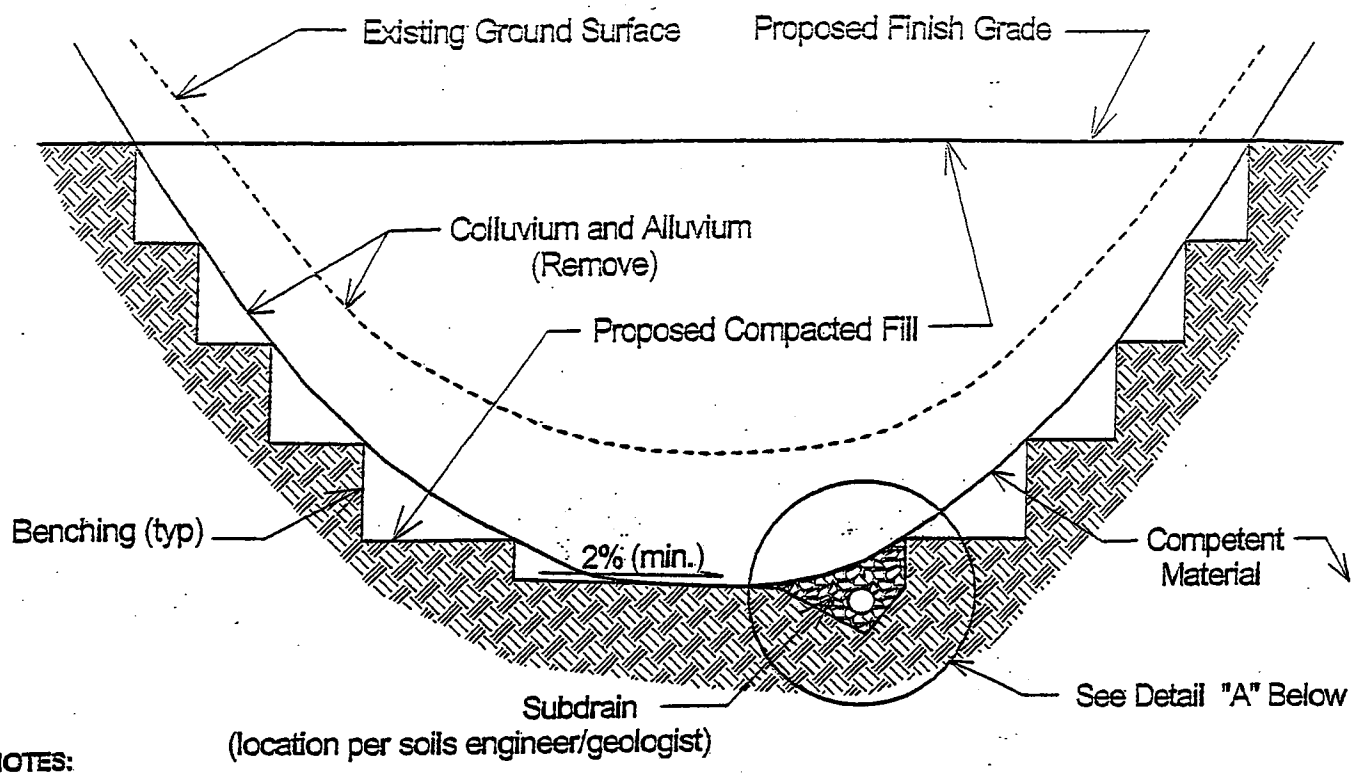
PLATE D-2



STREET CAPPING

Not To Scale
See attached soils report for specific recommendations.

Detail No. 19a



NOTES:

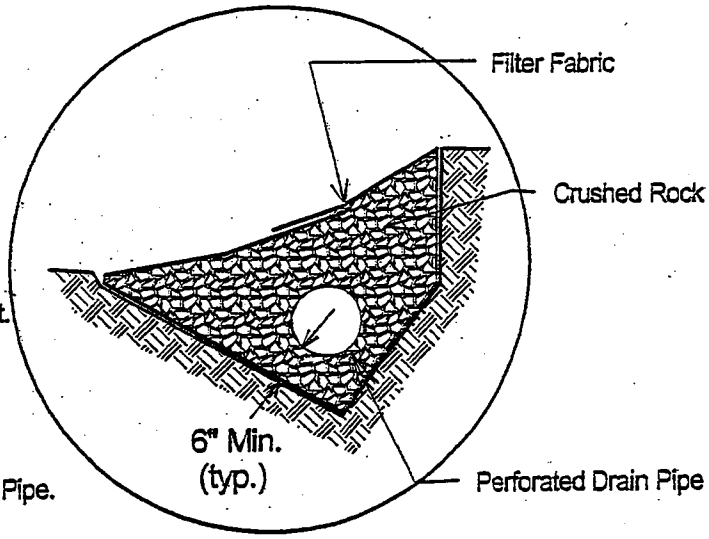
Perforated Drain Pipe should be at least 6 inches in diameter, or 8 inches for runs of more than 500 feet, consisting of either Shedule 40 PVC or SDR 35. A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8". Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes. Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point. Backfill around Outlet Pipe should consist of onsite soils. Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4". Provide at least 9 cubic feet per lineal foot of Perforated Drain Pipe. Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Miriff 140N or equivelent. Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

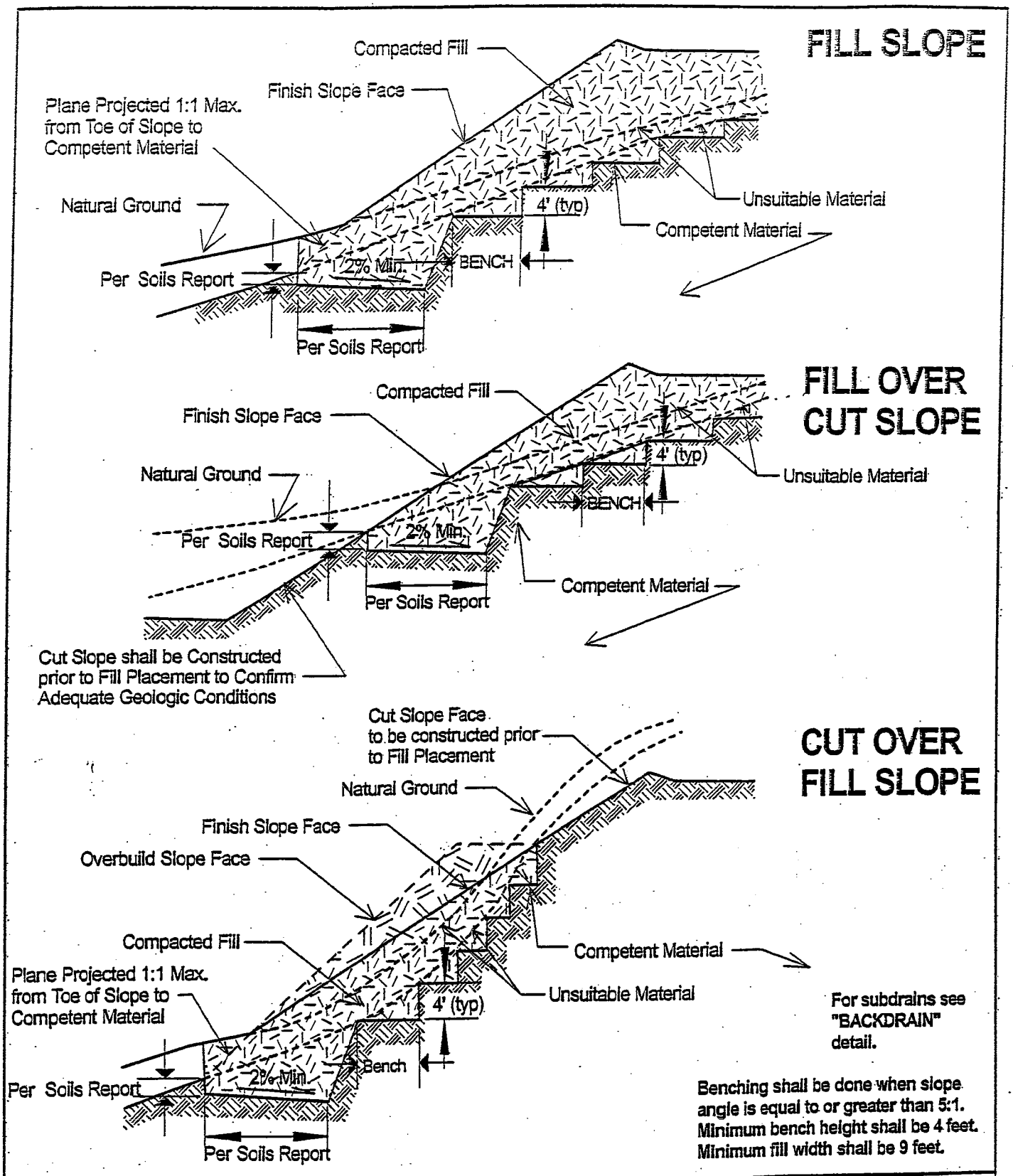


DETAIL "A"

CANYON SUBDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 7b

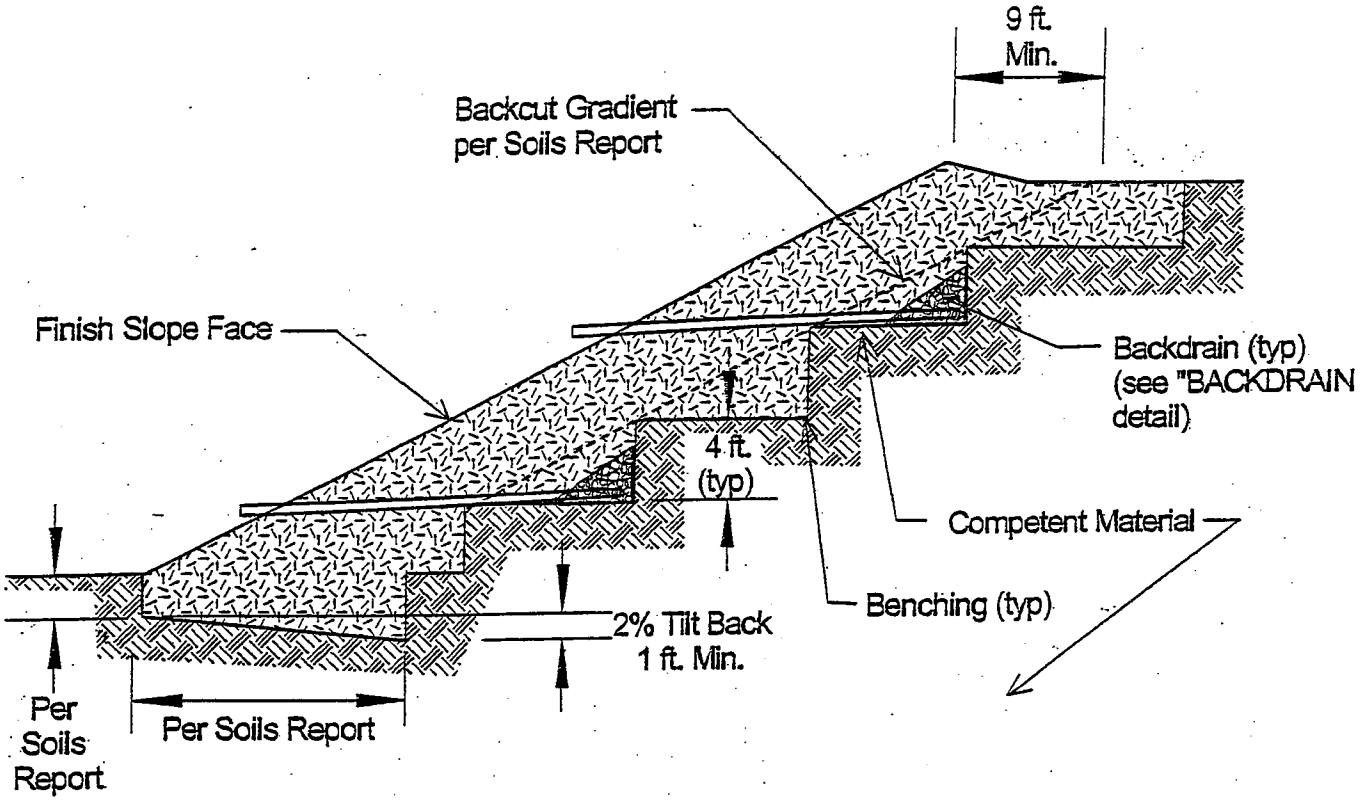


FILL SLOPE CONSTRUCTION

Not To Scale

See attached soils report for specific recommendations.

Detail No. 1

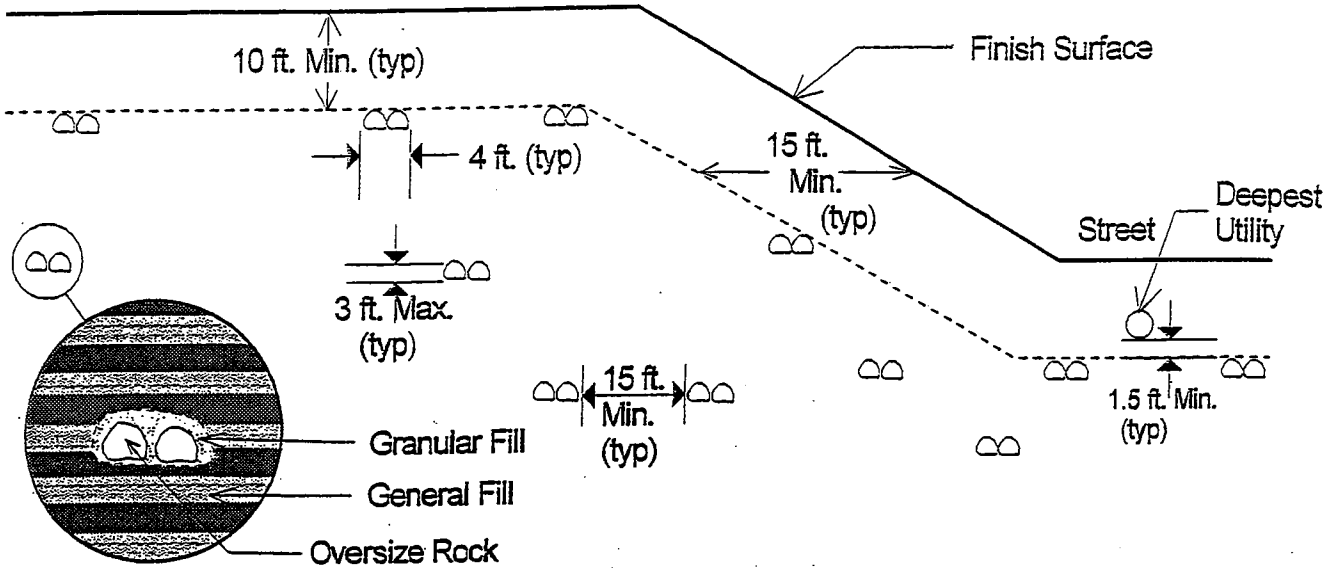


STABILIZATION FILL

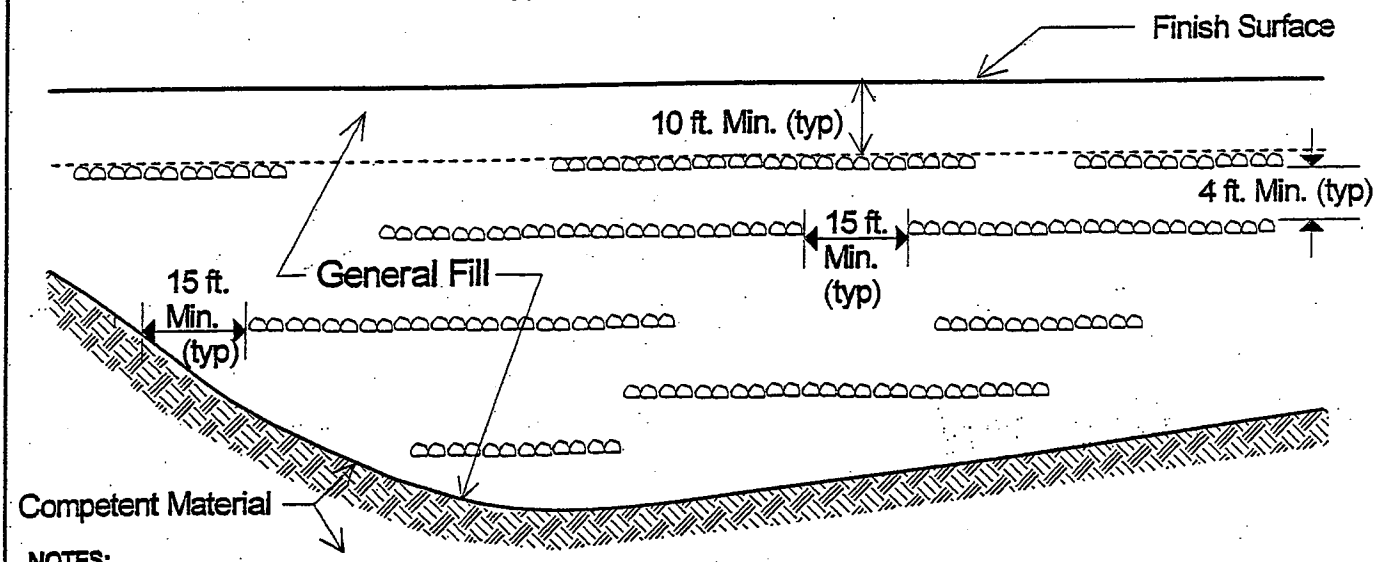
Not To Scale
See attached soils report for specific recommendations.

Detail No. 3b

VIEW NORMAL TO SLOPE FACE



VIEW PARALLEL TO SLOPE FACE



NOTES:

A. Oversize Rock should be placed within troughs created in the General Fill (windrows)

B. Oversize Rock should be placed to avoid nesting.

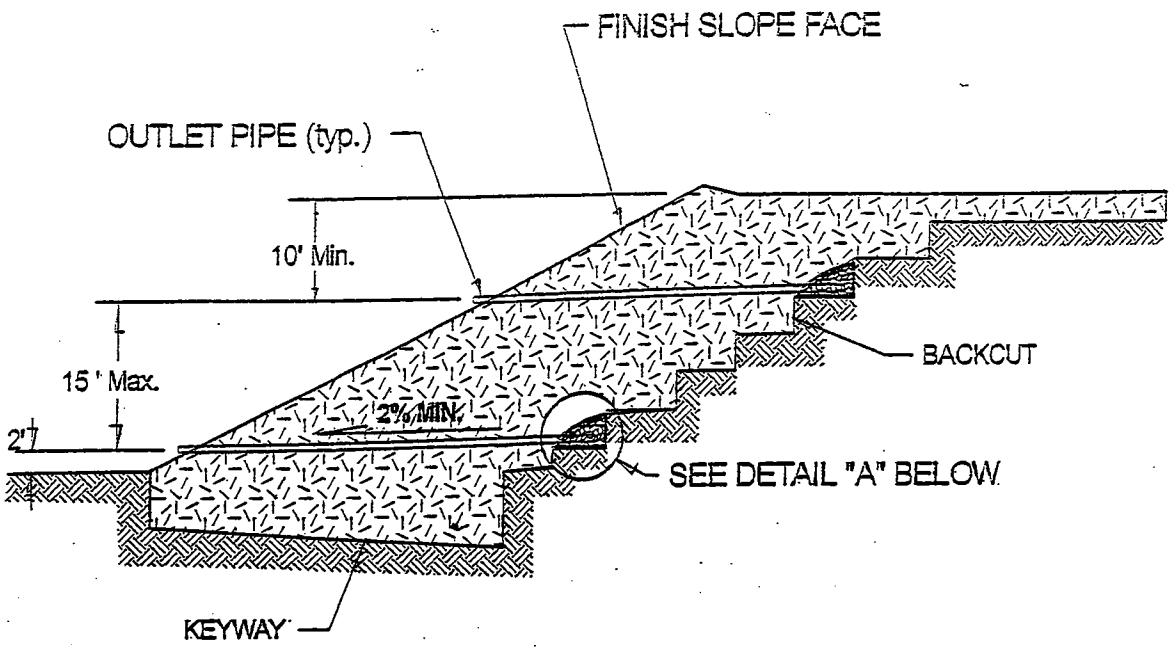
C. A layer of Granular Fill (soil material having a maximum particle size of 3 inches or less, and with a Sand Equivalent of 30 or more) should be placed over the Oversize Rock windrow and flooded.
This process should be repeated until all voids have been filled.

D. After the voids are filled with Granular Fill, the windrow should be track-walked with a dozer prior to placing General Fill over the windrow.

E. Oversize Rock, suitable for disposal by these methods, is defined as larger than 12 inches but not more than 36 inches in smallest dimension.

OVERSIZE ROCK DISPOSAL

Not To Scale
See attached soils report for specific recommendations.



NOTES:

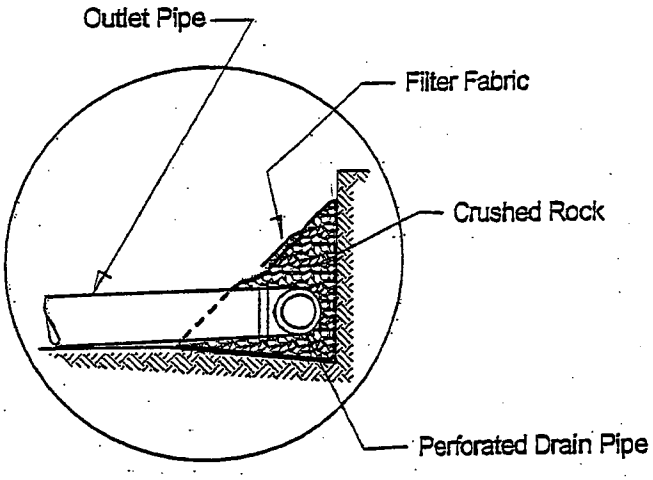
Perforated Drain Pipe should be at least 4 inches in diameter, or 6 inches for runs of more than 100 feet, consisting of either Shedule 40 PVC or SDR 35. A min. of 8 perforations per linear foot should be provided along the bottom of pipe. The perforations should be in two rows 120 degrees apart, and have diameters of 3/8". Upstream ends should be provided with a cap. The pipe should slope at a min. 1% gradient toward Outlet Pipes. Glue all joints.

Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point. Backfill around Outlet Pipe should consist of onsite soils. Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4". Provide at least 5 cubic feet per lineal foot of Perforated Drain Pipe. Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent. Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric

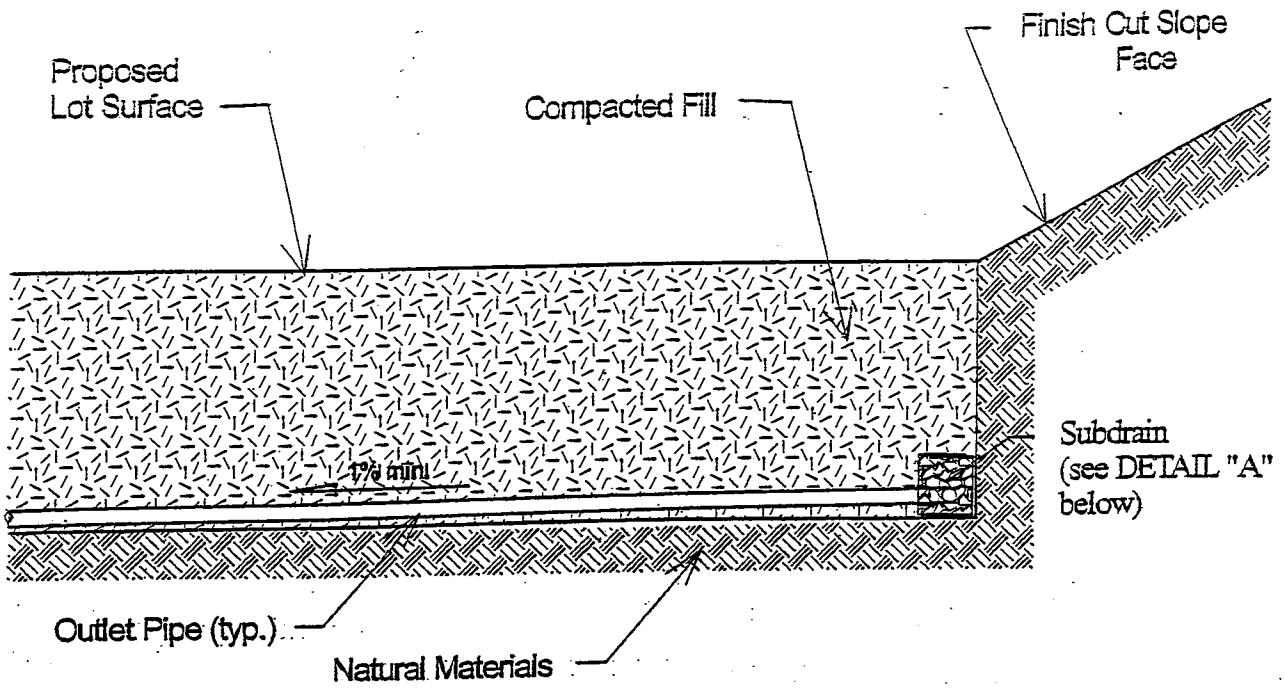


DETAIL "A"

BACKDRAIN

Not To Scale
See attached soils report for specific recommendations.

Detail No. 8c



NOTES:

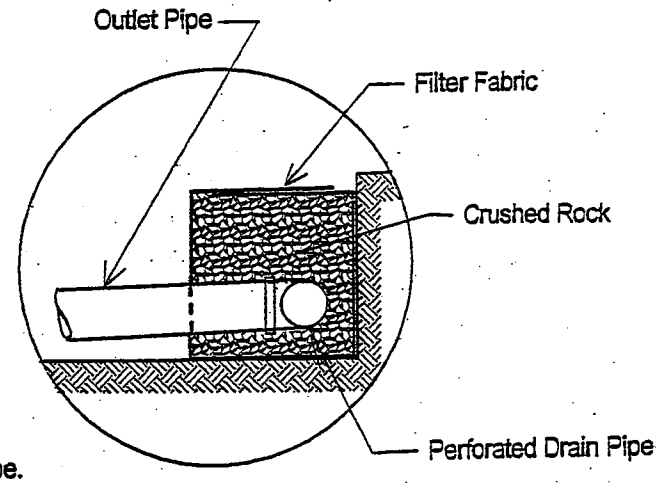
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Outlet Pipe should equal the diameter of the perforated pipe, consisting of either shedule 40 PVC or SDR 35. The pipe should slope at a min. 1% gradient toward the Discharge Point. Backfill around Outlet Pipe should consist of onsite soils. Glue all joints.

Crushed Rock should conform to the Standard Specifications for Public Works Construction, Section 200-1.2, for 3/4". Provide at least 3 cubic feet per lineal foot of Perforated Drain Pipe. Provide at least 6 inches of gravel below Perforated Pipe.

Filter Fabric should consist of Mirifi 140N or equivelent. Ends should overlap at least 12 inches.

CALTRANS Class II Permeable Filter Material can be used in lieu of Crushed Rock encased in Filter Fabric



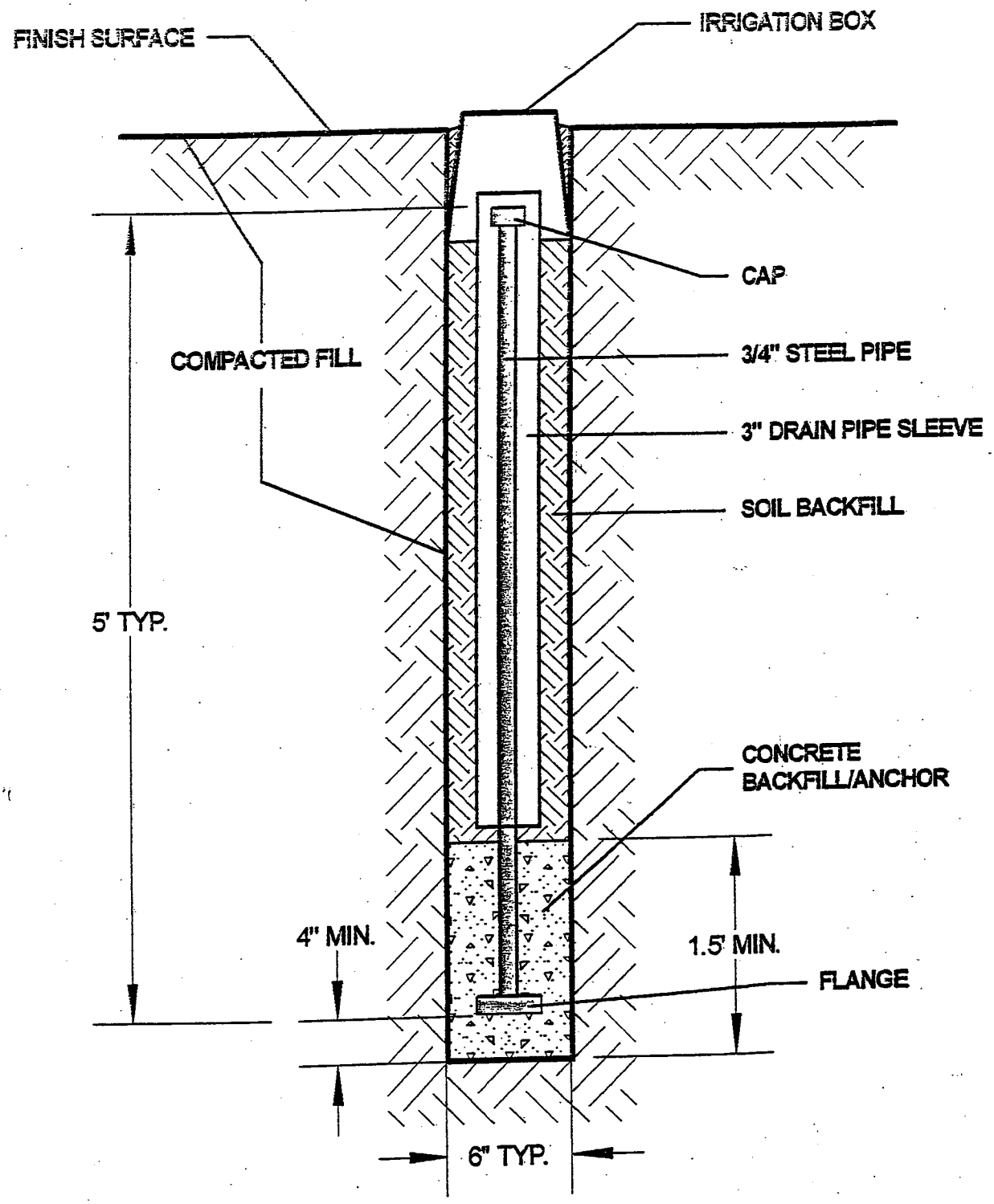
DETAIL "A"

LOT SUBDRAIN

Not To Scale

See attached soils report for specific recommendations.

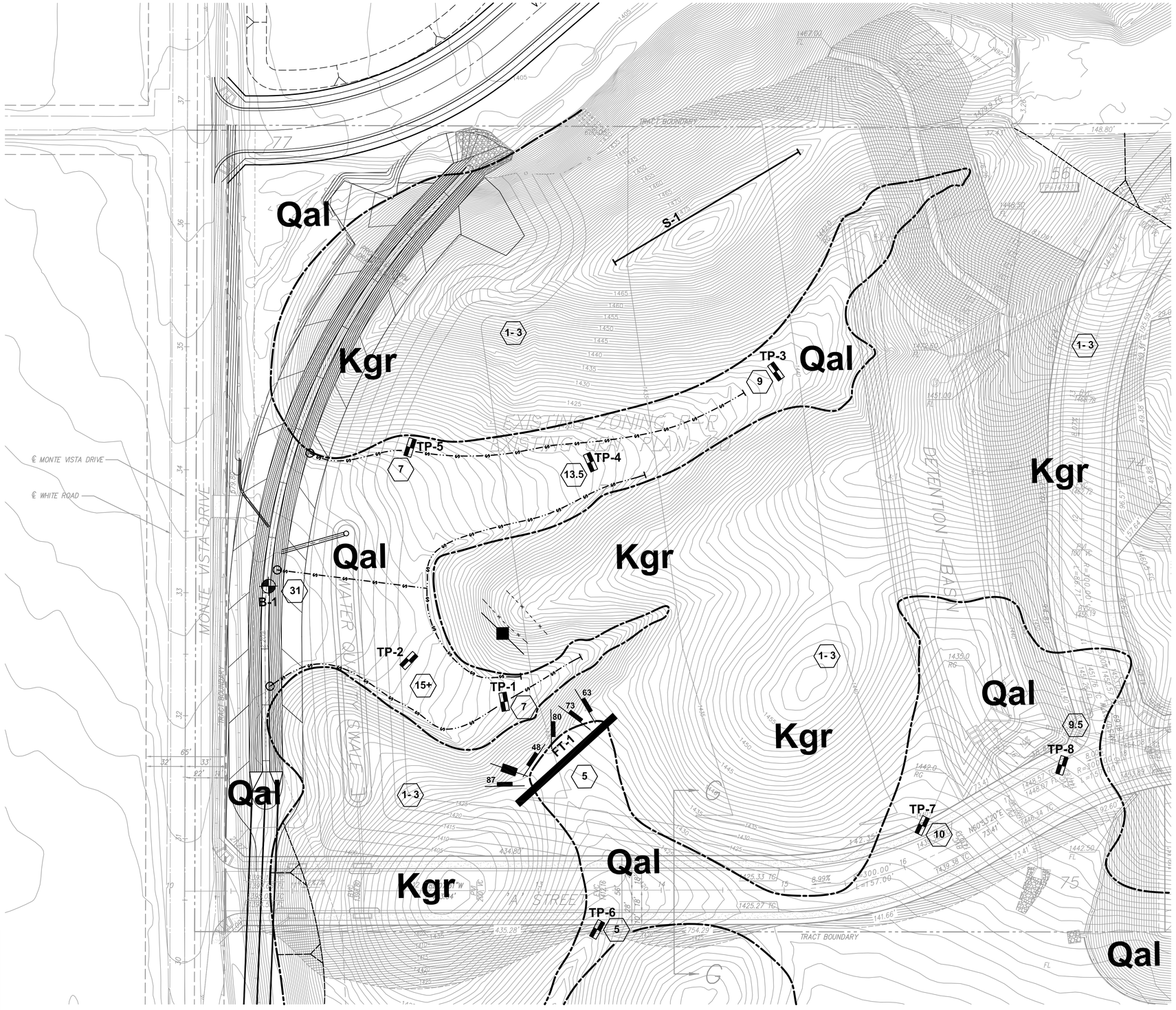
Detail No. 12



SURFACE SETTLEMENT MONUMENT

Not To Scale
See attached soils report for specific recommendations.

Detail No. 20



ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.00	Date: 6/7/07	Plate: 1

EXPLANATION

(LOCATIONS APPROXIMATE)

SURFICIAL UNITS:

- **Qaf** - Artificial Fill
- **Qal** - Alluvium/Colluvium (undifferentiated)

BEDROCK UNIT:

- **Qp** - Bedrock: Pauba Formation
- **Kgr** - Bedrock: Granitic Rock

LINES:

- Geologic Contact (querried where uncertain)
- Dike Contact
- **S-4** - Seismic Line (this investigation)
- Existing Graded Slope
- Tentative Subdrain Location

SYMBOLS:

- Vertical Dike Attitude
- 46 - Joint Attitude
- Verticle Joint Attitude
- **TP-23** - Exploratory Trench
- Fault Trench
- **B-6** - Exploratory Boring
- 31 - Estimated Depth of Unsuitable Materials (in feet)

CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL HEREON
3. CONSTRUCT TERRACE DRAIN PER DETAIL HEREON
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL HEREON

SCALE: 1"=40'

0 40 80 120 160

DIGALERT — DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG — TOLL FREE 1-800-227-2600 — A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE: WORK CONTAINED WITHIN THESE PLANS SHALL NOT COMMENCE UNTIL AN ENCROACHMENT PERMIT AND/OR A GRADING PERMIT HAS BEEN ISSUED.

THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY AND ACCEPTABILITY OF THE DESIGN HEREON. IN THE EVENT OF DISCREPANCIES ARISING AFTER COUNTY APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE FOR DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY THE COUNTY.

MARK	BY	DATE	REVISIONS	APPR.	DATE

ENGINEER — COUNTY

COUNTY OF RIVERSIDE
BUILDING AND SAFETY

SEAL–ENGINEER

REGISTERED PROFESSIONAL ENGINEER — FARRIS N. HADDAD — No. 65931 Exp. 06-30-08 — CIVIL — STATE OF CALIFORNIA

OSBORN KA FALLAHI Engineering, Inc.
ENGINEERING
LAND PLANNING
SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

PREPARED BY: R.C.E. NO. 65931 DATE

BENCHMARK:
RIVERSIDE COUNTY BM E-7-70
BRASS MONUMENT IN ELSINORE
LOCATED 352 FEET NORTH OF THE
INTERSECTION OF ORANGE AND WALNUT.
ELEVATION: 1347.733 (NAVD 88)

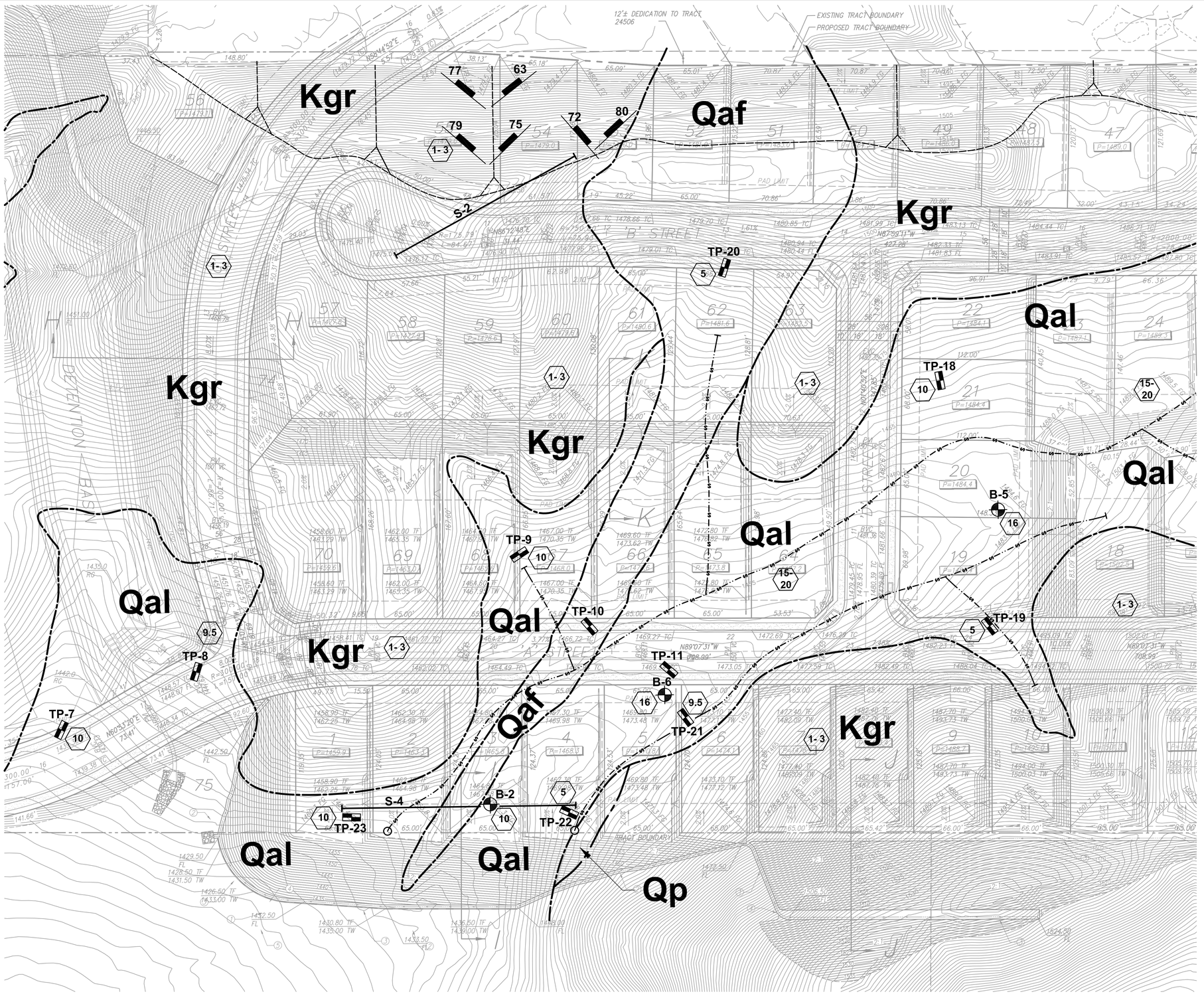
SCALE: 1"=40'

TRACT 32024
COUNTY OF RIVERSIDE
ROUGH GRADING PLAN

SHEET NO. 5 OF 7 SHTS

FOR: | W.O. | COUNTY FILE NO.

NOT FOR CONSTRUCTION – PLANCHECK SUBMITTAL NO. 2A DATE: 06/



ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.00	Date: 6/7/07	Plate: 2

(see Plate 1 for Explanation)

CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL HEREON
2. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL HEREON
3. CONSTRUCT TERRACE DRAIN PER DETAIL HEREON
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL HEREON
5. CONSTRUCT RIP-RAP ENERGY DISSIPATOR (1/4 TON GRADATION) PER DETAIL HEREON
6. CONSTRUCT SPLASH WALL PER DETAIL HEREON

SCALE: 1"=40'
0 40 80 120 160

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR.	DATE
	ENGINEER			COUNTY	

COUNTY OF RIVERSIDE
BUILDING AND SAFETY

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER FARRIS N. HADDAD No. 65931 Exp. 06-30-08 CIVIL STATE OF CALIFORNIA

OSBORN KA FALLAH Engineering, Inc.
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SURVEYING
357 N. SHERIDAN STREET
SUITE 117
CORONA, CALIFORNIA 92880
TEL. (951) 279-1800
FAX (951) 279-4380

PREPARED BY: R.C.E. NO. 65931 DATE

BENCHMARK:
RIVERSIDE COUNTY BM E-7-70
BRASS MONUMENT IN ELSINORE,
LOCATED 352 FEET NORTH OF THE
INTERSECTION OF ORANGE AND WALNUT.
ELEVATION: 1347.733 (NAVD 88)

SCALE: 1"=40'

TRACT 32024
COUNTY OF RIVERSIDE
ROUGH GRADING PLAN

SHEET NO. 6 OF 7 SHTS

FOR: W.O. COUNTY FILE NO.



ALBUS-KEEFE & ASSOCIATES, INC.
GEOTECHNICAL CONSULTANTS

GEOLOGIC MAP

Job No.: 1338.00 | Date: 6/7/07 | Plate: 3

(see Plate 1 for Explanation)

CONSTRUCTION NOTES

1. CONSTRUCT DOWN DRAIN PER DETAIL HEREON
2. CONSTRUCT INTERCEPTOR DRAIN PER DETAIL HEREON
3. CONSTRUCT TERRACE DRAIN PER DETAIL HEREON
4. CONSTRUCT TERRACE DRAIN AND DOWN DRAIN INTERSECTION PER DETAIL HEREON
5. CONSTRUCT RIP-RAP ENERGY DISSIPATOR (1/4 TON GRADATION) PER DETAIL HEREON
6. CONSTRUCT SPLASH WALL PER DETAIL HEREON
10. INSTALL CONCRETE DROP INLET PER RIVERSIDE COUNTY FLOOD CONTROL STD DRAWING No. CB 110.

DIGALERT
DIAL BEFORE YOU DIG — TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

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MARK	BY	DATE	REVISIONS	APPR	DATE
	ENGINEER			COUNTY	

COUNTY OF RIVERSIDE
BUILDING AND SAFETY

SEAL-ENGINEER

REGISTERED PROFESSIONAL ENGINEER — FARRIS N. HADDAD — No. 65931 Exp. 06-30-08 — CIVIL — STATE OF CALIFORNIA

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PREPARED BY: R.C.E. NO. 65931
DATE

BENCHMARK:
RIVERSIDE COUNTY BM E-7-70
BRASS MONUMENT IN ELSINORE;
LOCATED 352 FEET NORTH OF THE
INTERSECTION OF ORANGE AND WALNUT.
ELEVATION: 1347.733 (NAVD 88)

SCALE: 1"=40'

TRACT 32024
COUNTY OF RIVERSIDE
ROUGH GRADING PLAN

SHEET NO. 7 OF 7 SHTS

FOR: | W.O. | COUNTY FILE NO.

NOT FOR CONSTRUCTION – PLANCHECK SUBMITTAL NO. 2A DATE: 06/

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Examples of material to provide in Appendix 4 may include but are not limited to the following:

- Environmental Site Assessments conducted for the project,
- Other information on Past Site Use that impacts the feasibility of LID BMP implementation on the site.

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

Appendix 5: LID Feasibility Supplemental Information

Information that supports or supplements the determination of LID technical feasibility documented in Section D

Examples of material to provide in Appendix 5 may include but are not limited to the following:

- Technical feasibility criteria for DMAs
- Site specific analysis of technical infeasibility of all LID BMPs (if Alternative Compliance is needed)
- Documentation of Approval criteria for Proprietary Biofiltration BMPs

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 2.3 of the SMR WQMP and Sections D of this Template.

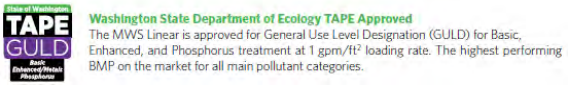
Proprietary Biofiltration Criteria

The applicant shall provide documentation of compliance with each criterion in this checklist as part of the project submittal. Proprietary Biofiltration BMPs shall not be proposed if the BMP will accept undeveloped off-site tributary flows, where potential silt/sediment could clog or otherwise negatively impact the BMP.

1	**All BMPs must be sited/designed with the max. feasible infiltration/evapotranspiration[6].**	
	Requirement	Response
1a	What was the development status of the site prior to project application (i.e. raw ungraded land, or redevelopment with existing graded conditions)? – There will be more expectations to infiltrate if the project is a new development.	Raw ungraded conditions.
1b	History of design discussions/coordination for the site proposed project, resulting in the final design determination (i.e. infiltration vs. flow-thru):	The project site is in majority Type Soil D.
1c	The consideration of site design alternatives to achieve infiltration or partial infiltration on site;	Anticipate poor or lower infiltration rate.
1d	The physical impairments (i.e., fire road egress, public safety considerations, sewer lines, etc.) and public safety concerns (impermeable liners only to avoid geotech or contamination issues);	N/A
1e	The extent low impact development BMP requirements were included in the project site design (site design worksheets can be attached).	Site design BMP worksheet is included.
1f	When in the development process (e.g. entitlement or plan check, with dates of geotechnical work and development approval dates) did a geotechnical engineer analyze the site for infiltration feasibility?	N/A
1g	What was the scope of the geotechnical testing?	
1h	What are Public Health and Safety requirements that affect infiltration locations?	None
1i	What are the conclusions and recommendations from the geotechnical engineer, in regards to infiltrating/retaining on-site or allowing some or all of the flows to flow-thru as a proprietary BMP?	The site was the stockpile area, majority in Soil Type D and the final finish surface is mostly in filled area. Therefore the infiltration feasibility is negative.
1j	How will the proposed proprietary biofiltration BMPs achieve maximum feasible retention	Using bio-filtration Modular Wetlands.

[6] To address San Diego Regional Board letter dated April 28, 2017 regarding documentation to support infeasibility to retain or infiltrate storm water on-site. This document will be used to meet the Regional Board requirements for documentation. As such, not apply or non-responses will not be accepted.

	(evapotranspiration and infiltration) of the water quality volume, as required by MS4 Permits?	

2	**Proprietary Biofiltration BMP sizing (all proprietary/compact BMPs require TAPE approval)[7]**	
	Requirement	Response
2a	Use Table F-1 and F-2 of the WQMP template to identify and list all the pollutants of concern.	Yes
2b	Attached Active Technology Acceptance Protocol-Ecology (TAPE) certification, with General Use Level Designation (GULD) for all of applicable pollutants of concern	Yes _____X____ or No_____
2c	The most restrictive loading rates outlined in TAPE GULD approval[8] for all of the pollutants of concern.	
2d	Attach calculations, and all relevant steps to show that the sizing of the proprietary BMP is based on the flowrate (or volume) used to obtain TAPE/GULD approval (the most restrictive rate).	Yes _____X____ or No_____
2e	Are the infiltration rates are outlet controlled (e.g., via an underdrain and orifice/weir) or controlled by the infiltration rate of the media? Faster infiltration rates thru the media tend to reduce O&M issues.	Is the design infiltration rate controlled by the outlet? Yes _____X____ or No_____ If No, provide the rates for the outlet and the media and explain why outlet control is not practicable.
2f	Does the water surface drains to at least 12 inches below the media surface within 24 hours from the end of storm event flow to preserve plant health and promote healthy soil structure?	Yes ____X_____ or No_____

3	**Biofiltration BMPs must be designed to promote appropriate biological activity to support and maintain treatment processes.**	
	Requirement	Response
3a	Plants tolerant of project climate, design ponding depths and the treatment media composition.	Provide documentation justifying plant selection.[9]

[7] Full scale field testing data that has been verified by Washington Department of Ecology and General Use Level Designation is required. https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies. Otherwise, the County has no obligation to accept the use of any other proprietary flow-thru BMP. Additional guidance can be found at the end of this checklist from the San Diego BMPDM Appendix F.1 for other verified third-party, field scale testing performance criteria that does not meet the Washington Department of Ecology standards.

[8] E.g. if the BMP was certified/verified with 100 gallons per minute treatment rate, the BMP shall be sized with no more than the equivalent rate).

3b	Plants that minimize irrigation requirements.	Provide documentation describing irrigation requirements for establishment and long term operation.
3c	Plant location and growth will not impede expected long-term media filtration rates and will enhance long-term infiltration rates to the extent possible.	Provide documentation justifying plant selection.[4]
3d	If plants are not applicable to the biofiltration design, other biological processes are supported as needed to sustain treatment processes (e.g., biofilm in a subsurface flow wetland). TAPE GULD approval that identifies approval with and without plants can be submitted for approval.	For biofiltration designs without plants, describe the biological processes that will support effective treatment and how they will be sustained.

4	**Biofiltration BMPs must be designed with a hydraulic loading rate to prevent erosion, scour, and channeling within the BMP. Erosion, scour, and/or channeling can disrupt treatment processes and reduce effectiveness.**	
	Requirement	Response
4a	What pre-treatment devices (e.g. vegetated buffers, catch basin inserts) and designs (e.g. forebay berms with cutouts) are proposed?	Catch Basin insert
4b	Adequate scour protection has been provided for both sheet flow and pipe inflows to the BMP.	
4c	Where scour protection has not been provided, flows into and within the BMP are kept to non-erosive velocities.	What are the maximum velocities for sheet flow and pipe inflows into the BMP?
4d	The BMP is used in a manner consistent with manufacturer guidelines and conditions of its third-party certification (e.g. maximum tributary area, maximum inflow velocities, etc.).	Manufacturer Requirements vs. the Design
4e	To preserve permeability, the media should have substantial void ratios and avoidance of choking layers.	Provide media gradation calculations and (if proposed) geotextile selection calculations if the geotextile could affect hydraulic loading rate.

5	**Biofiltration BMP must include operation and maintenance design features and planning considerations for continued effectiveness of pollutant removal and flow control functions. Biofiltration BMPs require regular maintenance in order provide ongoing function as intended. Additionally, it is not possible to foresee and avoid potential issues as part of design; therefore, plans must be in place to correct issues if they arise.**

[9] See Appendix E.20 of the San Deigo BMPDM for initial plan list for consideration for Riverside County.

	Requirement	Response
5a	Is there any media or cartridge required to maintain the function of the BMP sole-sourced or proprietary in any way? If yes, obtain explicit approval by the Agency. Potentially full replacement costs to a non-proprietary BMP needs to be considered.	Yes _____X___ or No_____, explain:
5b	The maintenance plan specific for the proprietary BMP specific inspection activities, regular/periodic maintenance activities and specific corrective actions relating to scour, erosion, channeling, media clogging, vegetation health, and inflow and outflow structures.	This is in addition to the O&M Plan described in the WQMP guidance document, Section 5.
5c	Adequate site area and features have been provided for BMP inspection and maintenance access.	Illustrate maintenance access routes, setbacks, maintenance features as needed on project water quality plans
5d	For proprietary biofiltration BMPs, the BMP maintenance plan is consistent with manufacturer guidelines and conditions of its third-party certification (i.e., maintenance activities, frequencies).	Yes ____X_____ or No_____
5e	Describe all portions of the BMP that may potentially clog or present an O&M issue.	
5f	Describe design features to address each of the potential clogging or O&M issues.	

By signing below, the preparer certifies all the information provided with this submittal and submittals related to proprietary BMPs for the project is accurate, and relevant information to assess the long term operation and maintenance of this proprietary BMP was not omitted with this submittal.

Prepared by: _____

Title: _____

Signature: _____

Date: _____

Alternative Pollutant Treatment Performance Standard

County staff may allow the applicant to submit alternative third-party documentation that the pollutant treatment performance of the system is consistent with Technology Acceptance Protocol-Ecology certifications. Table F.1-1 describes the required levels of certification and Table F.1-2 describes the pollutant treatment performance levels associated with each level of certification. Acceptance of this approach is at the sole discretion of County staff, preference would be given to:

a. Verified third-party, field-scale testing performance under the Technology Acceptance Reciprocity Partnership Tier II Protocol. This protocol is no longer operated, however this is considered to be a valid protocol and historic verifications are considered to be representative provided that product models being proposed are consistent with those that were tested. Technology Acceptance Reciprocity Partnership verifications were conducted under New Jersey Corporation for Advance Testing and are archived at the website linked below. Note that Technology Acceptance Reciprocity Partnership verifications must be matched to pollutant treatment standards in Table F.1-2 then matched to an equivalent Technology Acceptance Protocol-Ecology certification in Table F.1-1.

b. Verified third-party, field-scale testing performance under the New Jersey Corporation for Advance Testing protocol. Note that New Jersey Corporation for Advance Testing verifications must be matched to pollutant treatment standards in Table F.1-2 then matched to an equivalent Technology Acceptance Protocol- Ecology certification in Table F.1-1. A list of field-scale verified technologies under Technology Acceptance Reciprocity Partnership Tier II and New Jersey Corporation for Advance Testing can be accessed at: http://www.njcat.org/verification-process/technology-verification-database.html (refer to: field verified technologies only).

Table F.1-1: Required Technology Acceptance Protocol-Ecology Certifications for Polltuants of Concern for Biofiltration Performance Standard

Project Pollutant of Concern	Required Technology Acceptance Protocol-Ecology Certification for Biofiltration Performance Standard
Trash	Basic Treatment OR Phosphorus Treatment OR Enhanced Treatment
Sediments	Basic Treatment OR Phosphorus Treatment OR Enhanced Treatment
Oil and Grease	Basic Treatment OR Phosphorus Treatment OR Enhanced Treatment
Nutrients	Phosphorus Treatment[1]
Metals	Enhanced Treatment
Pesticides	Basic Treatment (including filtration)[2] OR Phosphorus Treatment OR Enhanced Treatment
Organics	Basic Treatment (including filtration)[2] OR Phosphorus Treatment OR Enhanced Treatment
Bacteria and Viruses	Basic Treatment (including bacteria removal processes)[3] OR Phosphorus Treatment OR Enhanced Treatment

1 – There is no Technology Acceptance Protocol-Ecology equivalent for nitrogen compounds; however systems that are designed to retain phosphorus (as well as meet basic treatment designation), generally also provide treatment of nitrogen compounds. Where nitrogen is a pollutant of concern, relative performance of available certified systems for nitrogen removal should be considered in BMP selection.
2 – Pesticides, organics, and oxygen demanding substances are typically addressed by particle filtration consistent with the level of treatment required to achieve Basic treatment certification; if a system with Basic treatment certification does not provide filtration, it is not acceptable for pesticides, organics or oxygen demanding substances.
3 – There is no Technology Acceptance Protocol-Ecology equivalent for pathogens (viruses and bacteria), and testing data are limited because of typical sample hold times. Systems with Technology Acceptance Protocol-Ecology Basic Treatment must be include one or more significant bacteria removal process such as media filtration, physical sorption, predation, reduced redox conditions, and/or solar inactivation. Where design options are available to enhance pathogen removal (i.e., pathogen-specific media mix offered by vendor), this design variation should be used.

Table F.1-2: Performance Standards for Technology Acceptance Protocol-Ecology Certification

Performance Goal	Influent Range	Criteria
Basic Treatment	20 – 100 mg/L TSS	Effluent goal ≤ 20 mg/L TSS
	100 – 200 mg/L TSS	≥ 80% TSS removal
	>200 mg/L TSS	> 80% TSS removal
Enhanced (Dissolved Metals) Treatment	Dissolved copper 0.005 – 0.02 mg/L	Must meet basic treatment goal and better than basic treatment currently defined as >30% dissolved copper removal
	Dissolved zinc 0.02 – 0.3 mg/L	Must meet basic treatment goal and better than basic treatment currently defined as >60% dissolved zinc removal
Phosphorous Treatment	Total phosphorous 0.1 – 0.5 mg/L	Must meet basic treatment goal and exhibit ≥50% total phosphorous removal
Oil Treatment	Total petroleum hydrocarbon > 10 mg/L	No ongoing or recurring visible sheen in effluent Daily average effluent Total petroleum hydrocarbon concentration < 10 mg/L Maximum effluent Total petroleum hydrocarbon concentration for a 15 mg/L for a discrete (grab) sample
Pretreatment	50 – 100 mg/L TSS	≤ 50 mg/L TSS
	≥ 200 mg/L TSS	≥ 50% TSS removal

Appendix 6: LID BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation to supplement Section D

Examples of material to provide in Appendix 6 may include but are not limited to the following:

- DCV calculations,
- LID BMP sizing calculations from Exhibit C of the SMR WQMP
- Design details/drawings from manufacturers for proprietary BMPs

This information should support the Full Infiltration Applicability, and Biofiltration Applicability sections of this Template. Refer to Section 3.4 of the SMR WQMP and Sections D.4 of this Template.

Santa Margarita Watershed BMP Design Flow Rate, Q_{BMP} (Rev. 03-2012)	Legend:	Required Entries Calculated Cells

Company Name	K&A Engineering, Inc.	Date	6/11/2021
Designed by	JY	County/City Case No	
Company Project Number/Name	Monte Vista Ranch 2		
Drainage Area Number/Name	Area A = 5.13 Ac		

Enter the Area Tributary to this Feature A_T = 5.13 acres

Determine the Effective Impervious Fraction

Type of post-development surface cover (use pull down menu): Mixed Surface Types

Effective Impervious Fraction I_f = 0.80

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.60

BMP Design Flow Rate

$Q_{BMP} = C \times I \times A_T$ Q_{BMP} = 0.6 ft^3/s

Notes:

Santa Margarita Watershed BMP Design Volume, V_{BMP} (Rev. 03-2012)	Legend:	Required Entries Calculated Cells

(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)

Company Name	K&A Engineering, Inc.	Date	6/11/2021
Designed by	JY	County/City Case No	
Company Project Number/Name	Monte Vista Ranch 2		
Drainage Area Number/Name	Area A = 5.13 Ac		

Enter the Area Tributary to this Feature A_T = 5.13 acres

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

Site Location	Township	6S
	Range	4W
	Section	26
Enter the 85th Percentile, 24-hour Rainfall Depth	D_{85} =	0.68

Determine the Effective Impervious Fraction

Type of post-development surface cover (use pull down menu)		Mixed Surface Types
Effective Impervious Fraction	I_f =	0.80

Calculate the composite Runoff Coefficient, C for the BMP Tributary Area

Use the following equation based on the WEF/ASCE Method

$C = 0.858I_f^3 - 0.78I_f^2 + 0.774I_f + 0.04$ C = 0.60

Determine Design Storage Volume, V_{BMP}

Calculate V_U, the 85% Unit Storage Volume $V_U = D_{85} \times C$ V_u = 0.41 (in*ac)/ac

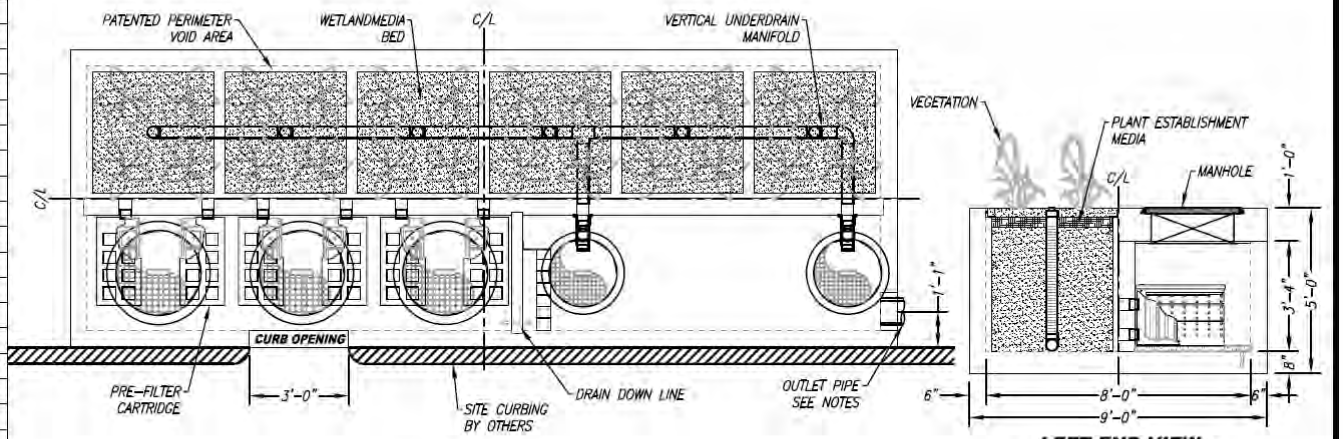
Calculate the design storage volume of the BMP, V_{BMP}.

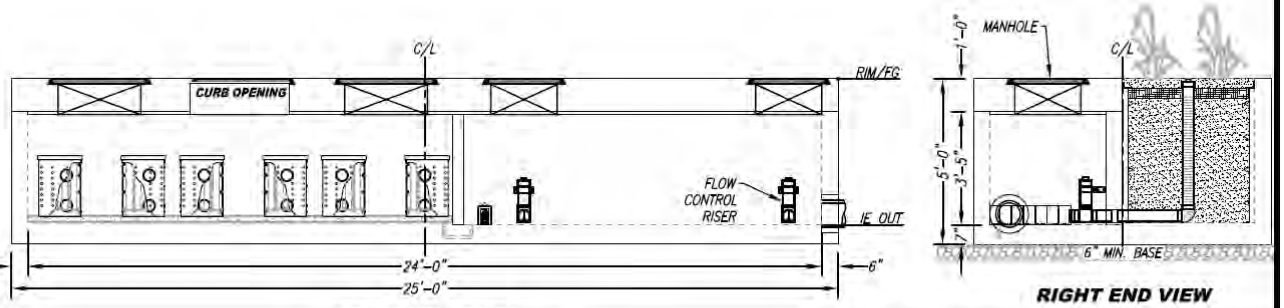
$$V_{BMP}\ (ft^3) = \frac{V_U\ (in\text{-}ac/ac) \times A_T\ (ac) \times 43{,}560\ (ft^2/ac)}{12\ (in/ft)}$$

V_{BMP} = 7,635 ft^3

Notes:

SITE SPECIFIC DATA			
PROJECT NUMBER			
ORDER NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN	OPEN PLANTER	PEDESTRIAN
FRAME & COVER	1 EA ø30"	N/A	2 EA ø24"
WETLANDMEDIA VOLUME (CY)			TBD
ORIFICE SIZE (DIA. INCHES)			TBD
NOTES: PRELIMINARY NOT FOR CONSTRUCTION			





INSTALLATION NOTES

1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON-SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING MODULAR WETLANDS FOR ACTIVATION OF UNIT. MANUFACTURES WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A MODULAR WETLANDS REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT MANUFACTURER.

TREATMENT FLOW (CFS)	0.693
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	2.0
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

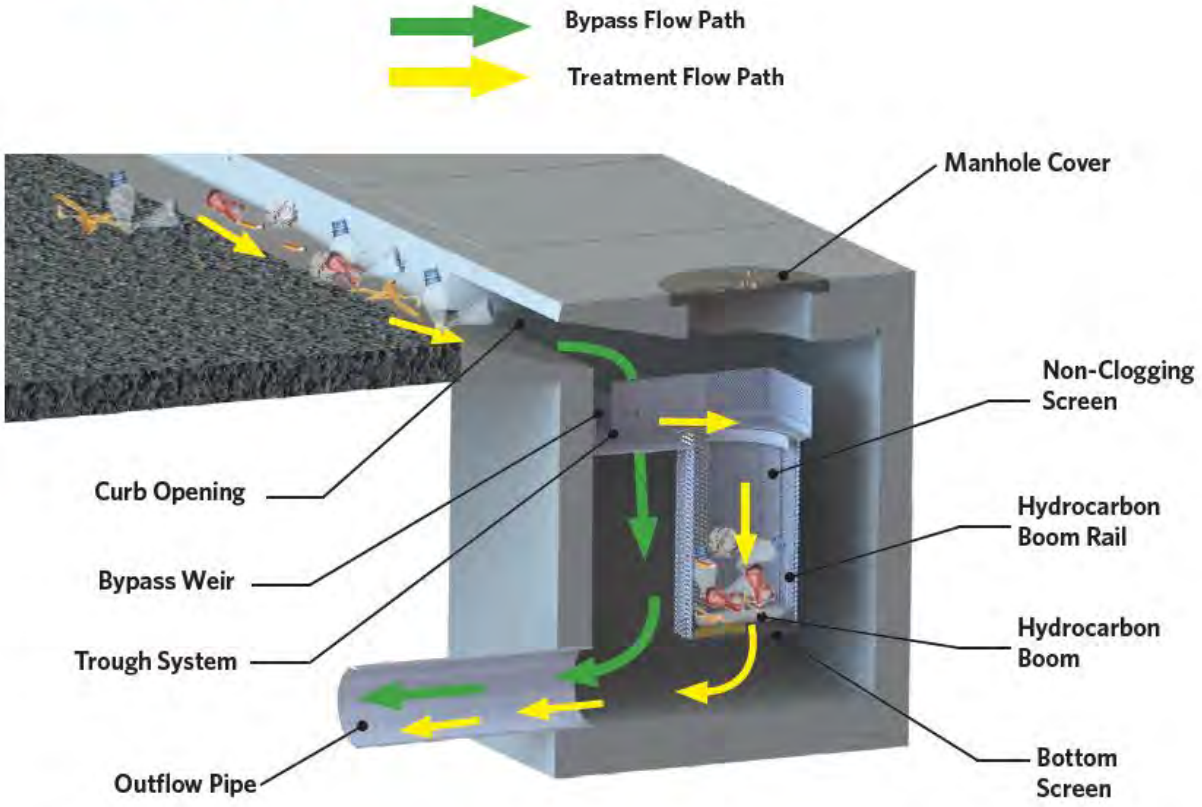
MODULAR WETLANDS

PROPRIETARY AND CONFIDENTIAL:
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Bio Clean
A Forterra Company

MWS-L-8-24-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

OPERATION



APPLICATIONS

- Parking Lots
- Roadways

SPECIFICATIONS

MODEL #	TREATMENT FLOW CAPACITY (cfs)	BYPASS FLOW (cfs)
BIO-CURB-FULL	2.85	UNLIMITED

Note: Treatment flow rate limited to the weir capacity - actual flow rates of the filter basket is greater than 2.85 cfs.
Various depth filter baskets available.

Pre-treatment BMP – Catch Basin Insert

Appendix 7:
Hydromodification & Critical Coarse Sediment

Supporting Detail for Hydromodification compliance & Exhibit G - CCSY & PSS Areas with the project location.

The preparer shall include the following in this Appendix (Refer to Section 2.4 and 3.6 of the SMR WQMP and Sections E of this Template):

- Hydromodification Exemption Exhibit (if the project is in an area exempt from Hydromod)
- Potential Critical Coarse Sediment Yield Area Mapping (to show if the site is out of a CCSYA)
- Hydromodification BMP sizing calculations (i.e. County Hydromod Spreadsheet – Hydromod, and BMP Design tabs, SMRHM report files, or other acceptable Hydromod calculations)
- Site-Specific Critical Coarse Sediment Analysis (if a project impacts a CCSYA)
- Design details/drawings from manufacturers for proprietary BMPs (if proprietary BMPs are proposed)

In addition, the project shall comply with drainage law and good practices:

- Protect the Site and Roads from Q100yr, without impacting adjacent property owners.
- Pad elevations must be above the Q100yr water surface at all locations.

I. Identify Offsite Hydrology

A. If the project intends to allow the flows to pass through the project uninterrupted, the flows must remain along its natural flow-path and natural condition. The project must also:
   (1) Ensure that the existing stream is stable. If not, the design must include stabilization.
   (2) Does the 100 year flow path affect proposed project elements, such as streets and fill slopes? If so, the project must properly design for impingements, provide revetment, etc. If the water surface changes due to impingements on neighbor's properties, Permission to pond letters must be provided.

B. If the project intends to collect and convey the offsite flows, see the next section:

II. Hydraulics

A. Project must provide collection inlets that can be accessed for maintenance. If located outside of the project boundary, the project must provide a Permission Letter or drainage easement. If the inlet creates new ponding on private property, the project must provide a Permission to Pond letter or easement.

B. The project should not divert watershed areas over 1 acre. If so, Permission Letter to accept project's diversion and drainage concept must be received by the project.

C. The project should have an adequate outlet. If not, include Permission Letters and implement Increased Runoff criteria (2, 5,10 year storm events and the 1, 3, 6 and 24 hour durations). 100 year storm routing is not to be used. Runoff from the offsite plus onsite must be returned to its natural (existing) condition of velocity, peak flow-rate, flow-width and location/right of way, if permission letters have not been obtained.

D. The project must adequately convey the 100 year storm between the combination of street flow and pipe flow per County Ordinance.

E. The project should use the downstream connection as the Q100yr water surface control elevation, to ensure 6 inches minimum of freeboard in proposed drainage system.

III. Basin Layout

A. Implement Basin Guidelines as best as possible from Appendix C, Design Handbook for LID BMPs.

DETENTION BASIN ROUTING for HYDROMOD CALCULATIONS

The proposed project Water Quality Biofiltration Basin is capable of all of the following:

1. Releasing the post-development hydrograph for 2-, 5-, 10- and 100year 1-, 3-, 6- and 24-hour at flow rates no greater than 110% of pre-development at the same frequency flow rates.

2. By-passing the 100-year storm event without damage to the BMP.
3. Control outlet velocities such that downstream erosion potential is minimized and outlet flow is released in a safe manner.

Detention Basin Routing Calculations

The Detention Basin Routing Calculations were conducted using the CivilCADD/Design software and the Riverside County Hydrology Manual. In this analysis, the goal was to estimate the quantity of storm water to be detained onsite to mitigate the increase in storm water peak discharge and volume resulting from this development for the 2-, 5-, 10-, 100-year 1-hour, 3-hour, 6-hour, 24-hour storms.



NOAA Atlas 14, Volume 6, Version 2
Location name: Wildomar, California, USA*
Latitude: 33.6222°, Longitude: -117.2657°
Elevation: 1427.54 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.085 (0.072-0.103)	0.116 (0.097-0.140)	0.157 (0.131-0.190)	0.192 (0.159-0.234)	0.242 (0.193-0.305)	0.281 (0.219-0.363)	0.322 (0.245-0.427)	0.365 (0.270-0.499)	0.426 (0.302-0.608)	0.475 (0.324-0.703)
10-min	0.122 (0.103-0.147)	0.166 (0.139-0.200)	0.225 (0.188-0.273)	0.275 (0.228-0.336)	0.346 (0.277-0.438)	0.403 (0.315-0.520)	0.461 (0.351-0.612)	0.524 (0.387-0.716)	0.611 (0.432-0.872)	0.680 (0.464-1.01)
15-min	0.148 (0.124-0.178)	0.201 (0.168-0.242)	0.273 (0.228-0.330)	0.333 (0.276-0.406)	0.419 (0.335-0.529)	0.487 (0.380-0.629)	0.558 (0.425-0.740)	0.633 (0.468-0.865)	0.739 (0.523-1.06)	0.823 (0.561-1.22)
30-min	0.232 (0.194-0.279)	0.314 (0.263-0.379)	0.427 (0.357-0.517)	0.522 (0.432-0.637)	0.656 (0.524-0.829)	0.763 (0.596-0.986)	0.874 (0.666-1.16)	0.993 (0.734-1.36)	1.16 (0.819-1.65)	1.29 (0.879-1.91)
60-min	0.357 (0.299-0.430)	0.484 (0.406-0.584)	0.658 (0.550-0.796)	0.804 (0.666-0.981)	1.01 (0.807-1.28)	1.18 (0.918-1.52)	1.35 (1.03-1.79)	1.53 (1.13-2.09)	1.78 (1.26-2.55)	1.99 (1.35-2.94)
2-hr	0.534 (0.448-0.643)	0.701 (0.588-0.846)	0.929 (0.776-1.12)	1.12 (0.927-1.37)	1.39 (1.11-1.75)	1.60 (1.25-2.07)	1.82 (1.39-2.42)	2.05 (1.52-2.81)	2.38 (1.68-3.39)	2.63 (1.80-3.90)
3-hr	0.659 (0.553-0.794)	0.858 (0.719-1.03)	1.13 (0.942-1.36)	1.35 (1.12-1.65)	1.67 (1.33-2.11)	1.92 (1.50-2.48)	2.18 (1.66-2.89)	2.45 (1.81-3.35)	2.82 (2.00-4.03)	3.12 (2.13-4.62)
6-hr	0.938 (0.787-1.13)	1.22 (1.02-1.47)	1.60 (1.33-1.93)	1.91 (1.58-2.33)	2.34 (1.87-2.96)	2.68 (2.10-3.47)	3.03 (2.31-4.02)	3.40 (2.51-4.64)	3.90 (2.76-5.57)	4.29 (2.93-6.35)
12-hr	1.23 (1.03-1.48)	1.64 (1.37-1.97)	2.17 (1.82-2.63)	2.61 (2.16-3.19)	3.21 (2.57-4.06)	3.67 (2.87-4.75)	4.14 (3.16-5.49)	4.62 (3.42-6.32)	5.27 (3.73-7.53)	5.78 (3.94-8.55)
24-hr	1.62 (1.43-1.87)	2.24 (1.98-2.59)	3.06 (2.69-3.54)	3.71 (3.24-4.34)	4.59 (3.89-5.54)	5.27 (4.37-6.48)	5.94 (4.81-7.48)	6.63 (5.23-8.58)	7.56 (5.73-10.2)	8.27 (6.06-11.5)
2-day	1.93 (1.71-2.23)	2.77 (2.44-3.20)	3.86 (3.39-4.47)	4.74 (4.14-5.53)	5.93 (5.02-7.15)	6.85 (5.68-8.42)	7.78 (6.30-9.80)	8.73 (6.89-11.3)	10.0 (7.60-13.5)	11.0 (8.08-15.4)
3-day	2.10 (1.85-2.42)	3.04 (2.69-3.52)	4.30 (3.78-4.98)	5.32 (4.65-6.22)	6.72 (5.69-8.10)	7.80 (6.47-9.60)	8.91 (7.22-11.2)	10.1 (7.94-13.0)	11.6 (8.82-15.7)	12.9 (9.44-17.9)
4-day	2.26 (2.00-2.61)	3.31 (2.92-3.82)	4.70 (4.14-5.45)	5.85 (5.11-6.84)	7.43 (6.29-8.96)	8.67 (7.19-10.7)	9.94 (8.05-12.5)	11.3 (8.88-14.6)	13.1 (9.92-17.6)	14.5 (10.7-20.3)
7-day	2.56 (2.26-2.95)	3.77 (3.33-4.35)	5.40 (4.76-6.26)	6.77 (5.92-7.91)	8.68 (7.35-10.5)	10.2 (8.45-12.5)	11.8 (9.53-14.8)	13.4 (10.6-17.4)	15.8 (11.9-21.2)	17.6 (12.9-24.5)
10-day	2.70 (2.39-3.12)	3.99 (3.52-4.61)	5.75 (5.06-6.66)	7.23 (6.32-8.45)	9.33 (7.90-11.3)	11.0 (9.13-13.5)	12.8 (10.3-16.1)	14.6 (11.5-18.9)	17.3 (13.1-23.3)	19.4 (14.2-27.0)
20-day	3.19 (2.82-3.68)	4.74 (4.19-5.48)	6.92 (6.09-8.02)	8.79 (7.68-10.3)	11.5 (9.73-13.9)	13.7 (11.4-16.9)	16.0 (13.0-20.2)	18.6 (14.7-24.1)	22.2 (16.8-29.9)	25.2 (18.5-35.1)
30-day	3.76 (3.32-4.34)	5.57 (4.92-6.44)	8.14 (7.17-9.43)	10.4 (9.07-12.1)	13.7 (11.6-16.5)	16.4 (13.6-20.1)	19.3 (15.6-24.3)	22.4 (17.7-29.0)	27.0 (20.5-36.4)	30.8 (22.6-42.9)
45-day	4.37 (3.86-5.04)	6.40 (5.65-7.40)	9.34 (8.22-10.8)	11.9 (10.4-13.9)	15.8 (13.3-19.0)	19.0 (15.7-23.4)	22.5 (18.2-28.3)	26.3 (20.7-34.0)	31.9 (24.1-42.9)	36.5 (26.8-50.8)
60-day	5.03 (4.45-5.81)	7.27 (6.42-8.41)	10.5 (9.28-12.2)	13.5 (11.8-15.7)	17.8 (15.1-21.5)	21.5 (17.8-26.4)	25.5 (20.6-32.1)	29.9 (23.6-38.7)	36.4 (27.6-49.0)	41.9 (30.7-58.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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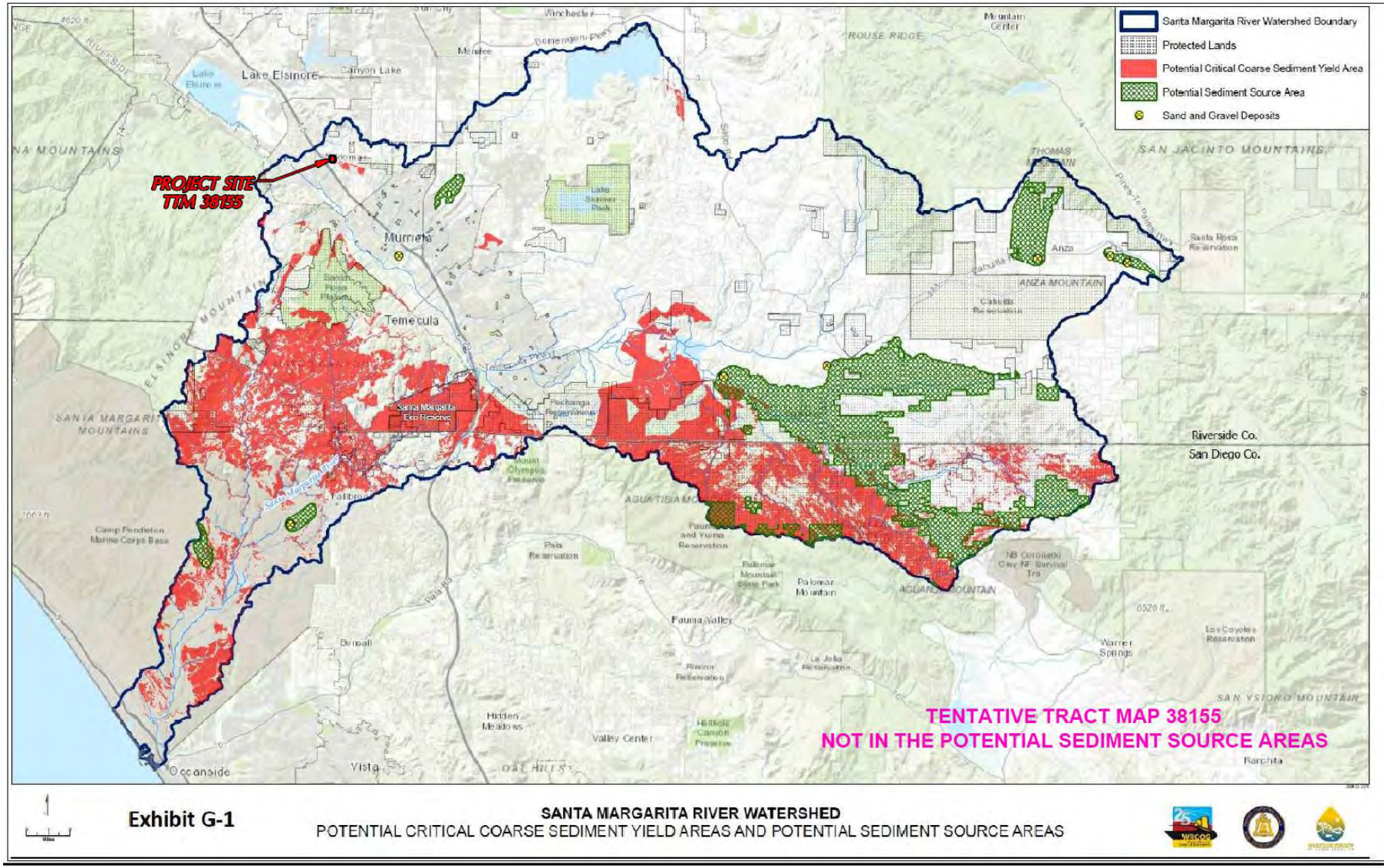


Exhibit G-1

SANTA MARGARITA RIVER WATERSHED
POTENTIAL CRITICAL COARSE SEDIMENT YIELD AREAS AND POTENTIAL SEDIMENT SOURCE AREAS

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

For Final WQMP, include a copy of the completed Pollutant Sources/Source Control Checklist in the subsequent pages and summarize Source Control BMPs in Section H of this Template.

Source Control BMPs

Potential Sources of Runoff Pollutants	Permanent Controls—Show on WQMP Drawings	Permanent Controls—List in WQMP Table and Narrative	Operational BMPs—Include in WQMP Table and Narrative
☒ A. On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☐ B. Interior floor drains and elevator shaft sump pumps		☐ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ C. Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.
☐ D1. Need for future indoor & structural pest control		☐ Note building design features that discourage entry of pests.	☐ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ D2. Landscape/ Outdoor Pesticide Use	☒ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ☒ Show self-retaining	State that final landscape plans will accomplish all of the following. ☒ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at

	landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. ☒ Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions. ☒ Consider using pest-resistant plants, especially adjacent to hardscape. ☒ To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	http://rcflood.org/stormwater/Error! Hyperlink reference not valid. ☒ Provide IPM information to new owners, lessees and operators.
☒ E. Pools, spas, ponds, decorative fountains, and other water features.	☒ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	☒ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. Food service	☐ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ☐ On the drawing, show a note that this drain will be connected to a grease interceptor before	☐ Describe the location and features of the designated cleaning area. ☐ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	☐ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.

	discharging to the sanitary sewer.		
☒ G. Refuse areas	☒ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☒ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent runon and show locations of berms to prevent runoff from the area. ☒ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☒ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☒ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☒ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
☐ H.Industrial processes.	☐ Show process area.	☐ If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."	☐ See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/
☐ I. Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	☐ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent runon or run-off from area. ☐ Storage of non-hazardous liquids shall be covered by a	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous	☐ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

	roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ☐ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Materials Programs for: ⍰ Hazardous Waste Generation ⍰ Hazardous Materials Release Response and Inventory ⍰ California Accidental Release (CalARP) ⍰ Aboveground Storage Tank ⍰ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ⍰ Underground Storage Tank www.cchealth.org/groups/hazmat/	
☐ J. Vehicle and Equipment Cleaning	☐ Show on drawings as appropriate: (1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses. (2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shutoff to discourage such use). (3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.	☐ If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.	Describe operational measures to implement the following (if applicable): ☐ Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system. Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater ☐ Car dealerships and similar may rinse cars with water only.

	(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.		
☐ K. Vehicle/Equipment Repair and Maintenance	☐ Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater. ☐ Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. ☐ Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.	☐ State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area. ☐ State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements. ☐ State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.	In the Stormwater Control Plan, note that all of the following restrictions apply to use the site: ☐ No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains. ☐ No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately. ☐ No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment. Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants

			categories below. Brochure can be found at http://rcflood.org/stormwater/
☐ L. Fuel Dispensing Areas	☐ Fueling areas[6] shall have impermeable floors (i.e., Portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ☐ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		☐ Move loaded and unloaded items indoors as soon as possible. ☐ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
☐ M. Loading Docks	☐ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be		☐ Move loaded and unloaded items indoors as soon as possible. ☐ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

	drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ☐ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ☐ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		
☐ N. Fire Sprinkler Test Water		☐ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☐ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ☐ Boiler drain lines ☐ Condensate drain lines ☒ Rooftop equipment ☐ Drainage sumps ☒ Roofing, gutters, and trim. ☐ Other sources		☐ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ☐ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☒ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ☐ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.	

		☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. ☐ Include controls for other sources as specified by local reviewer.	
☒ P. Plazas, sidewalks, and parking lots.			☒ Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

For the Final WQMP the following information shall be provided:

1. Maintenance Plan per Section 5.3.5 of the WQMP Guidance Document. County will regularly inspect BMPs, so BMPs without access (e.g. backyards, etc) will be rejected. Due to liability, the County does not allow for overlapping private maintenance in the public right-of-way.
2. For all projects, include one wet-signed and notarized hardcopy of the BMP Maintenance agreement. Please note, references to Exhibit A and B on Page 1can be struck out if the entire parcel is mentioned in the "Legal Description" on Page 1 of the agreement. Otherwise see below for Exhibit A and B standards. For BMP agreement, ensure that the name on the agreement matches throughout and the notary sheet, Notary shall be the latest California format, the date of the agreement is the date of the notary, all text does not exceed the margins, then the County will sign, attest & record
3. For Tracts, contact County EDA regarding maintenance determinations/formations. Include a completed Exhibit B.9 - WQMP O&M Cost Sheet.xlsx that is signed by both the preparer (to ensure quantities are correct) and the owner (to understand the maintenance obligations in perpetuity) & an Approved Maintenance Exhibit from EDA.
4. For Tracts or any project , written documentation from the maintenance entity that they are willing to maintain (e.g. CFD, CSA, L&LMD, etc.)

BMP EXHIBIT "A" STANDARDS

1. Use the legal description of the parcel as shown on the tentative exhibit. If not available, use the one in the most current title report.
2. As a backup, if the project is a map the description of the future lot may be included for reference

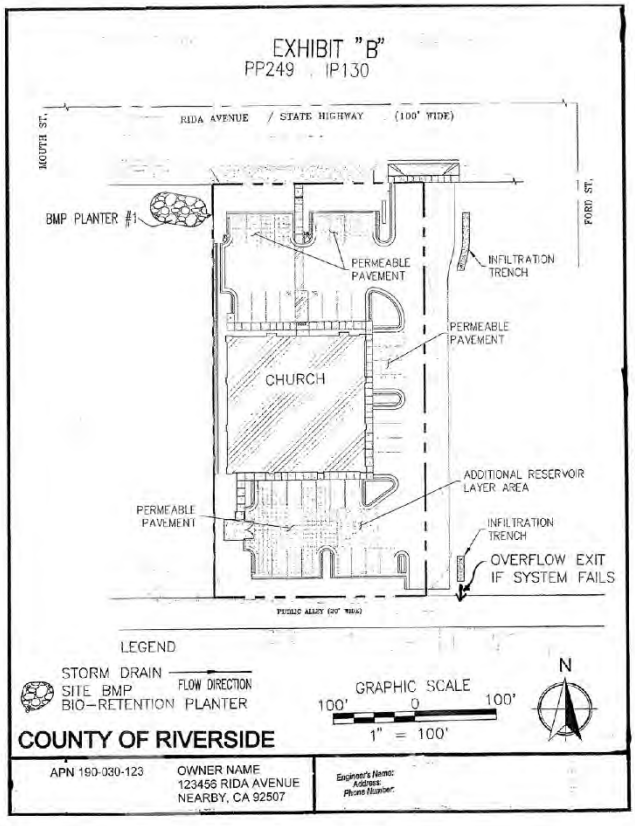
BMP EXH**IBIT "B" STANDARDS**

1. 0.12" minimum lettering
2. Sheet size must be 8.5" x 11"
3. Show Street names, north arrow
4. Indicate point of flow exit into street if basin system fails
5. Indicate Q100 of flow exit into street
6. Indicate direction of flow exit into street
7. Indicate by notation and/or show nearest downstream drainage facility (catch basin, culvert, riser, etc)
8. Show "Exhibit A", IP and project number (TR, PM, PUP, PP etc)
9. Title block, signature block, engineer seals, USA note is not necessary on Exhibit
10. Show scale used for drawing, provide 4" graphic scale

MAINTENANCE **EXHIBIT "B" STANDARDS**

1. 0.12" minimum lettering
2. Sheet size must be 8.5" x 11"
3. Show street names, north arrow
4. Show "Exhibit A", IP and project number (TR, PM, PUP, PP etc)
5. Title block, signature block, engineer seals, USA note is not necessary on Exhibit
6. Show scale used for drawing, provide 4" graphic scale

BMP EXHIBIT B EXAMPLE



Recorded at the request of:
COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT

THIS INSTRUMENT IS FOR THE BENEFIT
OF THE COUNTY OF RIVERSIDE AND
ENTITLED TO BE RECORDED WITHOUT
FEE.(GOV. CODE 6103)

RETURN TO:
RIVERSIDE COUNTY TRANSPORTATION
DEPARTMENT. **STOP NO. 1080**
4080 LEMON STREET
RIVERSIDE, CA 92501

COVENANT AND AGREEMENT REGARDING WATER QUALITY MANAGEMENT PLAN BMP, CONSENT TO INSPECT, MAINTENANCE AND INDEMNIFICATION

APN:_____ **PROJECT No.**_____ **IP No.**_____

OWNER(S):_____

PROPERTY ADDRESS:_____

LEGAL DESCRIPTION:_____
_____
_____

THIS AGREEMENT is made and entered into in Riverside County, California, this _____ day of _____ Year_____, by and between_____, (hereinafter referred to as "Covenantor" or "Owner") and the COUNTY OF RIVERSIDE via its Department of Transportation, a political subdivision of the State of California (hereinafter referred to as "County").

RECITALS

WHEREAS, the Covenantor owns real property ("Property") in the County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of these exhibits is attached, and incorporated herein by this reference;

WHEREAS, the County is the owner of interests in that certain real property within the unincorporated area of the County of Riverside, State of California, containing storm drains, pipelines, and related appurtenances constituting the County's municipal separate storm sewer system (the County's "MS4");

WHEREAS, Covenantor intends to develop, improve, and/or use the Property is such a way that approval by the County for such development, improvement, and/or use is required pursuant to applicable laws;

WHEREAS, As a condition for said approval by the County, County required Covenantor, and Covenantor desires to, restrict the use of the Property according to the conditions, covenants, equitable servitudes, and restrictions contained herein for the express benefit of the County's MS4, which include requirements that the Property incorporate post construction on-site stormwater quality control measures;

WHEREAS, the Covenantor/Owner has chosen to install one or more _____, hereinafter referred to as "Device", as the on-site control measure to minimize pollutants in urban runoff;

WHEREAS, said Device has been installed in accordance with plans and specifications accepted by the County;

WHEREAS, said Device, with installation on private property and draining only private property, is a private facility with all maintenance or replacement, therefore, the sole responsibility of the Covenantor/Owner in accordance with the terms of this Agreement;

WHEREAS, the Covenantor/Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of Device and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining; to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, incorporating the foregoing Recitals and in consideration of the covenants and conditions contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and expressly for the benefit of, and to bind, their sucessors in interest, the parties hereto agree as follows:

1. Covenantor/Owner hereby provides the County or County's designee complete access to the Device and its immediate vicinity and such access onto the property to permit access to the devise at any time, upon twenty-four *(24)* hour advance notice in writing, of any duration for the purpose of inspection, sampling and testing of the Device. County shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2. Covenantor/Owner shall use its best efforts diligently to maintain the Device in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of material(s) from the Device and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested

from time to time by the County / Regional Water Quality Control Board (RWQCB), the Owner shall provide the RWQCB with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. In the event Covenantor/Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this Agreement, within five (5) days of being given written notice by the County, the County is hereby authorized to cause any maintenance necessary to be done and charge the entire cost and expense to the Owner or Owner's successors or assigns, including administrative costs and interest thereon at the maximum rate authorized by the Civil Code from the date of notice of expense until paid in full.

4. The County may require the Covenantor/Owner to post security in a form and for a time period satisfactory to the County to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under this Agreement, the County may, in the case of a cash deposit, certificate of deposit or letter of credit, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement.

5. The County may, but shall not be obligated to, enforce this Agreement by a proceeding at law or in equity against any person or persons violating or attempting to violate any condition, covenant, equitable servitude, or restriction provided for herein, either to restrain such violation or to recover damages.

6. This Agreement constitutes the entire agreement and understanding between the parties with respect to the subject matter of this Agreement and supersedes all prior or contemporaneous agreements and understandings with respect to the subject matter hereof, whether oral or written.

7. If any part of this Agreement is declared by a final decision of a court of competent jurisdiction to be invalid for any reason, such shall not affect the validity of the rest of the Agreement. The other parts of this Agreement shall remain in effect as if this Agreement had been executed without the invalid parts(s). The parties declare that they intend and desire that the remaining parts of this Agreement continue to be effective without any part(s) that have been declared invalid.

8. This Agreement may be executed in counterparts, each of which so executed shall, irrespective of the date of its execution and delivery, be deemed an orginal, and all such counterparts together shall constitute one and the same instrument.

9. This Agreement shall be recorded in the Office of the Recorder of Riverside County, California and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth.

10. In the event of legal action occasioned by any default or action of the Covenantor/Owner, or its successors or assigns, then the Covenantor/Owner and its

successors or assigns agree(s) to pay all costs incurred by the County in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

11. Covenantor/Owner agrees to indemnify, defend, and hold harmless the County, its elected officers, employees, agents, and contractors from and against any and all liability, expense, including costs and reasonable legal fees, and claims of damage of any nature whatsoever including, but not limited to, death, bodily injury, personal injury, or property damage arising from or connected with the County inspection of the Property except where such liability, expense, or claim for damage results from the sole negligence or willful misconduct of the County.

12. It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien thereon against.

13. The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto and any other present or future interest holders or estate holders in the property. The term "Owner" shall include not only the present Owner, but also its heirs, successors in interest and in title to the property, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the County at the same time such notice is provided to the successor.

14. Time is of the essence in the performance of this Agreement.

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15. Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two *(72)* hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

COVENANTOR/OWNER NAME:

COUNTY:

Riverside County Department of Transportation
Attn: Transportation Director
4080 Lemon Street
Riverside, CA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT

Patricia Romo, P.E.
Director of Transportation

Date

(Attest)

Date

COVENANTOR/OWNER

Signature of Covenantor/Owner

(Print Name)

(Print Title)

Attach Notary

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

For the Final WQMP, examples of material to provide in Appendix 10 may include but are not limited to the following:

- BMP Fact Sheets for proposed BMPs form Exhibit C: LID BMP Design Handbook of the SMR WQMP,
- Source control information and training material for site owners and operators,
- O&M training material,
- Other educational/training material related to site drainage and BMPs.

Bio Clean

A Forterra Company

Modular Wetlands® Linear

A Stormwater Biofiltration Solution



OVERVIEW

The Modular Wetlands® Linear (MWS Linear*) represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands Linear incorporates an advanced pretreatment chamber that includes separation and pre-filter boxes. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

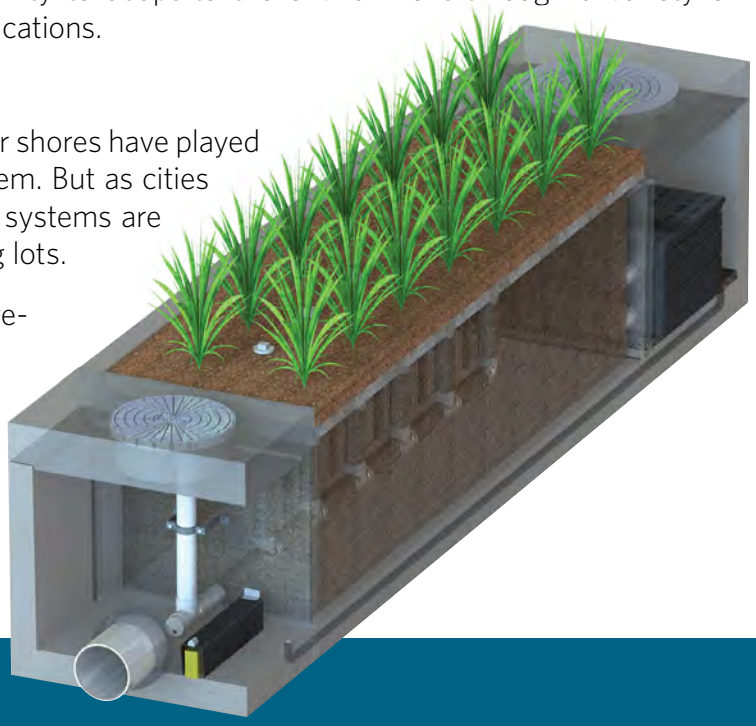
Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature's stormwater treatment system. But as cities grow and develop, our environment's natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature's presence in urban areas, and rejuvenating waterways with the Modular Wetlands Linear.

*Also known as: Modular Wetlands®, Modular Wetlands® System Linear, Modwet™, or MWS Linear™.



PERFORMANCE

The Modular Wetlands® Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the Modular Wetlands Linear has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the Modular Wetlands Linear harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	**69%** REMOVAL OF TOTAL ZINC	**38%** REMOVAL OF DISSOLVED COPPER	**85%** REMOVAL OF TSS	**100%** REMOVAL OF TRASH
45% REMOVAL OF NITROGEN	**50%** REMOVAL OF TOTAL COPPER	**95%** REMOVAL OF MOTOR OIL	**67%** REMOVAL OF ORTHO PHOSPHORUS	**64%** REMOVAL OF TOTAL PHOSPHORUS

APPROVALS

The Modular Wetlands® Linear (MWS Linear) has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.

Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft^2 loading rate. The highest performing BMP on the market for all main pollutant categories.

California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® Linear is the first biofiltration system to receive certification as a full capture trash treatment control device.

Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.

Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.

MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.

Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

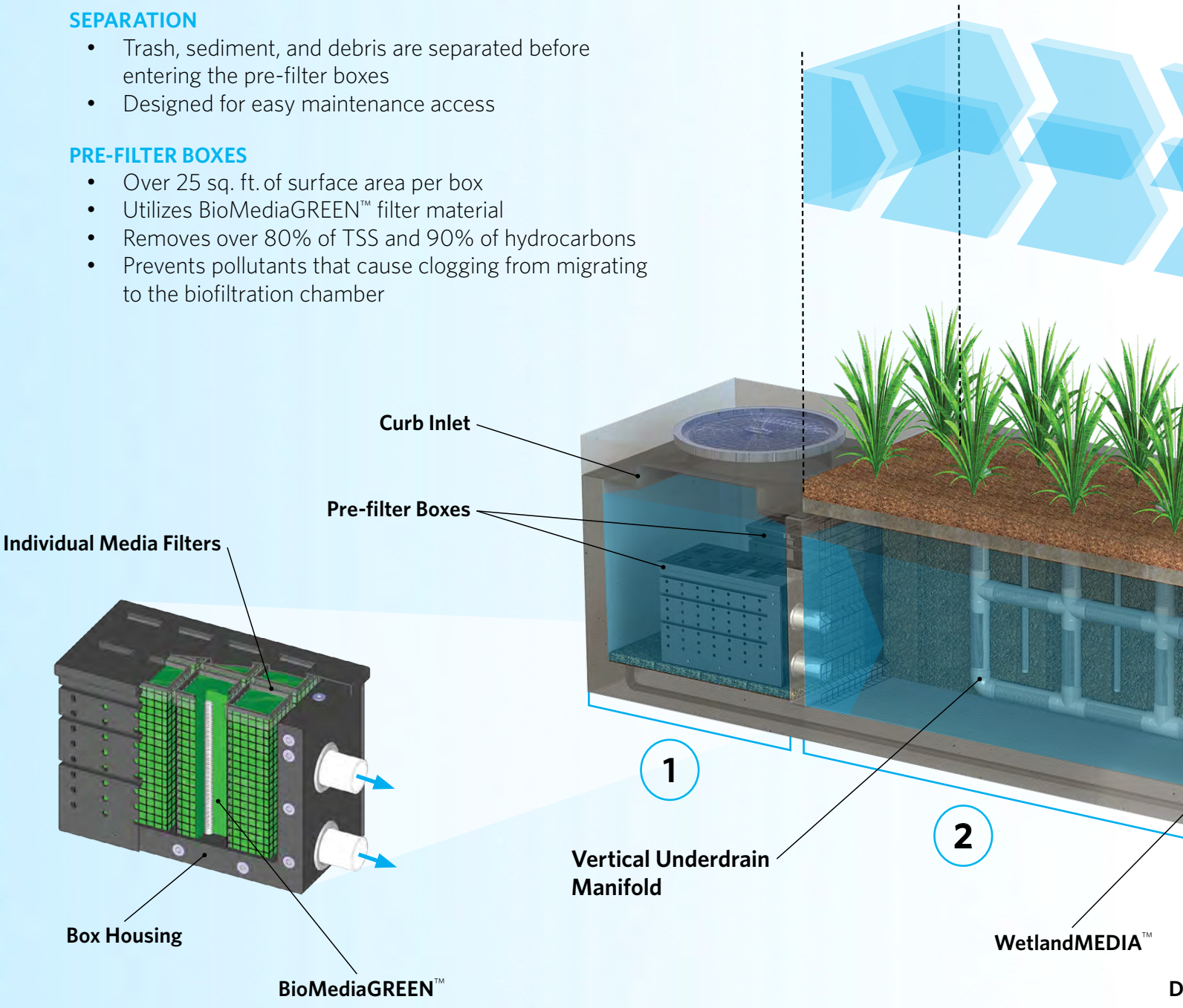
1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter boxes
- Designed for easy maintenance access

PRE-FILTER BOXES

- Over 25 sq. ft. of surface area per box
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



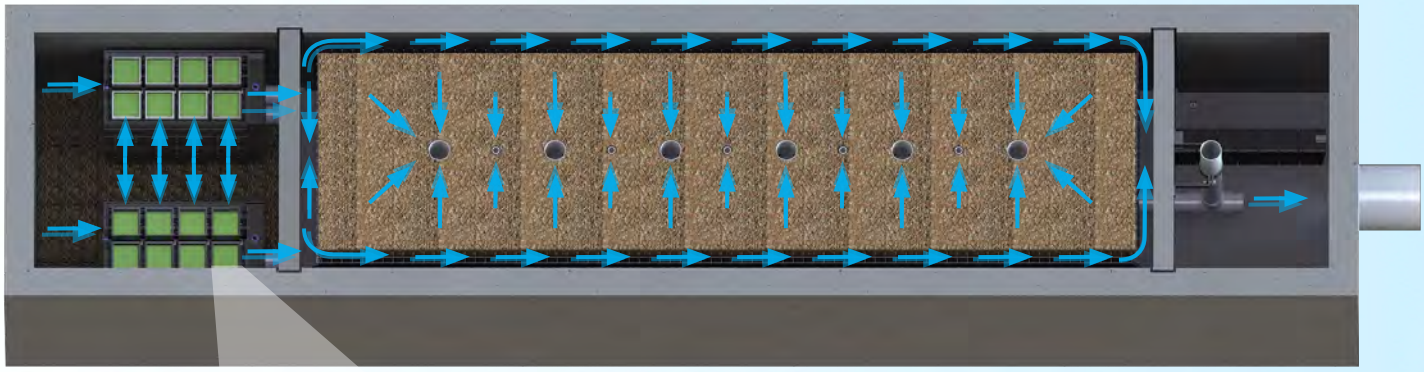


Figure 2,
Top View



2x to 3x more surface area than traditional downward flow bioretention systems.

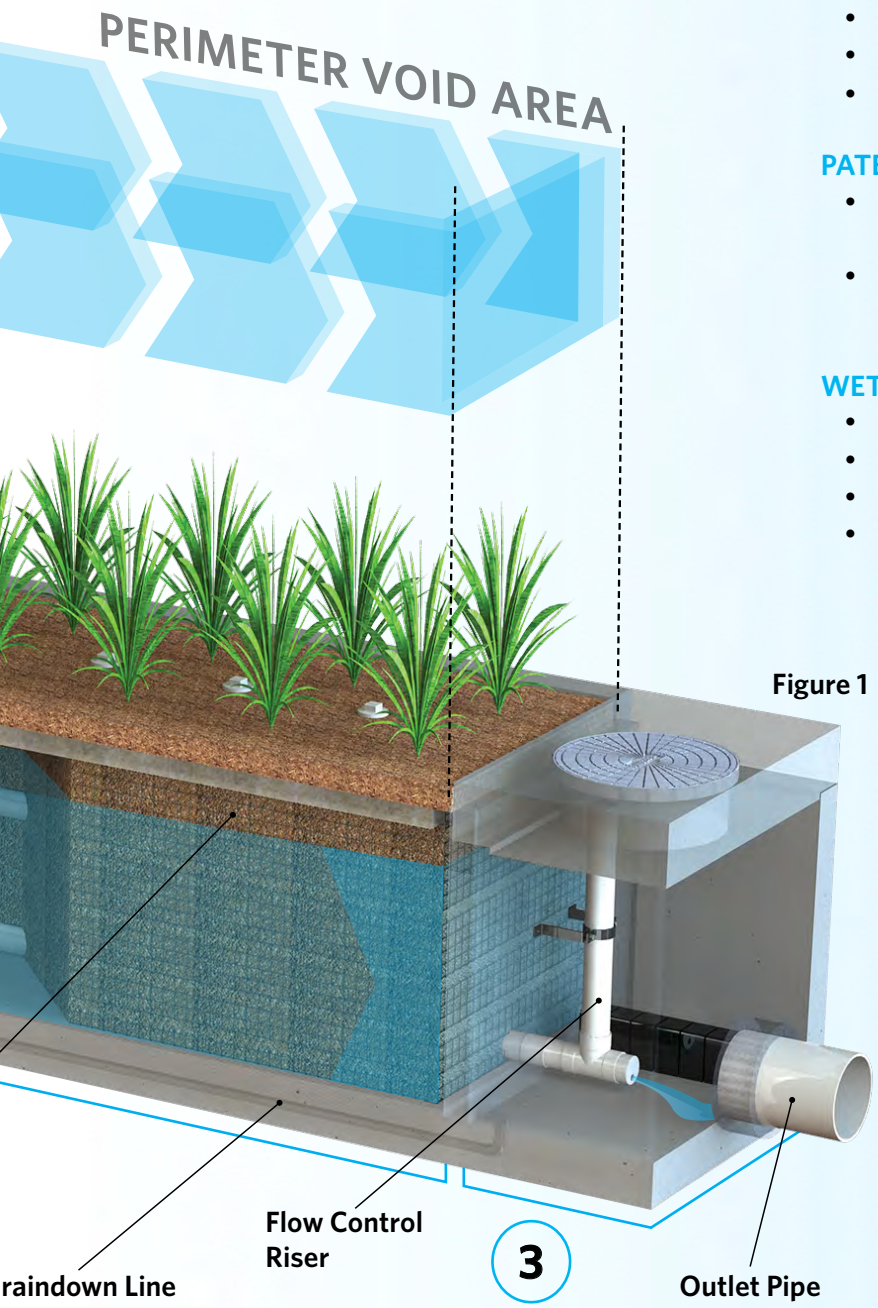


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

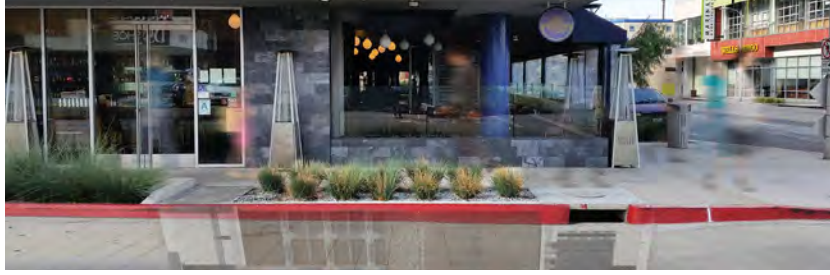
FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated





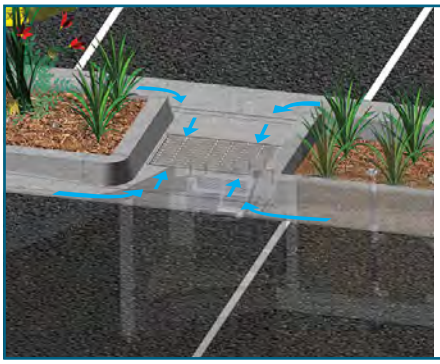
CONFIGURATIONS

The Modular Wetlands® Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



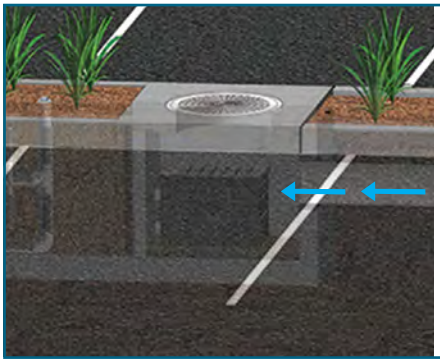
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

The system's patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/ bioretention systems. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.

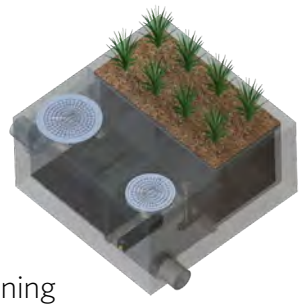


DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

ORIENTATIONS

SIDE-BY-SIDE



The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.

END-TO-END



The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.

BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system's treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

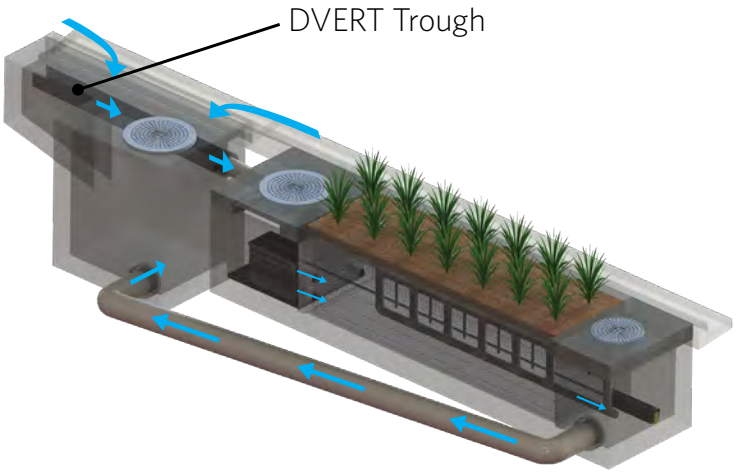
This traditional offline diversion method can be used with the Modular Wetlands® Linear in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the MWS Linear for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the MWS Linear and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® Linear via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over



to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the system to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE



MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.



UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.



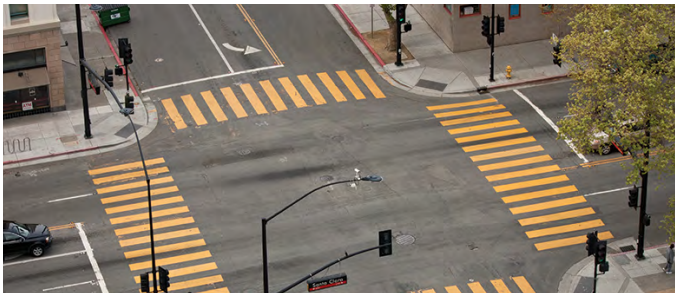
INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The Modular Wetlands® has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.



RESIDENTIAL

Low to high density developments can benefit from the versatile design of the Modular Wetlands®. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



STREETS

Street applications can be challenging due to limited space. The Modular Wetlands® is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.



PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands'® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.



COMMERCIAL

Compared to bioretention systems, the Modular Wetlands® can treat far more area in less space, meeting treatment and volume control requirements.



MIXED USE

The Modular Wetlands® can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

• Agriculture • Reuse • Low Impact Development • Waste Water

PLANT SELECTION



Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the Modular Wetlands®, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.

A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION



The Modular Wetlands® is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE



Reduce your maintenance costs, man hours, and materials with the Modular Wetlands®. Unlike other biofiltration systems that provide no pretreatment, the Modular Wetlands® is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.



Bio Clean
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stormwater@forterrabp.com
biocleanenvironmental.com

11192020v2

After the Storm

A Citizen's Guide to Understanding Stormwater

EPA United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water source. This, in turn, can affect human health and increase drinking water treatment costs.

What is stormwater runoff?

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

Why is stormwater runoff a problem?

Stormwater Pollution Solutions



Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.

Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.



Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.

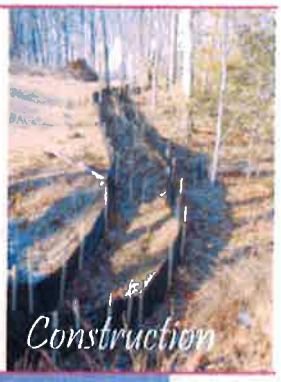


Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.





Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.

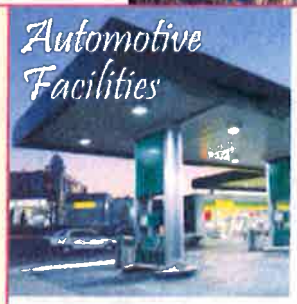


- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they mininize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

StormWater Pollution

What you should know for...

GENERAL CONSTRUCTION & SITE SUPERVISION

Best Management Practices (BMPs) for:

- Developers
- General Contractors
- Home Builders
- Construction Inspectors
- Anyone in the construction business

To report a hazardous materials spill, call:

Riverside County Hazardous Materials Emergency Response Team
(909) 358-5055 8:00 a.m. – 5:00 p.m.
(909) 358-5245 after 5:00 p.m.

In an emergency call: **911**

For recycling and hazardous waste disposal, call:

(909) 358-5055

To report an illegal dumping or a clogged storm drain, call:

1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, please call (909) 955-1200 or visit the StormWater/CleanWater Protection Program website at:
www.co.riverside.ca.us/depts/flood/waterquality npdes.asp

StormWater CleanWater
PROTECTION PROGRAM

The StormWater/CleanWater Protection Program gratefully acknowledges the Santa Clara Valley Nonpoint Pollution Control Program, Alameda Countywide CleanWater Program and the City of Los Angeles Stormwater Management Division for information provided in this brochure.

Resources

State Water Resources Control Board
Division of Water Quality
1001 I Street
Sacramento CA 95814
(916) 341-5455
www.swrcb.ca.gov/stormwtr/

Colorado River Basin Regional Water Quality Control Board - Region 7
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260
(760) 346-7491
www.swrcb.ca.gov/~rwqcb7/

Santa Ana Regional Water Quality Control Board - Region 8
3737 Main Street, Suite 500
Riverside, CA 92501-3348
(909) 782-4130
www.swrcb.ca.gov/~rwqcb8/

San Diego Regional Water Quality Control Board - Region 9
9771 Clairemont Mesa Blvd., Suite A
San Diego, CA 92124
(858) 467-2952
www.swrcb.ca.gov/~rwqcb9/

StormWater Pollution From Construction Activities

The two most common sources of stormwater pollution problems associated with construction activities are ***erosion*** and ***sedimentation***. Failure to maintain adequate erosion and sediment controls at construction sites often results in sediment discharges into the storm drain system, creating multiple problems once it enters local waterways.

Construction vehicles and heavy equipment can also track significant amounts of mud and sediment onto adjacent streets. Additionally, wind may transport construction materials and wastes into streets storm drains, or directly into our local waterways.

StormWater Pollution . . . What You Should Know

Riverside County has two drainage systems - sewers and storm drains. The storm drain system was designed to reduce flooding by carrying excess rainwater away from streets and developed areas. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our local waterways.

Unlike sanitary sewers, storm drains are not connected to a wastewater treatment plant – they flow directly to our local streams, rivers and lakes.

Stormwater runoff is a part of the natural hydrologic process. However, land development and construction activities can significantly alter natural drainage processes and introduce pollutants into stormwater runoff. Polluted stormwater runoff from construction sites has been identified as a major source of water pollution in California. It jeopardizes the quality of our local waterways and can pose a serious threat to the health of our aquatic ecosystems.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Because preventing pollution is much easier and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses on pollution prevention activities. This pamphlet describes various Best Management Practices (BMPs) that construction site operators can use to prevent stormwater pollution.

In accordance with applicable federal and state law, the Cities and County of Riverside have adopted ordinances for stormwater management and discharge control that **prohibit** the discharge of pollutants into the storm drain system or local surface water. This includes discharges from construction sites containing sediment, concrete, mortar, paint, solvents, lubricants, vehicle fluids, fuel, pesticides, and construction debris.

PLEASE NOTE: The Federal, State and local regulations strictly prohibit the discharge of sediment and pollutants into the streets, the storm drain system or waterways. As an owner, operator or supervisor of a construction site, you may be held financially responsible for any environmental damage caused by your subcontractors or employees.

Because every industrial site is unique, every SWPPP is unique. The SWPPP needs to be reviewed and updated by the operator on a regular basis. Please visit **www.epa.gov/npdes/stormwater/msgp** for more information on how to develop your SWPPP.

Basic SWPPP Elements

- Stormwater pollution prevention team
- Site description
- Summary of potential pollutant sources
- Description of control measures
- Schedules and procedures
- Documentation to support eligibility considerations under other federal laws
- Certification of the SWPPP

3. Complete documentation for eligibility under other Federal laws.
The operator must assess the potential effects of stormwater runoff on federally listed endangered and threatened species and any designated critical habitat located on or near the site, as well as impacts on historic properties on or near the facility. In making these determinations, the operator needs to consider areas beyond the immediate footprint of the facility site as well as beyond the property line—areas that could be affected directly or indirectly by stormwater discharges. The MSGP contains more information about completing these determinations in applying for permit coverage.

4. File a Notice of Intent (NOI) application.
The Notice of Intent (NOI) form lets EPA know that you are filing for permit coverage. It also attests that you have read, understood, and are complying with the requirements of the MSGP. The fastest and easiest way to file an NOI is through EPA's online permit application system (www.epa.gov/npdes/enoi). (Mailing a paper NOI to EPA can add 2 or more weeks to your processing time.) Your permit coverage begins after a 30-day waiting period, during which NOIs are reviewed by EPA and others.

5. Implement all stormwater control measures outlined in your SWPPP.
Your SWPPP must be updated as conditions at the industrial facility and as practices change.



Storm drain adjacent to access road to plant; drain is not protected and not being serviced.

Questions?

To find out more about the stormwater permit program, please contact in the EPA Region 10 Seattle office:

Julie Congdon
Stormwater Compliance Assistance Coordinator
Office of Compliance & Enforcement, NPDES Unit
1.800.424.4372, x. 2752
congdon.julie@epa.gov

Michael Le
Industrial Stormwater Permits
Office of Water & Watersheds, NPDES Permits Unit
1.800.424.4372, x. 1099
le.michael@epa.gov

Notice: The statements in this document are intended solely as guidance to aid regulated entities in complying with the Clean Water Act's stormwater requirements. The guidance is not a substitute for reading the Clean Water Act and its implementing regulations and understanding all its requirements as they apply to your facility. This guidance does not constitute rulemaking by the EPA and may not be relied on to create a substantive or procedural right or benefit enforceable, at law or in equity, by any person. EPA may decide to update this guide without public notice to reflect changes in EPA's approach to implementing the Clean Water Act. This document reflects information available in EPA's NPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity.



Waste materials are left exposed to the elements and stormwater runoff. Lack of secondary containment for the tank.

EPA 910-K-09-008

EPA
United States Environmental Protection Agency

Does Your Facility Need a Stormwater Permit?

An Industrial Facility Operator's Guide to EPA's Stormwater Permit Program



Office of Compliance and Enforcement
US EPA Region 10

Many Industrial Facilities *(with few exceptions)* Need Stormwater Permit Coverage!

Why is stormwater runoff a problem?

Runoff from rainstorms and snowmelt picks up pollutants like sediment, oil and grease, nitrogen, phosphorus, and other chemicals and carries them into storm drains or directly into waterbodies. Because most storm drain systems do not provide any treatment to the water they collect, preventing contamination of stormwater is critically important. Otherwise, polluted runoff will be discharged untreated into the waterbodies we use for swimming, fishing, and drinking water.

This brochure describes who must comply with the EPA's stormwater permit requirements for:

- Idaho
- Federal facilities in Washington
- Indian Country within Alaska, Idaho, Oregon and Washington.*

* *If your facility is not in one of the areas noted, you will need to obtain permit coverage from the appropriate state authority. A list of state permitting authorities can be found at* **www.epa.gov/npdes/stormwater**.



Unauthorized non-stormwater discharge from an industrial facility.

Photo courtesy of TetraTech.



Two photos showing an industrial facility before and after it followed good housekeeping practices.

Photos courtesy of TetraTech.

What is the Multi-Sector General Permit, or MSGP?

EPA's National Pollutant Discharge Elimination System (NPDES) program regulates stormwater runoff from industrial facilities. The Multi-Sector General Permit (MSGP) covers industrial facilities in 29 different industrial sectors.

If your facility...

- is located in Idaho, Indian Country or is a Federal facility in Washington,
- has "primary" or "co-located" industrial activities covered by the MSGP,
- has stormwater runoff that discharges to a surface water or to a storm sewer that flows to a surface water,

you need permit coverage under the **Multi-Sector General Permit**.

What industries are covered by the MSGP?

Permit eligibility is limited to discharges from facilities in the "sectors" of industrial activity listed. The sector descriptions are based on Standard Industrial Classification (SIC) Codes and Industrial Activity Codes. For a more detailed list, please see Appendix D of the MSGP. The industrial sectors listed in the table must minimize pollutants in their stormwater discharges and obtain permit coverage under the MSGP.

Industries Covered by the MSGP and SIC Codes

SIC Code	*Industrial Activity Sector*
24xx	A: Timber Products
26xx	B: Paper Products
28xx, 3952	C: Chemical Products
29xx	D: Asphalt/Roofing
32xx	E: Glass, Clay, Cement
33xx	F: Primary Metals
10xx	G: Metal Mining
12xx	H: Coal Mines
13xx	I: Oil and Gas
14xx	J: Mineral Mining
HZ	K: Hazardous Waste
LF	L: Landfills
5015	M: Auto Salvage Yards
5093	N: Scrap Recycling
SE	O: Steam Electric Facilities
40xx, 41xx, 42xx, 4311, 5171	P: Land Transportation
44xx	Q: Water Transportation
37xx	R: Ship/Boat Building, Repair
45xx	S: Air Transportation
TW	T: Treatment Works (WWTPs)
20xx, 21xx	U: Food Products
22xx, 23xx, 31xx	V: Textile Mills
2434, 25xx	W: Furniture and Fixtures
27xx	X: Printing, Publishing
30xx, 39xx	Y: Rubber, Misc. Plastics
3111	Z: Leather Tanning/ Finishing
34xx, 39xx	AA: Fabricated Metal Products
35xx, 37xx	AB: Transportation Equip.
357x, 38xx, 36xx	AC: Electronic, photo goods

I need permit coverage. *Where do I begin?*

1. Read EPA's Multi-Sector General Permit.

You can download a copy of EPA's permit at **www.epa.gov/npdes/stormwater/msgp**. Read the permit carefully, and remember that operators are legally responsible for complying with all of its requirements.

Who is responsible for coverage and who submits an NOI?

The "operator" submits a Notice of Intent (NOI) application. The operator is the entity (generally the company, corporation, etc.) that has operational control over the industrial activities, or has day-to-day operational control of activities at the facility necessary to implement the Stormwater Pollution Prevention Plan (SWPPP—see below/ next page for more information) and ensure compliance with the permit (e.g., the entity is authorized to direct workers at a facility to carry out activities required by the permit).

It is the responsibility of the operator(s) to develop and implement a SWPPP and maintain all "best management practices" or stormwater control measures at the facility. These include swales, detention ponds, spill protection equipment, schedules of activities, prohibitions of practices, and maintenance procedures that you use to prevent or reduce the discharge of pollutants.

2. Develop a site-specific stormwater pollution prevention plan (SWPPP).

The SWPPP explains how you will control pollutants in stormwater runoff from your facility. It is a written document that identifies the sources of pollution and industrial activities conducted at the site, including stormwater control practices which the operator will use to prevent pollutants from making their way into stormwater runoff. The SWPPP must be completed before you apply for permit coverage. EPA does not require that you submit the SWPPP with your application to obtain permit coverage, but the plan must be available to EPA by request or for review during inspection.

What Should You Do?
Advance Planning to Prevent Pollution

- ❑ Remove existing vegetation only as needed.
- ❑ Schedule excavation, grading, and paving operations for dry weather periods, if possible.
- ❑ Designate a specific area of the construction site, well away from storm drain inlets or watercourses, for material storage and equipment maintenance.
- ❑ Develop and implement an effective combination of erosion and sediment controls for the construction site.
- ❑ Practice source reduction by ordering only the amount of materials that are needed to finish the project.
- ❑ Educate your employees and subcontractors about stormwater management requirements and their pollution prevention responsibilities.
- ❑ Control the amount of surface runoff at the construction site by impeding internally generated flows and using berms or drainage ditches to direct incoming offsite flows to go around the site. ***Note:*** *Consult local drainage policies for more information.*

Best Management Practices

The following Best Management Practices (BMPs) can significantly reduce pollutant discharges from your construction site. Compliance with stormwater regulations can be as simple as minimizing stormwater contact with potential pollutants by providing covers and secondary containment for construction materials, designating areas away from storm drain systems for storing equipment and materials and implementing good housekeeping practices at the construction site.

- ❑ Protect all storm drain inlets and streams located near the construction site to prevent sediment-laden water from entering the storm drain system.
- ❑ Limit access to and from the site. Stabilize construction entrances/exits to minimize the track out of dirt and mud onto adjacent streets. Conduct frequent street sweeping.
- ❑ Protect stockpiles and construction materials from winds and rain by storing them under a roof, secured impermeable tarp or plastic sheeting.
- ❑ Avoid storing or stockpiling materials near storm drain inlets, gullies or streams.
- ❑ Phase grading operations to limit disturbed areas and duration of exposure.
- ❑ Perform major maintenance and repairs of vehicles and equipment offsite.
- ❑ Wash out concrete mixers only in designated washout areas at the construction site.
- ❑ Set-up and operate small concrete mixers on tarps or heavy plastic drop cloths.
- ❑ Keep construction sites clean by removing trash, debris, wastes, etc. on a regular basis.
- ❑ Clean-up spills immediately using dry clean-up methods (e.g., absorbent materials such as cat litter, sand or rags for liquid spills; sweeping for dry spills such as cement, mortar or fertilizer) and by removing the contaminated soil from spills on dirt areas. .
- ❑ Prevent erosion by implementing any or a combination of soil stabilization practices such as mulching, surface roughening, permanent or temporary seeding.
- ❑ Maintain all vehicles and equipment in good working condition. Inspect frequently for leaks, and repair promptly.
- ❑ Practice proper waste disposal. Many construction materials and wastes, including solvents, water-based paint, vehicle fluids, broken asphalt and concrete, wood, and cleared vegetation can be recycled. Materials that cannot be recycled must be taken to an appropriate landfill or disposed of as hazardous waste.
- ❑ Cover open dumpsters with secured tarps or plastic sheeting. Never clean out a dumpster by washing it down on the construction site.
- ❑ Arrange for an adequate debris disposal schedule to insure that dumpsters do not overflow.

General Construction Activities Stormwater Permit
(Construction Activities General Permit)

The State Water Resources Control Board (SWRCB) adopted a new Construction Activities General Permit (WQ Order No. 99-08DWQ) on August 19, 1999, superseding the now expired SWRCB statewide General Permit (WQ Order No. 92-08DWQ). This permit is administered and enforced by the SWRCB and the local Regional Water Quality Control Boards (RWQCB). The updated Construction Activities General Permit establishes a number of new stormwater management requirements for construction site operator.

NOTE: Some construction activies stormwater permits are issued on a regional basis. Consult your local RWQCB to find out if your project requires coverage under any of these permits.

Frequently Asked Questions:

Does my construction site require coverage under the Construction Activities General Permit?

Yes, if construction activity results in the disturbance of five or more acres of total land area or is part of a common plan of development that results in the disturbance of five or more acres.

How do I obtain coverage under the Construction Activities General Permit?

Obtain the permit package and submit the completed Notice of Intent (NOI) form to the SWRCB prior to grading or disturbing soil at the construction site. For ongoing construction activity involving a change of ownership, the new owner must submit a new NOI within 30 days of the date of change of ownership. The completed NOI along with the required fee should be mailed to the SWRCB.

What must I do to comply with the requirements of the Construction Activities General Permit?

- ● Implement BMPs for non-stormwater discharges year-round.
- ● Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) prior to commencing construction activities.
- ● Keep a copy of the SWPPP at the construction site for the entire duration of the project.
- ● Calculate the anticipated stormwater run-off.
- ● Implement an effective combination of erosion and sediment control on all soil disturbed areas.
- ● Conduct site inspections prior to anticipated storm events, every 24-hours during extended storm events, and after actual storm event.
- ● Perform repair and maintenance of BMPs as soon as possible after storm events depending upon worker safety.
- ● Update the SWPPP as needed, to manage pollutants or reflect changes in site conditions.
- ● Include description of post construction BMPs at the construction site, including parties responsible for long-term maintenance.

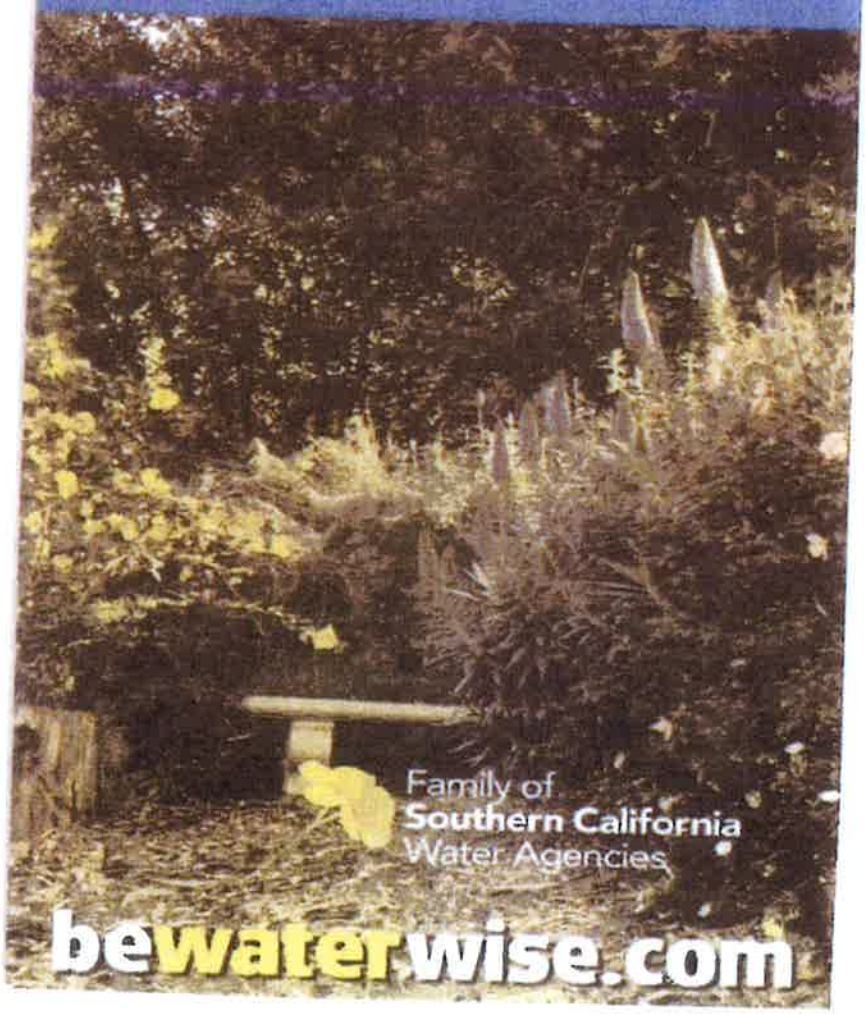
NOTE: Please refer to the Construction Activities General Permit for detailed information. You may contact the SWRCB, your local RWQCB, or visit the SWRCB website at www.swrcb.ca.gov/stormwtr/ to obtain a State Construction Activities Stormwater General Permit packet.

How long is this Construction Activities General Permit in effect?

The Permit coverage stays in effect untilyou submit a Notice of Termination (NOT) to the SWRCB. For the purpose of submitting a NOT, all soil disturbing activities have to be completed and one of the three following criteria has to be met:

1. Change of ownership;
2. A uniform vegetative cover with 70 percent coverage has been established; or,
3. Equivalent stabilization measures such as the use of reinforced channel liners, soil cement, fiber matrices, geotextiles, etc., have been employed.

10 Ways to Save Water Outdoors



TIP #1 The average homeowner uses twice the amount of water needed to keep plants healthy. Use the watering calculator and index at **bewaterwise.com** to know exactly how much water your plants need.

TIP #2 Check your sprinkler system for leaks, overspray and broken sprinkler heads. Update with drip or other more water-efficient sprinklers where appropriate.

TIP #3 This fall, plant a portion of your garden with beautiful native and California Friendly plants. Browse the plant database at **bewaterwise.com** to find just the right look for your outdoor spaces.

TIP #4 Reduce the amount of water-thirsty grass. Keep only what you need and replace the rest with less-thirsty plants or permeable paving.

TIP #5 For the grass you keep, set your lawnmower blade higher.

TIP #6 Adjust your sprinkler timer downward in September. Plants need less water when days are shorter.

TIP #7 Use a broom instead of the hose for cleaning sidewalks and patios.

TIP #8 Mulch! A layer of bark, gravel, compost, sawdust or low-growing groundcover evens out soil temperature and allows better water retention.

TIP #9 Check the list of invasive plants that hurt our environment at **caleppc.org** and remove any from your garden.

TIP #10 Share these tips with your gardener, neighbors and friends. Water conservation should be a part of every Southern Californian's lifestyle, but that doesn't mean we can't have lush and beautiful outdoor spaces.

bewaterwise.com



Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

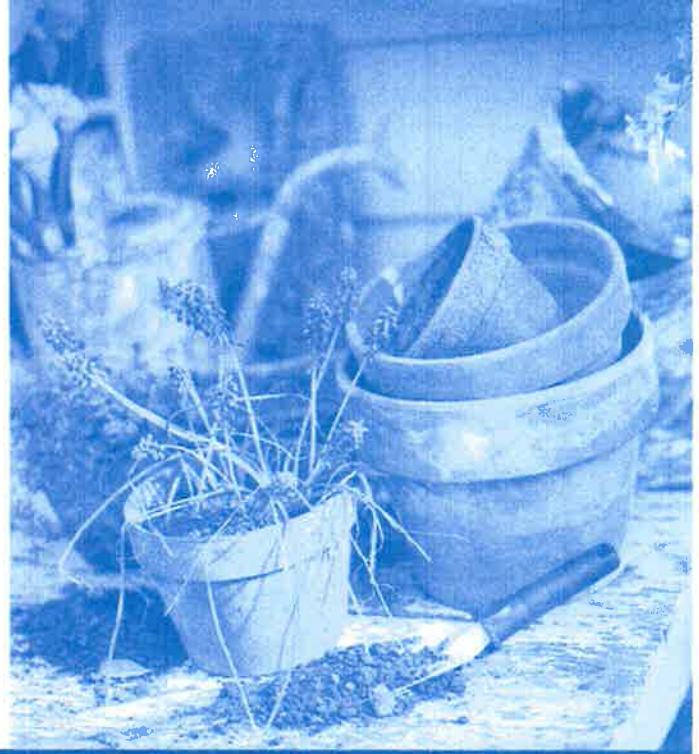
The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

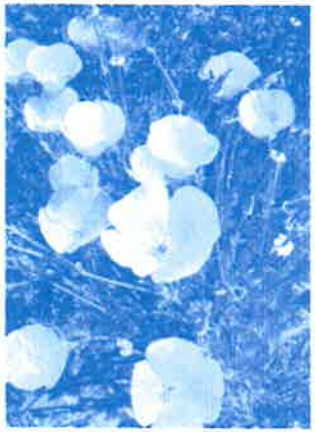


Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.



- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.



- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers



Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

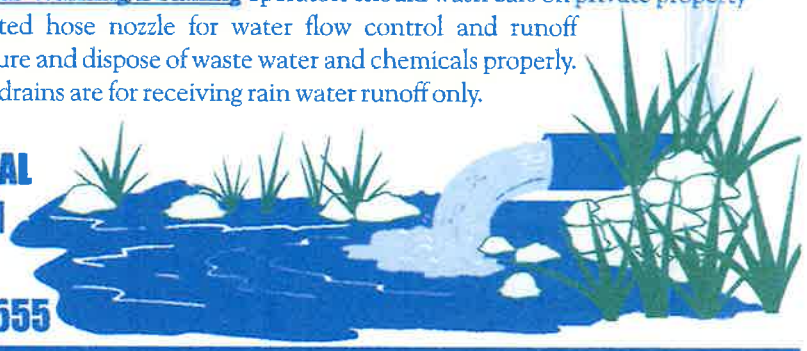
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



The primary purpose of storm drains is to carry *rain* water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.



Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.



When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your Regional Water Quality Control Board (RWQCB).

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairemont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:	
HAZ-MAT:	(909) 358-5055
HAZARDOUS WASTE DISPOSAL:	(909) 358-5055
RECYCLING INFORMATION:	1-800-366-SAVE
TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN:	1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call: (909) 955-1111.

StormWater
CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State Water Quality Control Board and the American Public Works Association, Storm Water Quality Task Force for the information provided in this brochure.

DID YOU KNOW . . .

YOUR FACILITY MAY NEED A STORM WATER PERMIT?



Many industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit

FIND OUT IF YOUR FACILITY MUST OBTAIN A PERMIT

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.



In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."

National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are ***general descriptions*** of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

➜ Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;

➜ Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;

➜ Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;

➜ Hazardous waste treatment, storage, or disposal facilities;

➜ Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;

➜ Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;

➜ Steam electric power generating facilities, facilities that generate steam for electric power by combustion;

➜ Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;

➜ Sewage treatment facilities;

➜ Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee ($250 or $500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.

2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.

   Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.

3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.

4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... *any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.*

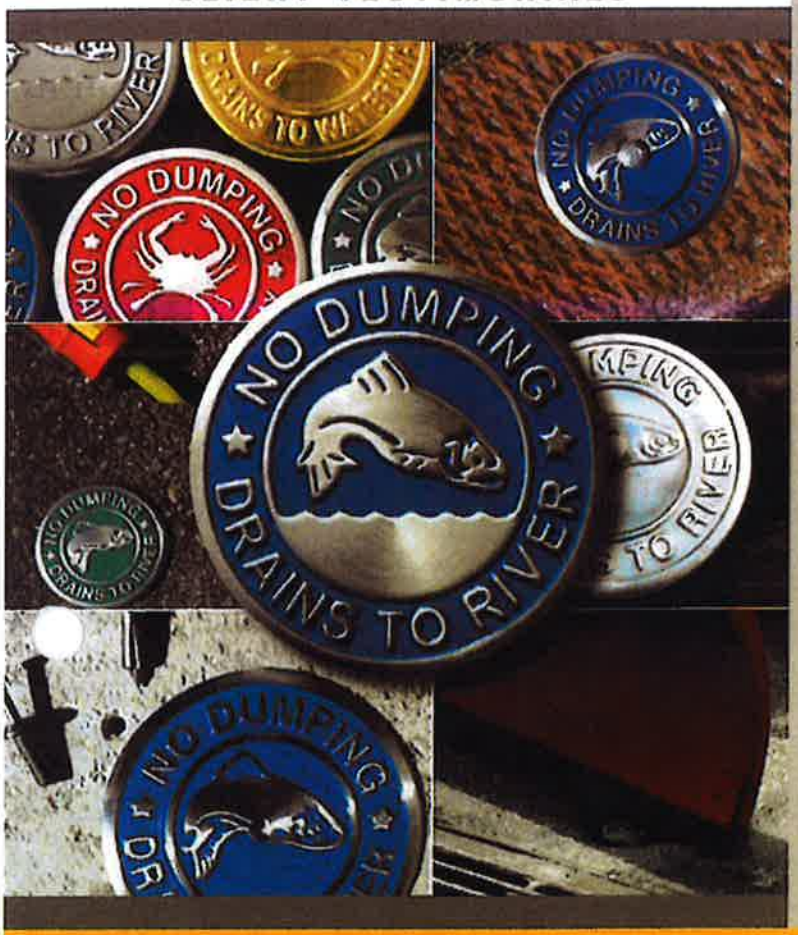
A BMP is . . . *a technique, process, activity, or structure used to reduce the pollutant content of a storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control (e.g. setting basins, oil/water separators, etc.)*



WARNING: *There are significant penalties for non-compliance: a minimum fine of $5,000 for failing to obtain permit coverage, and, up to $10,000 per day, per violation plus $10 per gallon of discharge in excess of 1,000 gallons.*

STORM DRAIN MARKERS

CLIENT TESTIMONIALS



ALMETEK

If You Identify With Quality,

You Identify With Us

SINCE 1975



"Almetek has been great to work with and the quality of their product is excellent. We will use them again."

- JOSH WINTERS
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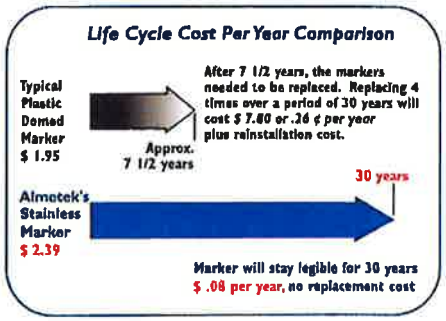
Almetek's Markers last a lifetime and are cost effective

Our attractive 4" Disc, 3-D embossed, metal, Storm Drain Markers will last for decades. They may even last a lifetime. These markers are so strong that they are virtually indestructible.

The Perfect Marker!
Almetek's metal markers have been engineered to perfection. They install easily, quickly and will remain permanently in place. Our patent pending sub-surface mounting installation with the turned down edges will ensure against theft and snow plow displacement. Our markers can be installed on the roadway, curb, storm drain grate or head. We are so sure of this product and its installation process that we will replace any missing marker with a brand new one, totally ***FREE OF CHARGE.****

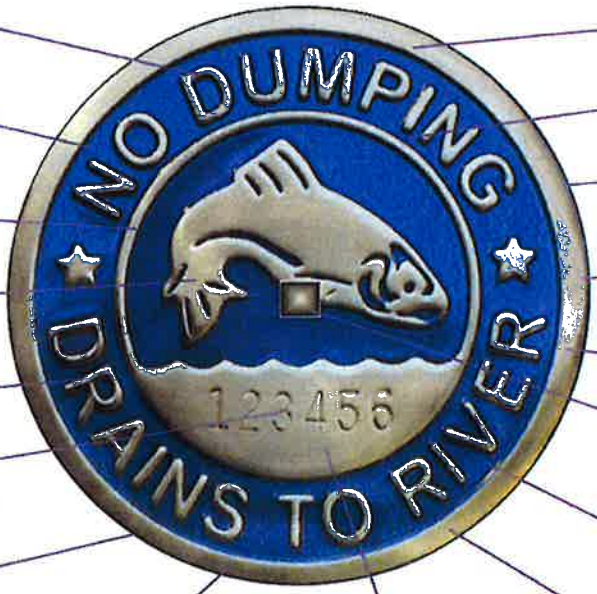
The Price is Right!
The price for stainless is less expensive than you think. A plastic marker may be pennies less initially, but in the long term, it will be more than three times expensive. Look at the facts.

Plastic isn't as durable as stainless steel. The estimated life of a domed marker is approximately 7 1/2 years and some customers are telling us that the plastic markers are failing after two years. During the span of 30 years, with a domed marker, you may need to replace it, at least, 4 times. The typical cost of a domed marker of $1.95 and replacing 4 times, will cost you, without inflation and re-installation cost, $7.80. Our stainless steel marker will only cost $2.39 (500 order) and no replacement cost for 30-years. *The final fact:* you will save at least $5.40 per marker with Almetek's Stainless Steel Marker.



Now you know the facts.
Go ahead and compare our Storm Drain Marker's advantages.

Our Storm Drain Marker's Advantages



- ***All metal, deep 3-D embossed***
- ***UV baked enamel paint, 1-2 colors option or natural***
- ***Virtually indestructible***
  Heavy .0625" thick metal
- ***9 different symbols***
- ***10 different legends***
- ***Deep-stamped, permanent sequential numbering option or stamp name of city or town***
- ***Easy-to-install, 2 adhesives, 2 different fasteners***
- ***Install into new or existing concrete***
- ***Prismatic finish***
- ***Up to 30-year warranty*****
- ***Attractive, high visibility***
- ***Theft-resistant with turned down edges*** *(Patent Pending)*
- ***Snow plow proof*** *(with sub-surface installation)*
- ***Lowest cost, .08¢per year with Stainless Steel***
- ***Square center hole option for fastener***
- ***Custom designs available***
- ***Install on either top or side of drain, grate, curb or roadway, in any weather***



Patent pending sub-surface mounting.
See back page for all installation options.



BACK VIEW
Back has cavities for better adhesion.



CUSTOM IMPRINT
Optional: Engrave your City or Town or GPS location

* Provided that you have purchased our fastener, adhesive & sub-surface installation tool and followed all installation instructions.
** Stainless & Brass- 30-years, Aluminum and Anodized Aluminum, 15-years. Call for Almetek's Metal Storm Drain Warranty Certificate.

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11



Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

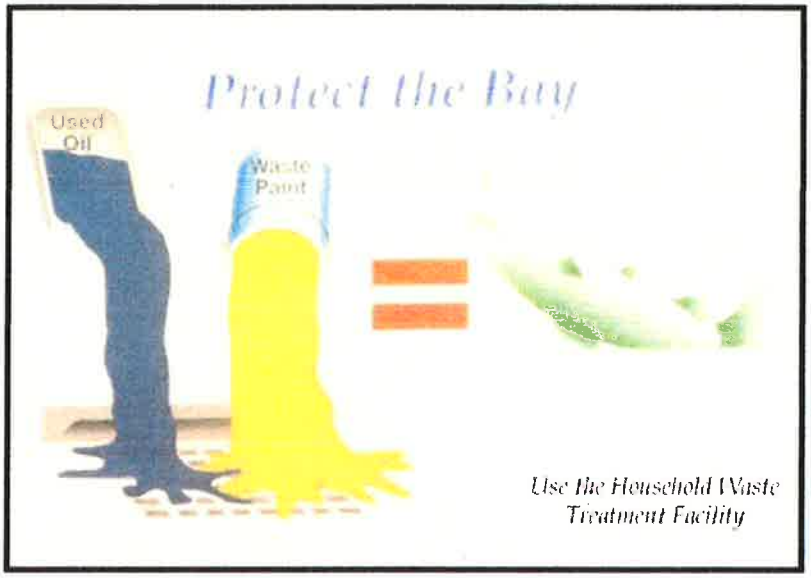
A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Non-Stormwater Discharges SC-10



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, air conditioner condensate, etc. However there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains. They can generally be detected through a combination of detection and elimination. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of pollutants on streets and into the storm drain system and creeks.

Targeted Constituents

Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Approach

Initially the industry must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is in the elimination of non-stormwater discharges.

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Pollution Prevention

- Ensure that used oil, used antifreeze, and hazardous chemical recycling programs are being implemented. Encourage litter control.

Suggested Protocols

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms
  - Educational materials

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.
- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled or demarcated next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.

- See SC44 Stormwater Drainage System Maintenance for additional information.

Illicit Connections

- Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- Isolate problem areas and plug illicit discharge points.
- Locate and evaluate all discharges to the industrial storm drain system.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.
- Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.
- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.
- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Drainage System

- TV Cameras can be employed to visually identify illicit connections to the industrial storm drainage system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.

- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC11 Spill Prevention, Control, and Cleanup.

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Document and report annually the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Training

- Training of technical staff in identifying and documenting illegal dumping incidents is required.
- Consider posting the quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.
- Conduct spill response drills annually (if no events occurred to evaluate your plan) in cooperation with other industries.
- When a responsible party is identified, educate the party on the impacts of his or her actions.

Spill Response and Prevention

- See SC11 Spill Prevention Control and Cleanup.

Other Considerations

- Many facilities do not have accurate, up-to-date schematic drawings.

Requirements

Costs (including capital and operation & maintenance)

- The primary cost is for staff time and depends on how aggressively a program is implemented.
- Cost for containment and disposal is borne by the discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Indoor floor drains may require re-plumbing if cross-connections to storm drains are detected.

Maintenance (including administrative and staffing)

- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Further Detail of the BMP

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. All of these wastes cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots

- Types and quantities (in some cases) of wastes
- Patterns in time of occurrence (time of day/night, month, or year)
- Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges to the stormwater collection system may include any water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Facilities subject to stormwater permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The State's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Performance Evaluation

- Review annually internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net/

Drainage System Maintenance SC-44



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff and stormwater that may contain certain pollutants. The protocols in this fact sheet are intended to reduce pollutants reaching receiving waters through proper conveyance system operation and maintenance.

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	
Bacteria	✓
Oil and Grease	
Organics	

Approach

Pollution Prevention

Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Suggested Protocols

Catch Basins/Inlet Structures

- Staff should regularly inspect facilities to ensure compliance with the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC34 Waste Handling and Disposal).

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- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS.

Illicit Connections and Discharges

- Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:
  - Is there evidence of spills such as paints, discoloring, etc?

- Are there any odors associated with the drainage system?
- Record locations of apparent illegal discharges/illicit connections?
- Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- Eliminate the discharge once the origin of flow is established.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Allow only properly trained individuals to handle hazardous materials/wastes.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).

- OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
- Procedural training (field screening, sampling, smoke/dye testing, TV inspection).

Spill Response and Prevention

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.
- Refer to fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Other Considerations (Limitations and Regulations)

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and prohibition against disposal of flushed effluent to sanitary sewer in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget.
- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The primary cost is for staff time. Cost depends on how aggressively a program is implemented. Other cost considerations for an illegal dumping program include:
  - Purchase and installation of signs.
  - Rental of vehicle(s) to haul illegally-disposed items and material to landfills.
  - Rental of heavy equipment to remove larger items (e.g., car bodies) from channels.
  - Purchase of landfill space to dispose of illegally-dumped items and material.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.

Supplemental Information

Further Detail of the BMP

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing resuspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Clark County Storm Water Pollution Control Manual
http://www.co.clark.wa.us/pubworks/bmpman.pdf

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King County Storm Water Pollution Control Manual http://dnr.metrokc.gov/wlr/dss/spcm.htm

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Santa Clara Valley Urban Runoff Pollution Prevention Program http://www.scvurppp.org

The Storm Water Managers Resource Center http://www.stormwatercenter.net

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm

Appendix 11

Preliminary Drainage Report for Monte Vista Ranch Phase 2

Preliminary Drainage Report
FOR
Monte Vista Ranch II
City of Wildomar

Prepared for:

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June 2021

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FIGURES

1a Vicinity Map
1b Aerial Pictures
2 Hydrology Map, Proposed Condition – Figure 2

INTRODUCTION

BACKGROUND

This report describes TTM 38155 – Monte Vista Ranch II, "the project", which consists of the approximately 6 acres, proposed for high density residential development. The project will support about 64 residential lots at 8-14 lots/acre.

Tract 32024 is located 3.5 miles southeast of Lake Elsinore in Unincorporated County of Riverside, California. Generally, the site is south of Bundy Canyon Road and east of Monte Vista Drive (see *Figure 1* below). The entire property consists of approximately 39.5 gross acres, with about 29.5 acres proposed to be developed. The first phase of development consisted of 23 acres for single-family residential units. The remaining approximately 6 acres is the proposed TTM 38155 – Monte Vista Ranch II.
All calculations for the first phase have been approved by the City of Wildomar.

SETTING – EXISTING CONDITION

The Monte Vista Ranch II project consists of approximately 6-acre property, located within the City of Wildomar, County of Riverside, California. The project is located approximately 800 feet east of the I-15 Freeway and 1300 feet south of Bundy Canyon Road. It is immediately adjacent to existing Monte Vista Drive on the west. Parallel to Monte Vista Drive, and roughly wrapping around the northern boundary of the project, there is an existing Riverside County Flood Control and Water Conservation District (**Wildomar MDP Lateral C, Stage 3**) owned and maintained concrete trapezoidal channel, Bundy Canyon Channel. This channel flows from north to south.

The project is located in APN 367-140-011
See figure 1a – Vicinity Map.

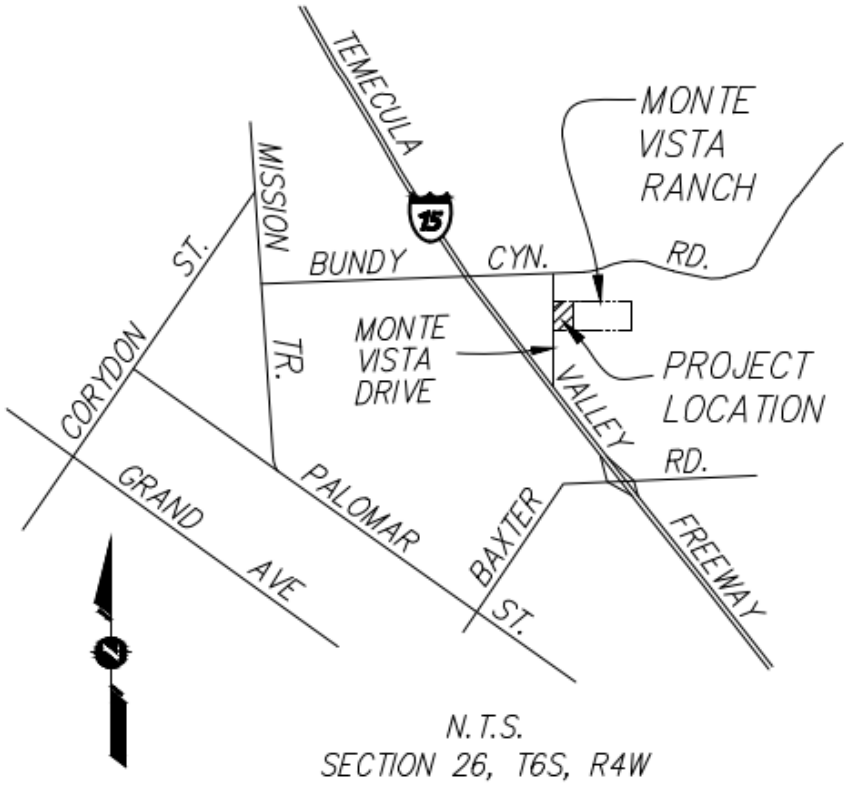


Figure 1a: Vicinity Map

Hydrology - Existing Condition:

The project site consists of a hillside terrain with mountainous peaks surrounding the northeastern and southwestern boundaries. The existing landform drains towards the existing channel. The west edge of the existing basin access road, built per the Tract 32024 grading plan, is the eastern property line. The Tract 32024 (phase 1) grading also resulted in a temporary stockpile on the TTM 38155 (phase 2) site, however the ultimate drainage pattern will match the existing (pre-stockpile) condition.

The existing condition using the actual native contour Hydrology Calculation was per Tract 32024. The included Hydrology Calculation for TTM 31855 is for comparison to the proposed condition by changing the input landuse to natural.

See Aerial picture in the current condition below:



Figure 1b: Aerial Picture Project Site

PROPOSED CONDITIONS

The Monte Vista Ranch II project will generally follow the existing drainage pattern. The proposed roads and storm drain facilities will convey water from east to west. The onsite private storm drain system will include catch basins to capture runoff and enter the underground storm drain. At the low point of the project, a biotreatment Modular Wetlands BMP is proposed which will treat the water before discharging into the existing concrete RCFC&WCD channel. The BMP will be sized to handle the entire water quality treatment requirement in accordance with the Santa Margarita Region criteria (see separate WQMP). The ultimate drainage pattern will match the existing (pre Phase 1 stockpile) condition.

Proposed impervious cover for Monte Vista Ranch Phase 2 Project is approximately 75% per the proposed landuse and per the table below (see below Plate D-5.6 from RCFC&WCD Hydrology Manual).

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

Use Landuse “Apartment” with impervious = 80% for this hydrology proposed condition.

HYDROLOGY

Rational Method

The hydrology calculations for determining the on-site and offsite flows have been conducted using the Rational Method as incorporated into the CivilCADD Rational Method Hydrology software. The rational method relates rainfall intensity, the ratio of runoff to rainfall, and the drainage area size to the peak storm runoff and is expressed by the equation: Q = CIA. Where Q = runoff (in cubic feet per second), C = runoff coefficient relating the ratio of runoff to rainfall, I = rainfall intensity (in inches per hour), A = drainage area (in acres). The soil type used in the analysis is a combination Type A and D.

See Figures 2 is the hydrology map which summarizes the results of the hydrologic analysis, including drainage areas, subareas, node numbers, elevations and cumulative Q_{100} .

The design discharge in the various sub-drainage areas considered in this study are listed in the table below:

Summary Hydrology Drainage Area A – Proposed Condition (see in the following pages for calculation):

Drainage Area	Area in Acre	Q_{100} sub-area in cfs	Q_{100} confl. in cfs
Drainage Area A			
A-1	2.05	5.94	
A-2	3.08	8.92	14.86

Summary Hydrology Drainage Area A – Existing Condition (use "natural" landuse for calculation):

Drainage Area	Area in Acre	Q_{100} sub-area in cfs	Q_{100} confl. in cfs
Drainage Area A			
A-1	2.05	4.62	
A-2	3.08	6.94	11.57

```
CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
      Rational Hydrology Study        Date: 06/11/21  File:mv100.out
------------------------------------------------------------------------

Monte Vista Ranch II – TTM 31855
City of Wildomar
Proposed Condition
100-year storm


------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4029

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

2 year, 1 hour precipitation =  0.484(In.)
100 year, 1 hour precipitation =  1.350(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.350(In/Hr)
Slope of intensity duration curve = 0.4800



++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =  1439.000(Ft.)
Bottom (of initial area) elevation =  1426.500(Ft.)
Difference in elevation =    12.500(Ft.)
Slope =    0.01888  s(percent)=       1.89
TC = k(0.323)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.601 min.
Rainfall intensity =      3.253(In/Hr) for a   100.0 year storm
APARTMENT subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.200; Impervious fraction =  0.800
Initial subarea runoff =      5.939(CFS)
Total initial stream area =        2.050(Ac.)
Pervious area fraction = 0.200


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
```

```
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________
APARTMENT subarea type
Runoff Coefficient = 0.890
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  88.00
Pervious area fraction =  0.200; Impervious fraction =  0.800
Time of concentration =     9.60 min.
Rainfall intensity =      3.253(In/Hr) for a   100.0 year storm
Subarea runoff =      8.923(CFS) for      3.080(Ac.)
Total runoff =     14.862(CFS)   Total area =       5.130(Ac.)
End of computations, total study area =            5.13 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.200
Area averaged RI index number =  75.0
```

```
                Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2005 Version 7.1
       Rational Hydrology Study        Date: 06/15/21  File:mv100ex.out
------------------------------------------------------------------------

Monte Vista Ranch II – TTM 31855
City of Wildomar
Existing Condition (for comparison)
100-year storm



------------------------------------------------------------------------
 *********   Hydrology Study Control Information **********

 English (in-lb) Units used in input data file

------------------------------------------------------------------------


Program License Serial Number 4029

------------------------------------------------------------------------
Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) =  100.00 Antecedent Moisture Condition = 3

2 year, 1 hour precipitation =  0.484(In.)
100 year, 1 hour precipitation =  1.350(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity =  1.350(In/Hr)
Slope of intensity duration curve = 0.4800




++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   662.000(Ft.)
Top (of initial area) elevation =  1439.000(Ft.)
Bottom (of initial area) elevation =  1426.500(Ft.)
Difference in elevation =    12.500(Ft.)
Slope =    0.01888  s(percent)=       1.89
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   15.755 min.
Rainfall intensity =      2.565(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      4.622(CFS)
Total initial stream area =       2.050(Ac.)
Pervious area fraction = 1.000
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       10.000 to Point/Station       11.000
**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________________
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Time of concentration =    15.75 min.
Rainfall intensity =      2.565(In/Hr) for a   100.0 year storm
Subarea runoff =      6.944(CFS) for      3.080(Ac.)
Total runoff =     11.566(CFS)   Total area =       5.130(Ac.)
End of computations, total study area =            5.13 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

HYDRAULICS

Storm Drain System Calculations

Open Channel, Pipe and Inlet program Flow Master V8i by Bentley Inc., Reference 7 was used to determine the street capacity, ditch capacity and inlet sizing.

Main line system: the following assumptions and criteria were used to design the main line system:

1. n = 0.013 for reinforced concrete pipe, n = 0.014 for reinforced concrete box, and n = 0.015 for concrete V-ditch.
2. The minor losses considered in this study are as follows: friction loss, junction loss, transition loss, and manhole loss. In order to minimize junction structure losses, all junctions are inleting the main line at an angle of approximately 45 degrees.

See Street Capacity, Catch Basin and Concrete Ditch Sizing calculations will be provided later in the final design.

WSPG hydraulic calculations will be used in the design for the principal off site and onsite storm drains to determine the hydraulic gradient elevation for proposed conduit sizes.
Will be provided later in the final design.

Pipe Sizing Calculations

All proposed inlet and storm drain pipe will be sized to carry Q_{100}.

Summary Storm Drain Pipe sizing per peak discharge 100-year storm Ultimate Condition:

Drainage Area	Q_{100} sub-area in cfs	Q_{100} conf. in cfs	Proposed Storm Drain Pipe
A-1	5.94		18” RCP, slope 1% min.
A-2	8.92	14.86	24” RCP, slope 1% min.

Worksheet for Circular Pipe - 18" RCP with slope 1%

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	1.50	ft
Diameter	1.50	ft
Discharge	10.50	ft³/s

Results

Discharge	10.50	ft³/s
Normal Depth	1.50	ft
Flow Area	1.77	ft²
Wetted Perimeter	4.71	ft
Hydraulic Radius	0.38	ft
Top Width	0.00	ft
Critical Depth	1.25	ft
Percent Full	100.0	%
Critical Slope	0.00977	ft/ft
Velocity	5.94	ft/s
Velocity Head	0.55	ft
Specific Energy	2.05	ft
Froude Number	0.00	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.25	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00977	ft/ft

Worksheet for Circular Pipe – **24” RCP with slope 1%**

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.0100	ft/ft
Normal Depth	2.00	ft
Diameter	2.00	ft
Discharge	22.62	ft³/s

Results

Discharge	22.62	ft³/s
Normal Depth	2.00	ft
Flow Area	3.14	ft²
Wetted Perimeter	6.28	ft
Hydraulic Radius	0.50	ft
Top Width	0.00	ft
Critical Depth	1.69	ft
Percent Full	100.0	%
Critical Slope	0.00946	ft/ft
Velocity	7.20	ft/s
Velocity Head	0.81	ft
Specific Energy	2.81	ft
Froude Number	0.00	
Maximum Discharge	24.33	ft³/s
Discharge Full	22.62	ft³/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.00	ft
Critical Depth	1.69	ft
Channel Slope	0.0100	ft/ft
Critical Slope	0.00946	ft/ft

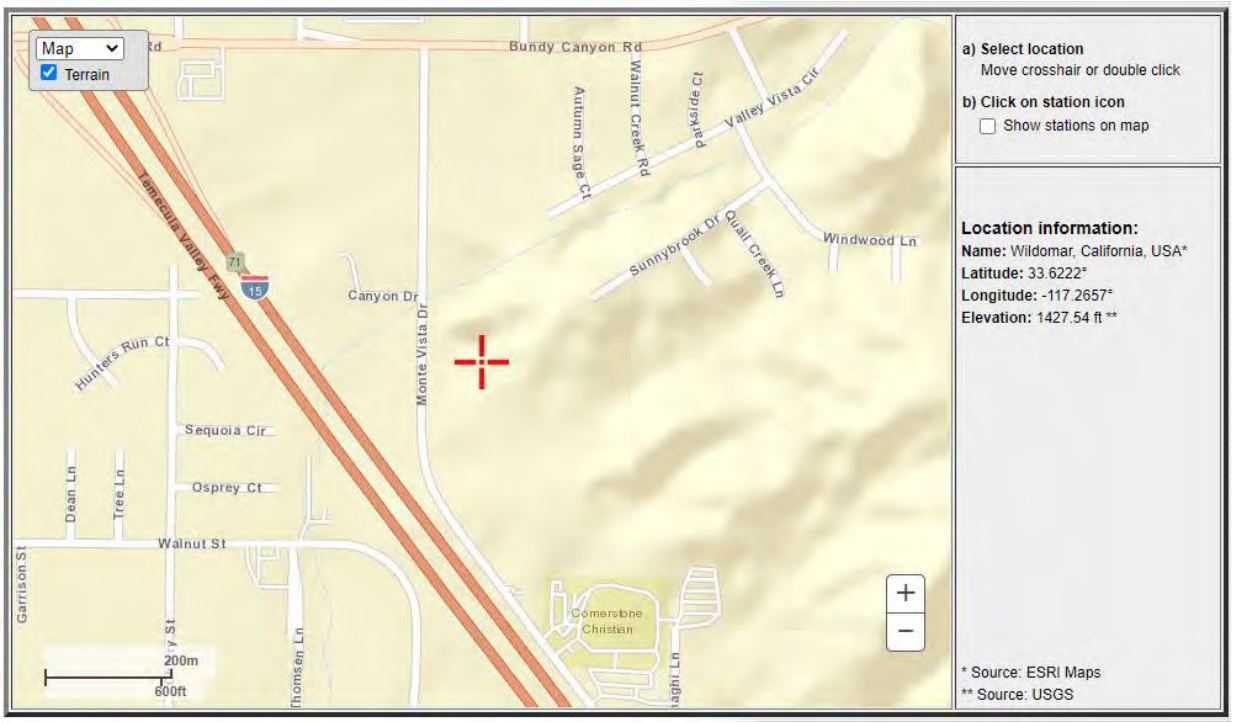
HYDROGRAPHS

Unit Hydrograph Analysis

The unit hydrograph analysis was conducted using the CivilDesign Corporation Unit Hydrograph software and the Riverside County Hydrology Manual. In this study analysis, the goal was to estimate the quantity of storm water to be detained onsite to mitigate the increase in storm water peak discharge and volume resulting from this development. The 1-hour, 3-hour, 6-hour and 24-hour 2-, 5-, 10, 100-year storms hydrographs were computed to evaluate that the project peak runoff discharge originating from the site for ultimate/proposed conditions.
The ultimate condition-project hydrographs will be used as inflow hydrograph in detention basin routing with restricted outlet structure works.

Summary of Precipitation – Intensity Pattern per Hydrology Manual (NOAA Atlas 14):

Storm Event	***1-hour***	***3-hour***	***6-hour***	***24-hour***
2-year	0.484	0.858	1.22	2.24
100-year	1.35	2.18	3.03	5.94



NOAA Atlas 14, Volume 6, Version 2
Location name: Wildomar, California, USA*
Latitude: 33.6222°, Longitude: -117.2657°
Elevation: 1427.54 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.085 (0.072-0.103)	0.116 (0.097-0.140)	0.157 (0.131-0.190)	0.192 (0.159-0.234)	0.242 (0.193-0.305)	0.281 (0.219-0.363)	0.322 (0.245-0.427)	0.365 (0.270-0.499)	0.426 (0.302-0.608)	0.475 (0.324-0.703)
10-min	0.122 (0.103-0.147)	0.166 (0.139-0.200)	0.225 (0.188-0.273)	0.275 (0.228-0.336)	0.346 (0.277-0.438)	0.403 (0.315-0.520)	0.461 (0.351-0.612)	0.524 (0.387-0.716)	0.611 (0.432-0.872)	0.680 (0.464-1.01)
15-min	0.148 (0.124-0.178)	0.201 (0.168-0.242)	0.273 (0.228-0.330)	0.333 (0.276-0.406)	0.419 (0.335-0.529)	0.487 (0.380-0.629)	0.558 (0.425-0.740)	0.633 (0.468-0.865)	0.739 (0.523-1.06)	0.823 (0.561-1.22)
30-min	0.232 (0.194-0.279)	0.314 (0.263-0.379)	0.427 (0.357-0.517)	0.522 (0.432-0.637)	0.656 (0.524-0.829)	0.763 (0.596-0.986)	0.874 (0.666-1.16)	0.993 (0.734-1.36)	1.16 (0.819-1.65)	1.29 (0.879-1.91)
60-min	0.357 (0.299-0.430)	0.484 (0.406-0.584)	0.658 (0.550-0.796)	0.804 (0.666-0.981)	1.01 (0.807-1.28)	1.18 (0.918-1.52)	1.35 (1.03-1.79)	1.53 (1.13-2.09)	1.78 (1.26-2.55)	1.99 (1.35-2.94)
2-hr	0.534 (0.448-0.643)	0.701 (0.588-0.846)	0.929 (0.776-1.12)	1.12 (0.927-1.37)	1.39 (1.11-1.75)	1.60 (1.25-2.07)	1.82 (1.39-2.42)	2.05 (1.52-2.81)	2.38 (1.68-3.39)	2.63 (1.80-3.90)
3-hr	0.659 (0.553-0.794)	0.858 (0.719-1.03)	1.13 (0.942-1.36)	1.35 (1.12-1.65)	1.67 (1.33-2.11)	1.92 (1.50-2.48)	2.18 (1.66-2.89)	2.45 (1.81-3.35)	2.82 (2.00-4.03)	3.12 (2.13-4.62)
6-hr	0.938 (0.787-1.13)	1.22 (1.02-1.47)	1.60 (1.33-1.93)	1.91 (1.58-2.33)	2.34 (1.87-2.96)	2.68 (2.10-3.47)	3.03 (2.31-4.02)	3.40 (2.51-4.64)	3.90 (2.76-5.57)	4.29 (2.93-6.35)
12-hr	1.23 (1.03-1.48)	1.64 (1.37-1.97)	2.17 (1.82-2.63)	2.61 (2.16-3.19)	3.21 (2.57-4.06)	3.67 (2.87-4.75)	4.14 (3.16-5.49)	4.62 (3.42-6.32)	5.27 (3.73-7.53)	5.78 (3.94-8.55)
24-hr	1.62 (1.43-1.87)	2.24 (1.98-2.59)	3.06 (2.69-3.54)	3.71 (3.24-4.34)	4.59 (3.89-5.54)	5.27 (4.37-6.48)	5.94 (4.81-7.48)	6.63 (5.23-8.58)	7.56 (5.73-10.2)	8.27 (6.06-11.5)
2-day	1.93 (1.71-2.23)	2.77 (2.44-3.20)	3.86 (3.39-4.47)	4.74 (4.14-5.53)	5.93 (5.02-7.15)	6.85 (5.68-8.42)	7.78 (6.30-9.80)	8.73 (6.89-11.3)	10.0 (7.60-13.5)	11.0 (8.08-15.4)
3-day	2.10 (1.85-2.42)	3.04 (2.69-3.52)	4.30 (3.78-4.98)	5.32 (4.65-6.22)	6.72 (5.69-8.10)	7.80 (6.47-9.60)	8.91 (7.22-11.2)	10.1 (7.94-13.0)	11.6 (8.82-15.7)	12.9 (9.44-17.9)
4-day	2.26 (2.00-2.61)	3.31 (2.92-3.82)	4.70 (4.14-5.45)	5.85 (5.11-6.84)	7.43 (6.29-8.96)	8.67 (7.19-10.7)	9.94 (8.05-12.5)	11.3 (8.88-14.6)	13.1 (9.92-17.6)	14.5 (10.7-20.3)
7-day	2.56 (2.26-2.95)	3.77 (3.33-4.35)	5.40 (4.76-6.26)	6.77 (5.92-7.91)	8.68 (7.35-10.5)	10.2 (8.45-12.5)	11.8 (9.53-14.8)	13.4 (10.6-17.4)	15.8 (11.9-21.2)	17.6 (12.9-24.5)
10-day	2.70 (2.39-3.12)	3.99 (3.52-4.61)	5.75 (5.06-6.66)	7.23 (6.32-8.45)	9.33 (7.90-11.3)	11.0 (9.13-13.5)	12.8 (10.3-16.1)	14.6 (11.5-18.9)	17.3 (13.1-23.3)	19.4 (14.2-27.0)
20-day	3.19 (2.82-3.68)	4.74 (4.19-5.48)	6.92 (6.09-8.02)	8.79 (7.68-10.3)	11.5 (9.73-13.9)	13.7 (11.4-16.9)	16.0 (13.0-20.2)	18.6 (14.7-24.1)	22.2 (16.8-29.9)	25.2 (18.5-35.1)
30-day	3.76 (3.32-4.34)	5.57 (4.92-6.44)	8.14 (7.17-9.43)	10.4 (9.07-12.1)	13.7 (11.6-16.5)	16.4 (13.6-20.1)	19.3 (15.6-24.3)	22.4 (17.7-29.0)	27.0 (20.5-36.4)	30.8 (22.6-42.9)
45-day	4.37 (3.86-5.04)	6.40 (5.65-7.40)	9.34 (8.22-10.8)	11.9 (10.4-13.9)	15.8 (13.3-19.0)	19.0 (15.7-23.4)	22.5 (18.2-28.3)	26.3 (20.7-34.0)	31.9 (24.1-42.9)	36.5 (26.8-50.8)
60-day	5.03 (4.45-5.81)	7.27 (6.42-8.41)	10.5 (9.28-12.2)	13.5 (11.8-15.7)	17.8 (15.1-21.5)	21.5 (17.8-26.4)	25.5 (20.6-32.1)	29.9 (23.6-38.7)	36.4 (27.6-49.0)	41.9 (30.7-58.3)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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CONCLUSIONS

The Monte Vista ranch II project will be developed to maintain the existing drainage condition, tributary to the RCFC&WCD concrete channel Wildomar MDP Lateral C, Stage 3.

The Q100 from the high density residential land use will be calculated and used to size the drainage facilities in the final drainage report.

Water quality treatment will be handled by the onsite biofiltration BMP, as shown on the preliminary WQMP, and will be in accordance with the Santa Margarita Region requirements.

REFERENCES

1. County of Riverside Hydrology Manual, 1978, as incorporated in the CivilDesign Rational Method Hydrology Software.

2. CivilCADD/Design Engineering Software, version 7.1.

3. Aerial Topography by Inland Aerial Surveys, Inc.

4. County of Riverside Topographic Maps

5. WSPG, Los Angeles County Public Works Water Surface Profile software - Storm Drain Analysis Plus by CivilSoft.

6. Hydraulic Calculations software by Bentley, Inc., Flow Master V8i

FIGURES

FIGURE 2
Hydrology Map – Proposed & Existing Conditions

EXISTING RCFC&WCD TRAP. CHANNEL (PROTECT IN PLACE)

LOT 79
TR 32024

MDP LATERAL C, STAGE 3

CONC. CHANNEL

MONTE VISTA DRIVE

SUNNYBROOK DRIVE

SUMMER SAGE WAY

13,989 S.F.

A-1
2.05

A-2
3.08

L=662'

BMP MWS BIOFILTRATION

1426.50
Q100=5.94 cfs
ΣQ100=14.86 cfs

REC CENTER
18,800 S.F.

1439.0

LOT 77
TR 32024

TR32024 PHASE 1
(BY OTHERS)

27.3 PAD
28.2 PAD
28.5 PAD
27.5 PAD
28.5 PAD
31.0 PAD
34.5 PAD
35.0 PAD
38.5 PAD
39.0 PAD
38.5 PAD

Summary Hydrology Drainage Area A – Proposed Condition:

Drainage Area	Area in Acre	Q_{100} sub-area in cfs	Q_{100} confl. in cfs
Drainage Area A			
A-1	2.05	5.94	
A-2	3.08	8.92	14.86

Summary Hydrology Drainage Area A – Existing Condition (for comparison):

Drainage Area	Area in Acre	Q_{100} sub-area in cfs	Q_{100} confl. in cfs
Drainage Area A			
A-1	2.05	4.62	
A-2	3.08	6.94	11.57

SCALE: 1"=30'
0 30 60 90 120

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OWNER

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PHONE: (714)318-3500
PROJECT MANAGER: ERIK LUNDE

ENGINEER

K & A ENGINEERING, INC.
357 N. SHERIDAN STREET, SUITE 117
CORONA, CA 92880
PHONE: (951) 279-1800
PROJECT MANAGER: AMIR FALLAHI, P.E.

CITY OF WILDOMAR

MONTE VISTA RANCH II - TTM 38155

FIGURE 2 - HYDROLOGY MAP

Drawn By:
Checked By:
Scale: AS SHOWN

SHEET 1 OF 1 SHEETS

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Appendix 12

Monte Vista Ranch Noise Impact Analysis

Monte Vista Ranch

NOISE IMPACT ANALYSIS

CITY OF WILDOMAR

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LIST OF ABBREVIATED TERMS

•	Reference
ANSI	American National Standards Institute
Calveno	California Vehicle Noise
CEQA	California Environmental Quality Act
CNEL	Community Noise Equivalent Level
dBA	A-weighted decibels
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
INCE	Institute of Noise Control Engineering
L_{eq}	Equivalent continuous (average) sound level
L_{max}	Maximum level measured over the time interval
mph	Miles per hour
PPV	Peak Particle Velocity
Project	Monte Vista Ranch
REMEL	Reference Energy Mean Emission Level
RMS	Root-mean-square
VdB	Vibration Decibels

EXECUTIVE SUMMARY

Urban Crossroads, Inc. has prepared this noise study to determine the noise exposure and the necessary noise mitigation measures for the proposed Monte Vista Ranch development ("Project"). The Project site is located south on the Northeast corner of Summer Sage Way and Monte Vista Drive, in the City of Wildomar. It is our understanding that the Project consists of the development of up to 69 multi-family residential units. This noise study has been prepared to satisfy applicable City of Wildomar noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1)

The results of this Noise Impact Analysis are summarized below consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines. (1) Table ES-1 shows the findings of significance for each potential noise and/or vibration impact under CEQA before and after any required mitigation measures.

TABLE ES-1: SUMMARY OF CEQA SIGNIFICANCE FINDINGS

Analysis	Report Section	Significance Findings	
		Unmitigated	Mitigated
Off-Site Traffic Noise	ES	*Less Than Significant*	-
Operational Noise	ES	*Less Than Significant*	-
Construction Noise	7	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

OFF-SITE TRAFFIC NOISE IMPACTS

Traffic generated by the operation of the proposed Project is not expected to meaningfully influence the traffic noise levels in surrounding off-site areas. The expected Project traffic represents an incremental increase to the existing roadway volumes, which is not expected to generate a barely perceptible noise level increase of 3 dBA CNEL at nearby sensitive land uses adjacent to study area roadways, since a doubling of the existing traffic volumes would be required to generate a 3 dBA CNEL increase. (2) Due to the low traffic volumes generated by the Project, the off-site traffic noise levels generated by the Project are considered *less than significant* and no further analysis is required.

OPERATIONAL NOISE IMPACTS

The Project is not expected to include any specific type of operational noise (stationary source) levels beyond the normal noise source activities associated with typical residential land use in the Project study area, such as people moving around the site, parking lot vehicle movements, air conditioning units, etc. and is considered a noise-sensitive receiving land use. Therefore, no potential operational noise impacts for the residential land use are analyzed in the noise study the operational noise impacts are considered *less than significant* and no further analysis is required.

CONSTRUCTION NOISE IMPACTS

The Project-related construction noise impacts are expected to create short-term and intermittent high-level noise conditions at receivers surrounding the Project site when certain activities occur at the Project site boundary. Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels.

Observations of typical residential construction activities indicate that the most noticeable noise sources tend to include heavy construction equipment, hammers, electric drills, workers talking, and radios playing music. While the Project construction noise levels will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities, the construction noise generated during peak activities and single-event noise sources during Project construction will still be heard at the adjacent sensitive residential homes. Therefore, to reduce Project construction noise levels at the adjacent sensitive receiver locations the following construction noise abatement measures shall be required:

1. Project construction activities and truck deliveries shall be limited to the hours between 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (City of Wildomar Municipal Code, Section 9.48.020 (I)).
2. During all Project site construction, the construction contractor shall equip all construction equipment, mobile or stationary, with properly operating and maintained mufflers, consistent with manufacturers' standards.
3. The construction contractor shall locate/stage all stationary equipment such that the location will create the greatest physical distance between construction-related noise sources and noise-sensitive receivers nearest the Project site during all Project construction activities.
4. The construction contractor shall place all stationary construction equipment so that emitted noise is directed away from the noise-sensitive receivers nearest the Project site.
5. The construction contractor shall post a publicly visible sign with the telephone number and designated person to contact regarding noise complaints. The construction contractor, within 48 hours of receipt of a noise complaint, shall either take corrective actions or, if immediate action is not feasible, provide a plan or corrective action to address the source of the noise complaint.
6. Electrically powered air compressors and similar power tools shall be used, when feasible, in place of diesel equipment.
7. No music or electronically reinforced speech from construction workers shall be allowed within the Project site.

1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the proposed Monte Vista Ranch ("Project"). This noise study briefly describes the proposed Project, provides information regarding noise fundamentals, sets out the local regulatory setting, presents the study methods and procedures for transportation related CNEL traffic noise analysis, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential short-term construction noise and vibration impacts.

1.1 SITE LOCATION

The proposed Monte Vista Ranch site is located on the Northeast corner of Summer Sage Way and Monte Vista Drive, in the City of Wildomar, as shown on Exhibit 1-A. The area surrounding the Project Site includes residential homes to the east, with vacant land to the north, west and south.

1.2 PROJECT DESCRIPTION

It is our understanding that the Project consists of the development of up to 69 multi-family residential units, as shown on Exhibit 1-B.

EXHIBIT 1-A: LOCATION MAP



EXHIBIT 1-B: SITE PLAN



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2 FUNDAMENTALS

Noise is simply defined as "unwanted sound." Sound becomes unwanted when it interferes with normal activities, when it causes actual physical harm or when it has adverse effects on health. Noise is measured on a logarithmic scale of sound pressure level known as a decibel (dB). A-weighted decibels (dBA) approximate the subjective response of the human ear to broad frequency noise source by discriminating against very low and very high frequencies of the audible spectrum. They are adjusted to reflect only those frequencies which are audible to the human ear. Exhibit 2-A presents a summary of the typical noise levels and their subjective loudness and effects that are described in more detail below.

EXHIBIT 2-A: TYPICAL NOISE LEVELS

COMMON OUTDOOR ACTIVITIES	COMMON INDOOR ACTIVITIES	A - WEIGHTED SOUND LEVEL dBA	SUBJECTIVE LOUDNESS	EFFECTS OF NOISE
THRESHOLD OF PAIN		140	INTOLERABLE OR DEAFENING	HEARING LOSS
NEAR JET ENGINE		130		
		120		
JET FLY-OVER AT 300m (1000 ft)	ROCK BAND	110		
LOUD AUTO HORN		100	VERY NOISY	
GAS LAWN MOWER AT 1m (3 ft)		90		
DIESEL TRUCK AT 15m (50 ft), at 80 km/hr (50 mph)	FOOD BLENDER AT 1m (3 ft)	80		SPEECH INTERFERENCE
NOISY URBAN AREA, DAYTIME	VACUUM CLEANER AT 3m (10 ft)	70	LOUD	
HEAVY TRAFFIC AT 90m (300 ft)	NORMAL SPEECH AT 1m (3 ft)	60		
QUIET URBAN DAYTIME	LARGE BUSINESS OFFICE	50	MODERATE	SLEEP DISTURBANCE
QUIET URBAN NIGHTTIME	THEATER, LARGE CONFERENCE ROOM (BACKGROUND)	40		
QUIET SUBURBAN NIGHTTIME	LIBRARY	30	FAINT	NO EFFECT
QUIET RURAL NIGHTTIME	BEDROOM AT NIGHT, CONCERT HALL (BACKGROUND)	20		
	BROADCAST/RECORDING STUDIO	10	VERY FAINT	
LOWEST THRESHOLD OF HUMAN HEARING	LOWEST THRESHOLD OF HUMAN HEARING	0		

Source: Environmental Protection Agency Office of Noise Abatement and Control, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (EPA/ONAC 550/9-74-004) March 1974.

2.1 RANGE OF NOISE

Since the range of intensities that the human ear can detect is so large, the scale frequently used to measure intensity is a scale based on multiples of 10, the logarithmic scale. The scale for measuring intensity is the decibel scale. Each interval of 10 decibels indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. (3) The most common sounds vary between 40 dBA (very quiet) to 100 dBA (very loud). Normal conversation at three feet is roughly at 60 dBA, while loud jet engine noises equate to 110 dBA

at approximately 100 feet, which can cause serious discomfort. (4) Another important aspect of noise is the duration of the sound and the way it is described and distributed in time.

2.2 NOISE DESCRIPTORS

Environmental noise descriptors are generally based on averages, rather than instantaneous, noise levels. The most used figure is the equivalent level (L_{eq}). Equivalent sound levels are not measured directly but are calculated from sound pressure levels typically measured in A-weighted decibels (dBA). The equivalent sound level (L_{eq}) represents a steady state sound level containing the same total energy as a time varying signal over a given sample period and is commonly used to describe the "average" noise levels within the environment.

Peak hour or average noise levels, while useful, do not completely describe a given noise environment. Noise levels lower than peak hour may be disturbing if they occur during times when quiet is most desirable, namely evening and nighttime (sleeping) hours. To account for this, the Community Noise Equivalent Level (CNEL), representing a composite 24-hour noise level is utilized. The CNEL is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time-of-day corrections require the addition of 5 decibels to dBA L_{eq} sound levels in the evening from 7:00 p.m. to 10:00 p.m., and the addition of 10 decibels to dBA L_{eq} sound levels at night between 10:00 p.m. and 7:00 a.m. These additions are made to account for the noise sensitive time periods during the evening and night hours when sound appears louder. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Wildomar relies on the 24-hour CNEL level to assess land use compatibility with transportation related noise sources.

2.3 SOUND PROPAGATION

When sound propagates over a distance, it changes in level and frequency content. The way noise reduces with distance depends on the following factors.

2.3.1 GEOMETRIC SPREADING

Sound from a localized source (i.e., a stationary point source) propagates uniformly outward in a spherical pattern. The sound level attenuates (or decreases) at a rate of 6 dB for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of 3 dB for each doubling of distance from a line source. (3)

2.3.2 GROUND ABSORPTION

The propagation path of noise from a highway to a receiver is usually very close to the ground. Noise attenuation from ground absorption and reflective wave canceling adds to the attenuation associated with geometric spreading. Traditionally, the excess attenuation has also been expressed in terms of attenuation per doubling of distance. This approximation is usually

sufficiently accurate for distances of less than 200 ft. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dB per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation results in an overall drop-off rate of 4.5 dB per doubling of distance from a line source. (2)

2.3.3 ATMOSPHERIC EFFECTS

Receivers located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects. (3)

2.3.4 SHIELDING

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Shielding by trees and other such vegetation typically only has an "out of sight, out of mind" effect. That is, the perception of noise impact tends to decrease when vegetation blocks the line-of-sight to nearby residents. However, for vegetation to provide a substantial, or even noticeable, noise reduction, the vegetation area must be at least 15 feet in height, 100 feet wide and dense enough to completely obstruct the line-of sight between the source and the receiver. This size of vegetation may provide up to 5 dBA of noise reduction. The Federal Highway Administration (FHWA) does not consider the planting of vegetation to be a noise abatement measure.

2.4 NOISE CONTROL

Noise control is the process of obtaining an acceptable noise environment for an observation point or receiver by controlling the noise source, transmission path, receiver, or all three. This concept is known as the source-path-receiver concept. In general, noise control measures can be applied to these three elements.

2.5 NOISE BARRIER ATTENUATION

Effective noise barriers can reduce noise levels by 10 to 15 dBA, cutting the loudness of traffic noise in half. A noise barrier is most effective when placed close to the noise source or receiver. Noise barriers, however, do have limitations. For a noise barrier to work, it must be high enough and long enough to block the path of the noise source. (2)

2.6 LAND USE COMPATIBILITY WITH NOISE

Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, so too can the mismanagement of noise impacts impair the economic health and growth potential of a community by reducing the area's desirability as a place to live, shop and work. For this reason, land use compatibility with the noise environment is an important consideration in the planning and design process. The FHWA encourages State and Local government to regulate land development in such a way that noise-sensitive land uses are either prohibited from being located adjacent to a highway, or that the developments are planned, designed, and constructed in such a way that noise impacts are minimized. (5)

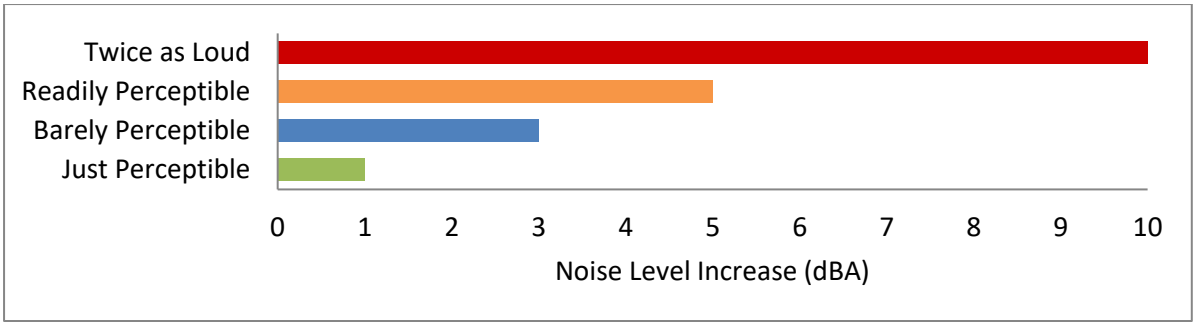
2.7 COMMUNITY RESPONSE TO NOISE

Community responses to noise may range from registering a complaint by telephone or letter, to initiating court action, depending upon everyone's susceptibility to noise and personal attitudes about noise. Several factors are related to the level of community annoyance including:

- Fear associated with noise producing activities;
- Socio-economic status and educational level;
- Perception that those affected are being unfairly treated;
- Attitudes regarding the usefulness of the noise-producing activity;
- Belief that the noise source can be controlled.

Approximately ten percent of the population has a very low tolerance for noise and will object to any noise not of their making. Consequently, even in the quietest environment, some complaints will occur. Twenty-five percent of the population will not complain even in very severe noise environments. Thus, a variety of reactions can be expected from people exposed to any given noise environment. (6) Surveys have shown that about ten percent of the people exposed to traffic noise of 60 dBA will report being highly annoyed with the noise, and each increase of one dBA is associated with approximately two percent more people being highly annoyed. When traffic noise exceeds 60 dBA or aircraft noise exceeds 55 dBA, people may begin to complain. (6) Despite this variability in behavior on an individual level, the population can be expected to exhibit the following responses to changes in noise levels as shown on Exhibit 2-B. A change of 3 dBA are considered *barely perceptible*, and changes of 5 dBA are considered *readily perceptible*. (2)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



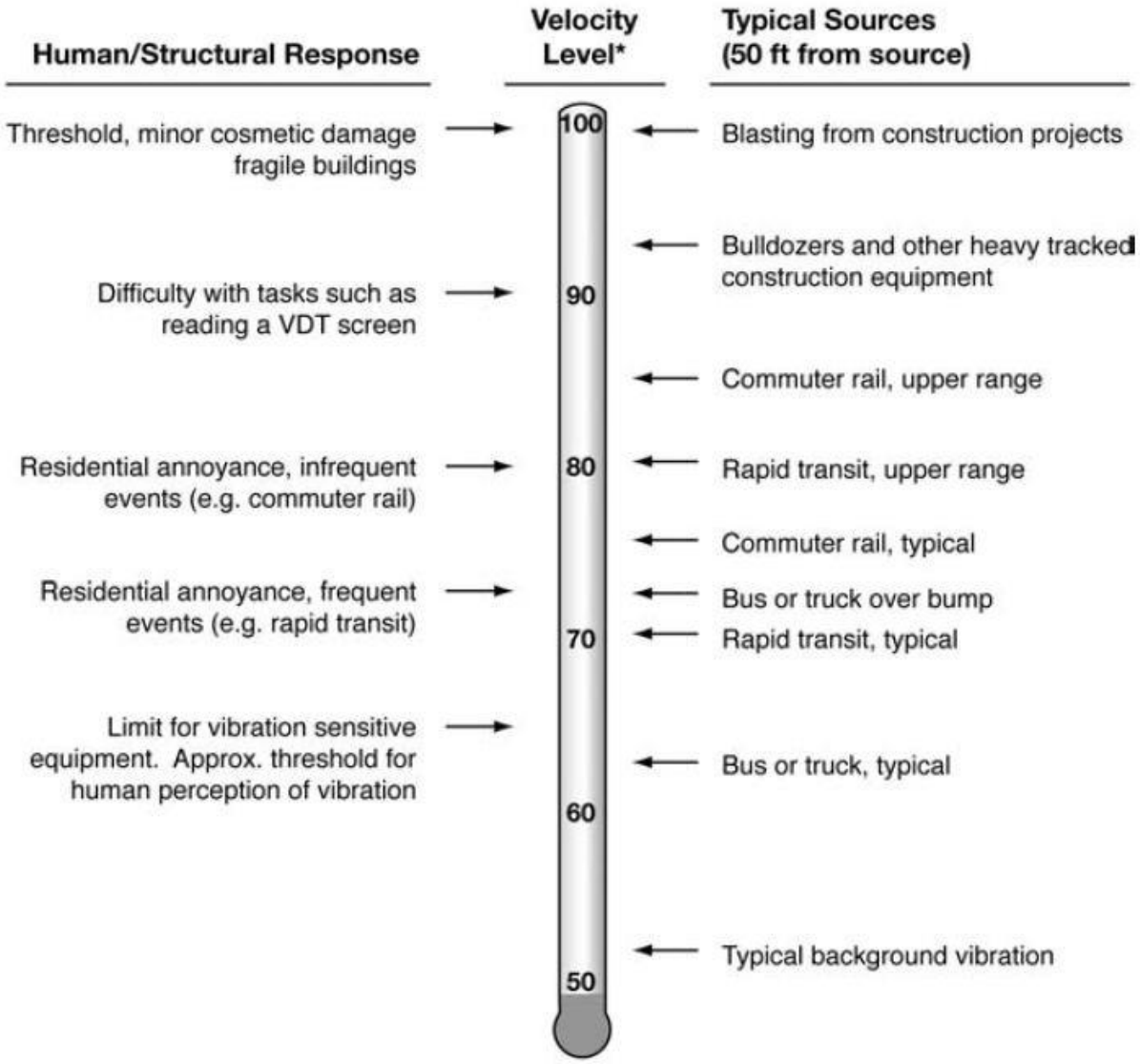
2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise Impact and Vibration Impact Assessment Manual* (7) , vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or transient, such as explosions. As is the case with airborne sound, ground-borne vibrations may be described by amplitude and frequency.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human response (annoyance) because it takes some time for the human body to respond to vibration signals. Instead, the human body responds to average vibration amplitude often described as the root mean square (RMS). The RMS amplitude is defined as the average of the squared amplitude of the signal and is most frequently used to describe the effect of vibration on the human body. Decibel notation (VdB) is commonly used to measure RMS. Decibel notation (VdB) serves to reduce the range of numbers used to describe human response to vibration. Typically, ground-borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receivers for vibration include structures (especially older masonry structures), people (especially residents, the elderly, and sick), and vibration-sensitive equipment and/or activities

The background vibration-velocity level in residential areas is generally 50 VdB. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Exhibit 2-C illustrates common vibration sources and the human and structural response to ground-borne vibration.

EXHIBIT 2-C: TYPICAL LEVELS OF GROUND-BORNE VIBRATION



* *RMS Vibration Velocity Level in VdB relative to 10^{-6} inches/second*

Source: Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual.

3 REGULATORY SETTING

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise. In most areas, automobile and truck traffic is the major source of environmental noise. Traffic activity generally produces an average sound level that remains constant with time. Air and rail traffic, and commercial and industrial activities are also major sources of noise in some areas. Federal, state, and local agencies regulate different aspects of environmental noise. Federal and state agencies generally set noise standards for mobile sources such as aircraft and motor vehicles, while regulation of stationary sources is left to local agencies.

3.1 STATE OF CALIFORNIA NOISE REQUIREMENTS

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires that each county and city adopt a General Plan that includes a Noise Element which is to be prepared per guidelines adopted by the Governor's Office of Planning and Research (OPR). (8) The purpose of the Noise Element is to *limit the exposure of the community to excessive noise levels*. In addition, the California Environmental Quality Act (CEQA) requires that all known environmental effects of a project be analyzed, including environmental noise impacts.

3.2 STATE OF CALIFORNIA BUILDING CODE

The State of California's noise insulation standards for all residential units are codified in the California Code of Regulations (CCR), Title 24, Building Standards Administrative Code, Chapter 12, Section 1206. These noise standards are applied to new construction that contains dwelling units or sleeping units, such as residential and hotel or motel uses, in California for controlling interior noise levels resulting from exterior noise sources. For new buildings, the acceptable interior noise limit is 45 dBA CNEL in habitable rooms (9).

3.3 CITY OF WILDOMAR GENERAL PLAN NOISE ELEMENT

The City of Wildomar was incorporated as a City in October of 2008. Through the incorporation process, the City adopted the Riverside County General Plan Noise Element to control and abate environmental noise, and to protect the citizens of the City of Wildomar from excessive exposure to noise. (10) The Noise Element specifies the maximum allowable exterior noise levels for new developments impacted by transportation noise sources such as arterial roads, freeways, airports, and railroads. In addition, the Noise Element identifies several polices to minimize the impacts of excessive noise levels throughout the community and establishes noise level requirements for all land uses. To protect City of Wildomar residents from excessive noise, the Noise Element contains the following seven policies:

N 1.1 Protect noise-sensitive land uses from high levels of noise by restricting noise-producing land uses from these areas. If the noise-producing land use cannot be relocated, then noise buffers such as setbacks, landscaping, or block walls shall be used.

N 1.3 Consider residential use as noise-sensitive and discourage this use in areas in excess of 65 CNEL.

N 1.5 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, visitors, and noise-sensitive uses of Riverside County.

N 1.7 Require proposed land uses, affected by unacceptable high noise levels, to have an acoustical specialist prepare a study of the noise problems and recommend structural and site design features that will adequately mitigate the noise problem.

N 12.1 Minimize the impacts of construction noise on adjacent uses within acceptable standards.

N 12.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse impacts on surrounding areas.

N 12.3 Condition subdivision approval adjacent to developed/occupied noise-sensitive land uses (see policy N1.3) by requiring the developer to submit a construction-related noise mitigation plan to the City for review and approval prior to issuance of a grading permit. The plan must depict the location of construction equipment and how the noise from this equipment will be mitigated during construction of this project, through the use of such methods as:

- *i. Temporary noise attenuation fences;*
- *ii. Preferential location and equipment; and*
- *iii. Use of current noise suppression technology and equipment.*

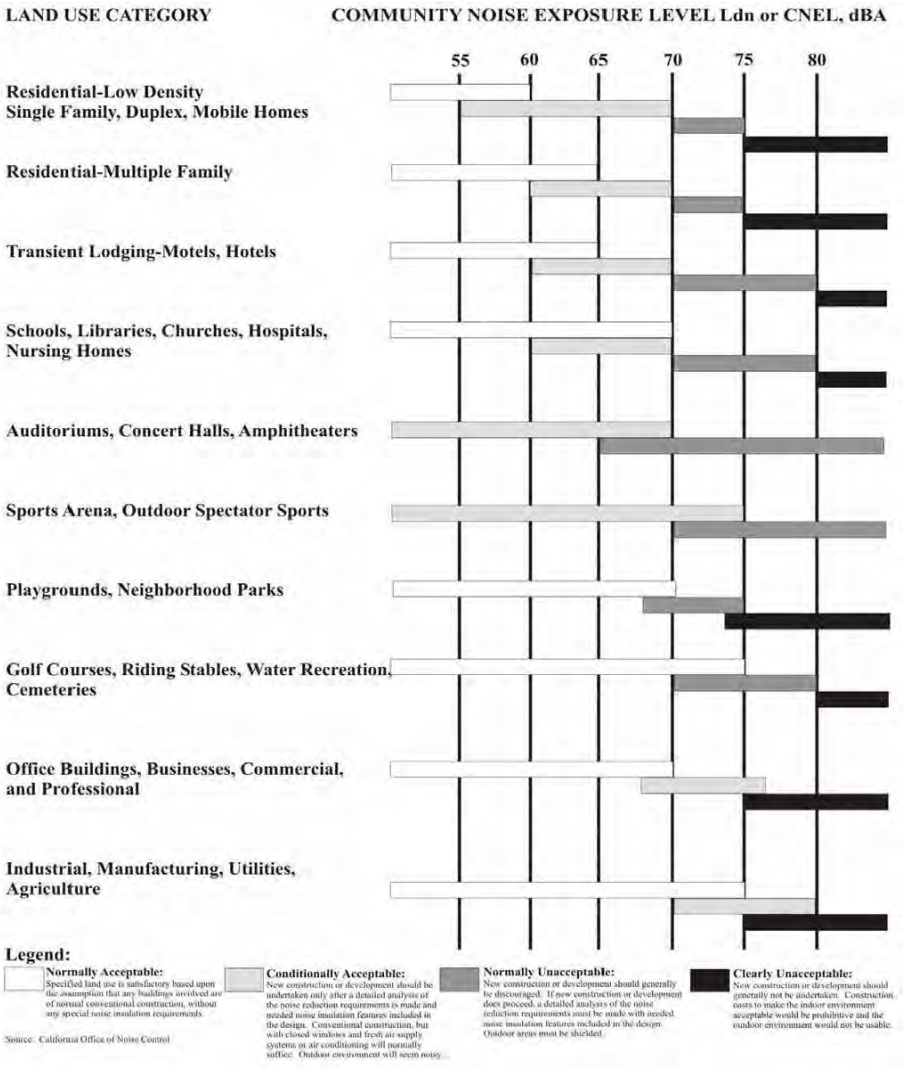
To ensure noise-sensitive land uses are protected from high levels of noise (N 1.1), Table N-1 of the Noise Element identifies guidelines to evaluate proposed developments based on exterior and interior noise level limits for land uses and requires a noise analysis to determine needed mitigation measures if necessary. The Noise Element identifies residential use as a noise-sensitive land use (N 1.3) which, when located in an area of 60 CNEL or greater, may require an acoustical analysis. To prevent and mitigate noise impacts for its residents (N 1.5), the City of Wildomar requires noise attenuation measures for any land use exposed to noise levels higher than 65 CNEL. The intent of policy N 1.7 is to require a noise analysis for land uses impacted by unacceptably high noise levels and include mitigation measures in the design. To prevent high levels of construction noise from impacting noise-sensitive land uses, policies N 12.1 through 12.3 identify construction noise mitigation requirements for new development located near existing noise-sensitive land uses. (10)

3.3.1 LAND USE COMPATIBILITY

The noise criteria identified in the City of Wildomar Noise Element (Table N-1) are guidelines to evaluate the land use compatibility of transportation related noise. The compatibility criteria, shown on Exhibit 3-A, provides the City with a planning tool to gauge the compatibility of land uses relative to existing and future exterior noise levels The *Land Use Compatibility for Community Noise Exposure* matrix describes categories of compatibility and not specific noise standards. The proposed Monte Vista Ranch development contains single-family and multi-family residential land use. Single-family residential land use is considered *normally acceptable*

with unmitigated exterior levels of less than 60 dBA CNEL. Multi-family residential land use is considered *normally acceptable* with unmitigated exterior levels of less than 65 dBA CNEL. For *conditionally acceptable* exterior noise levels, approaching 70 dBA CNEL for multi-family and single-family land uses, *new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and the needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.*

EXHIBIT 3-A: LAND USE COMPATIBILITY FOR COMMUNITY NOISE EXPOSURE



Source: City of Wildomar General Plan Noise Element, Table N-1.

3.4 CONSTRUCTION NOISE CRITERIA

To control noise impacts associated with the construction of the proposed Project, the City of Wildomar has established limits to the hours of operation. Section 9.48.020 (I) of the Noise Regulation ordinance indicates that noise associated with any private construction activity located within one-quarter of a mile from an inhabited dwelling is considered exempt between the hours of 6:00 a.m. and 6:00 p.m., during the months of June through September, and 7:00 a.m. and 6:00 p.m., during the months of October through May. (11) However, neither the City of Wildomar General Plan nor Municipal Code establish numeric maximum acceptable construction source noise levels at potentially affected receivers. Therefore, a numerical construction threshold based on Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual* is used for analysis of daytime construction impacts, as discussed below.

According to the FTA, local noise ordinances are typically not very useful in evaluating construction noise. They usually relate to nuisance and hours of allowed activity, and sometimes specify limits in terms of maximum levels, but are generally not practical for assessing the impact of a construction project. Project construction noise criteria should account for the existing noise environment, the absolute noise levels during construction activities, the duration of the construction, and the adjacent land use. Due to the lack of standardized construction noise thresholds, the FTA provides guidelines that can be considered reasonable criteria for construction noise assessment. The FTA considers a daytime exterior construction noise level of 80 dBA L_{eq} as a reasonable threshold for noise sensitive residential land use. (7 p. 179)

3.5 CONSTRUCTION VIBRATION CRITERIA

Construction activity can result in varying degrees of ground-borne vibration, depending on the equipment and methods used, distance to the affected structures and soil type. Construction vibration is generally associated with pile driving and rock blasting. Other construction equipment such as air compressors, light trucks, hydraulic loaders, etc., generates little or no ground vibration. (7) Occasionally large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity. To analyze vibration impacts originating from the construction of the vibration-generating construction activities are appropriately evaluated against standards established under a City's Municipal Code, if such standards exist. However, the City of Wildomar does not identify specific construction vibration level limits. The City of Wildomar General Plan Policy 15.3 identifies a motion velocity perception threshold for vibration due to passing trains of 0.01 inches per second (in/sec) RMS over the range of one to 100 Hz. (2)

Since the City of Wildomar does not identify any construction related vibration standards, this analysis relies on the Caltrans *Transportation and Construction Vibration Guidance Manual*, (12 p. 38) Table 19 vibration damage criteria are to assess potential temporary construction-related impacts at adjacent receiver locations. The construction vibration damage potential criteria include consideration of the building conditions. (4 p. 182) Table 3-1 describes the maximum acceptable transient and continuous vibration building damage potential levels by structure type and condition. The existing buildings adjacent to the Project site can best be described as "older

residential structures" with a maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec).

TABLE 3-1: BUILDING DAMAGE VIBRATION CRITERIA

Structure and Condition	Maximum Transient Vibration Levels PPV (in/sec)	Maximum Continuous Vibration Levels PPV (in/sec)
Extremely fragile historic buildings	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.

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4 METHODS AND PROCEDURES

The following section outlines the methods and procedures used to model and analyze the future traffic noise environment.

4.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The estimated roadway noise impacts from vehicular traffic were calculated using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (13) The FHWA Model arrives at a predicted noise level through a series of adjustments to the Reference Energy Mean Emission Level (REMEL). In California the national REMELs are substituted with the California Vehicle Noise (Calveno) Emission Levels. (14) Adjustments are then made to the REMEL to account for: the roadway classification (e.g., collector, secondary, major or arterial), the roadway active width (i.e., the distance between the center of the outermost travel lanes on each side of the roadway), the total average daily traffic (ADT), the travel speed, the percentages of automobiles, medium trucks, and heavy trucks in the traffic volume, the roadway grade, the angle of view (e.g., whether the roadway view is blocked), the site conditions ("hard" or "soft" relates to the absorption of the ground, pavement, or landscaping), and the percentage of total ADT which flows each hour throughout a 24-hour period.

4.2 ON-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

The on-site roadway parameters including the average daily traffic (ADT) volumes used for this study are presented on Table 4-1. Based on the City of Wildomar Circulation Element Figure C-1, Monte Vista Drive is classified as a Secondary Highway and Summer Sage Way is classified as an enhanced 2-lane Local Street. (15) To predict the future on-site noise environment at the Project site, parameters including the number of lanes and daily volume thresholds were obtained from the City of Wildomar Transportation Element, Figure C-3. For the purposes of this analysis, soft site conditions were used to analyze the on-site traffic noise impacts for the Project study area. Soft site conditions account for the sound propagation loss over natural surfaces such as normal earth and ground vegetation. Research conducted by Caltrans has shown that the use of soft site conditions is appropriate for the application of the FHWA traffic noise prediction model used in this analysis. (16)

TABLE 4-1: ON-SITE ROADWAY PARAMETERS

Roadway	Lanes	Classification[1]	Design Capacity[2]	Speeds (MPH)	Site Conditions
Monte Vista Dr.	4	Secondary Highway	20,700	55	Soft
I-15 Freeway	6	Freeway	132,000	70	Soft
Summer Sage Way	2	Enhanced Local Street	10,400	40	Soft

[1] City of Wildomar Circulation Element Figure C-1, October 2003
[2] City of Wildomar Circulation Element Figure C-3, October 2003. Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2018.

Table 4-2 presents the time-of-day vehicle splits by vehicle type, and Table 4-3 presents the total traffic flow distributions (vehicle mixes) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA Model based on roadway types.

TABLE 4-2: TIME OF DAY VEHICLE SPLITS

Time Period	Vehicle Type		
	Autos	Medium Trucks	Heavy Trucks
Daytime (7am-7pm)	77.5%	84.8%	86.5%
Evening (7pm-10pm)	12.9%	4.9%	2.7%
Nighttime (10pm-7am)	9.6%	10.3%	10.8%
Total:	100.0%	100.0%	100.0%

Typical Southern California vehicle mix.

TABLE 4-3: DISTRIBUTION OF TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Roadway	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
Surface Streets[1]	97.42%	1.84%	0.74%	100.00%
I-15 Freeway[2]	91.30%	3.92%	4.78%	100.00%

[1] Typical Southern California Vehicle Mix
[2] Caltrans Traffic Data Branch Annual Average Daily Truck Traffic on the California Highways System, 2018

To predict the future noise environment at each building within the Project site, coordinate information was collected to identify the noise transmission path between the noise source and receiver. The coordinate information is based on the site plan showing the plotting of each building in relationship to adjacent analyzed roadways, as shown in Appendix 4.1. The plans are used to identify the relationship between the roadway centerline elevation, the pad elevation and the centerline distance to the noise barrier, and the building façade. The first-floor exterior noise level receivers were placed five feet above the pad elevation. Second-floor receiver locations were placed at 5 feet above the finished floor elevations.

5 ON-SITE TRAFFIC NOISE IMPACTS

An on-site exterior noise impact analysis has been completed to determine the traffic noise exposure and to identify potential necessary noise abatement measures for the proposed Monte Vista Ranch Project. It is expected that the primary source of noise impacts to the Project site will be traffic noise from Monte Vista Drive, Summer Sage Way, and the I-15 Freeway. The Project will also experience some background traffic noise impacts from the Project's internal local streets, however, due to the distance, topography and low traffic volume/speed, traffic noise from these roads will not make a significant contribution to the noise environment.

5.1 ON-SITE EXTERIOR NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 4-1 to 4-3, the expected future exterior noise levels for outdoor living areas (backyards) were calculated. Table 5-1 presents a summary of future exterior noise levels at the outdoor living areas (backyards) within the Project site. The on-site traffic noise level analysis indicates that the residential outdoor living areas (backyards) adjacent to Monte Vista Drive, Summer Sage Way and the I-15 Freeway will experience unmitigated exterior noise levels ranging from 62.8 to 67.9 dBA CNEL. The on-site traffic noise analysis calculations are provided in Appendix 5.1.

To satisfy the City of Wildomar General Plan Noise Element 65 dBA CNEL exterior noise level standard for residential uses, a minimum 6-foot-high barrier is required for southwest, northwest, and west homes near the I-15 Freeway. With the minimum 6-foot-high barrier, the mitigated exterior noise levels will range from 56.7 to 64.5 dBA CNEL. Additional interior noise analysis is provided in this noise study to satisfy the General Plan Noise Element interior noise level standards. (10)

TABLE 5-1: EXTERIOR NOISE LEVELS (CNEL)

Homes	Roadway	Unmitigated Noise Level (dBA CNEL)	Mitigated Noise Level (dBA CNEL)	Barrier Height (Feet)	Top of Barrier Elevation (Feet)
Northwest Home	Monte Vista Dr.	65.4	56.7	6.0	1425.0'
West Homes	Monte Vista Dr.	64.5	64.5	–[2]	–[2]
Southwest Homes	I-15 Freeway	67.9	62.3	6.0	1425.0'
South Homes	Summer Sage Way	62.8	62.8	–[2]	–[2]
West Homes	I-15 Freeway	67.1	61.5	6.0	1425.0'

[1] Exterior noise level calculations are included Appendix 5.1.
[2] No exterior mitigation needed.

5.2 On-Site Interior Noise Analysis

The future noise levels were calculated at the first and second-floor building façades to ensure that the interior noise levels comply with the City of Wildomar 45 dBA CNEL interior noise standards.

5.2.1 Noise Reduction Methodology

The interior noise level is the difference between the predicted exterior noise level at the building façade and the noise reduction of the structure. Standard building construction will provide a Noise Reduction (NR) of approximately 12 dBA with "windows open" and a minimum 25 dBA noise reduction with "windows closed." However, sound leaks, cracks and openings within the window assembly can greatly diminish its effectiveness in reducing noise. Several methods are used to improve interior noise reduction, including: (1) weather-stripped solid core exterior doors; (2) upgraded dual glazed windows; (3) mechanical ventilation/air conditioning; and (4) exterior wall/roof assembles free of cut outs or openings.

5.2.2 Interior Noise Level Assessment

Tables 5-2 to 5-3 show that the residential units require a windows-closed condition and a means of mechanical ventilation (e.g. air conditioning). Table 5-2 shows that the future noise levels at the first-floor building façade are expected to range from 56.7 to 64.5 dBA CNEL. The first-floor interior noise level analysis shows that the City of Wildomar 45 dBA CNEL with windows-closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for all units. Table 5-3 shows the future noise levels at the second-floor building façade are expected to range from 62.7 to 67.9 dBA CNEL. The second-floor interior noise level analysis shows that the City of Wildomar 45 dBA CNEL with windows closed interior noise standards can be satisfied using standard windows with a minimum STC rating of 27 for all units, based on the minimum 25 dBA interior noise reduction for standard construction.

The interior noise analysis shows that with the recommended interior noise abatement measures described in the Executive Summary the Project will satisfy the City of Wildomar 45 dBA CNEL windows closed interior noise level standards for residential development.

TABLE 5-2: FIRST-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot Number	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
Northwest Home	56.7	11.7	25.0	No	31.7	45	No
West Homes	64.5	19.5	25.0	No	39.5	45	No
Southwest Homes	62.3	17.3	25.0	No	37.3	45	No
South Homes	62.8	17.8	25.0	No	37.8	45	No
West Homes	61.5	16.5	25.0	No	36.5	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] Estimated minimum interior noise reduction.
[4] Does the required interior noise reduction trigger upgraded with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise reduction

TABLE 5-3: SECOND-FLOOR INTERIOR NOISE IMPACTS (CNEL)

Lot Number	Noise Level at Façade[1]	Required Interior NR[2]	Estimated Interior NR[3]	Upgraded Windows[4]	Interior Noise Level[5]	Threshold	Threshold Exceeded?
Northwest Home	65.3	20.3	25.0	No	40.3	45	No
West Homes	64.4	19.4	25.0	No	39.4	45	No
Southwest Homes	67.9	22.9	25.0	No	42.9	45	No
South Homes	62.7	17.7	25.0	No	37.7	45	No
West Homes	67.1	22.1	25.0	No	42.1	45	No

[1] Exterior noise level at the facade with a windows closed condition requiring a means of mechanical ventilation (e.g. air conditioning).
[2] Noise reduction required to satisfy the 45 dBA CNEL interior noise standards.
[3] Estimated minimum interior noise reduction.
[4] Does the required interior noise reduction trigger upgraded with a minimum STC rating of greater than 27?
[5] Estimated interior noise level with minimum STC rating for all windows.
"NR" = Noise reduction

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6 SENSITIVE RECEIVER LOCATIONS

To assess the potential for long-term operational and short-term construction noise impacts, the following sensitive receiver locations, as shown on Exhibit 6-A, were identified as representative locations for analysis. Sensitive receivers are generally defined as locations where people reside or where the presence of unwanted sound could otherwise adversely affect the use of the land. Noise-sensitive land uses are generally considered to include schools, hospitals, single-family dwellings, mobile home parks, churches, libraries, and recreation areas. Moderately noise-sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, out-patient clinics, cemeteries, golf courses, country clubs, athletic/tennis clubs, and equestrian clubs. Land uses that are considered relatively insensitive to noise include business, commercial, and professional developments. Land uses that are typically not affected by noise include: industrial, manufacturing, utilities, agriculture, undeveloped land, parking lots, warehousing, liquid and solid waste facilities, salvage yards, and transit terminals.

To describe the potential off-site Project noise levels, three receiver locations in the vicinity of the Project site were identified. All distances are measured from the Project site boundary to the outdoor living areas (e.g., private backyards) or at the building façade, whichever is closer to the Project site. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA. Other sensitive land uses in the Project study area that are located at greater distances than those identified in this noise study will experience lower noise levels than those presented in this report due to the additional attenuation from distance and the shielding of intervening structures. Distance is measured in a straight line from the project boundary to each receiver location.

R1: Location R1 represents the existing noise sensitive residence at 22622 Sunnybrook Drive, approximately 105 feet west of the Project site. R1 is placed at the private outdoor living areas (backyards) facing the Project site.

R2: Location R2 represents the existing noise sensitive residence at 22641 Summer Sage Way, approximately 240 feet southeast of the Project site. R2 is placed at the private outdoor living areas (backyards) facing the Project site.

R3: Location R3 represents the existing noise sensitive residence at 34281 Monte Vista Road approximately 477 feet west of the Project site. Since there are no private outdoor living areas (backyards) facing the Project site, receiver R3 is placed at the residential building façade.

EXHIBIT 6-A: RECEIVER LOCATIONS



7 CONSTRUCTION ANALYSIS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 6-A shows the construction noise source locations (measured from the Project's site boundary) in relation to the nearest sensitive receiver locations previously described in Section 6. To prevent high levels of construction noise from impacting noise-sensitive land uses, City of Wildomar Municipal Code Section 9.48.020 (I) limits the hours of construction.

7.1 CONSTRUCTION NOISE LEVELS

Noise generated by the Project construction equipment will include a combination of trucks, power tools, concrete mixers, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

7.2 CONSTRUCTION REFERENCE NOISE LEVELS

To describe peak construction noise activities, this construction noise analysis was prepared using reference noise level measurements published in the *Update of Noise Database for Prediction of Noise on Construction and Open Sites* by the Department for Environment, Food and Rural Affairs (DEFRA). (17). The DEFRA database provides the most recent and comprehensive source of reference construction noise levels. Table 7-1 provides a summary of the DEFRA construction reference noise level measurements expressed in hourly average dBA L_{eq} using the estimated FHWA Roadway Construction Noise Model (RCNM) usage factors (18) to describe the typical construction activities for each stage of Project construction.

TABLE 7-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity[1]	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Highest Reference Noise Level (dBA L_{eq})
Site Preparation	Crawler Tractors	77	77
	Hauling Trucks	71	
	Rubber Tired Dozers	71	
Grading	Graders	79	79
	Excavators	64	
	Compactors	67	
Building Construction	Cranes	67	72
	Tractors	72	
	Welders	65	
Paving	Pavers	70	70
	Paving Equipment	69	
	Rollers	69	
Architectural Coating	Cranes	67	67
	Air Compressors	67	
	Generator Sets	67	

[1] Update of Noise Database for Prediction of Noise on Construction and Open Sites by the Department for Environment, Food and Rural Affairs (DEFRA) expressed in hourly average L_{eq} based on estimated usage factors from the FHWA Roadway Construction Noise Model (RCNM).

7.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior construction noise levels from the Project, Urban Crossroads, Inc. developed a noise prediction model using the CadnaA (Computer Aided Noise Abatement) computer program. CadnaA can analyze multiple types of noise sources using the spatially accurate Project site plan, georeferenced Nearmap aerial imagery, topography, buildings, and barriers in its calculations to predict outdoor noise levels. Using the ISO 9613 protocol, CadnaA will calculate the distance from each noise source to the noise receiver locations, using the ground absorption, distance, and barrier/building attenuation inputs to provide a summary of noise level at each receiver and the partial noise level contributions by noise source. The construction noise level calculations provided in this noise study account for the distance attenuation provided due to geometric spreading, when sound from a localized stationary source (i.e., a point source) propagates uniformly outward in a spherical pattern. A default ground attenuation factor of 0.5 was used in the noise analysis to account for mixed ground representing a combination of hard and soft surfaces.

7.4 TYPICAL CONSTRUCTION NOISE ANALYSIS

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearest sensitive receiver locations were completed. To assess the worst-case construction noise levels, the Project

construction noise analysis relies on the highest noise level impacts when the equipment with the highest reference noise level is operating at the closest point from the edge of primary construction activity (Project site boundary) to each receiver location. As shown on Table 7-2, the construction noise levels are expected to range from 51.2 to 67.8 dBA L_{eq}, and the highest construction levels are expected to range from 63.2 to 67.8 dBA L_{eq} at the nearest receiver locations from the property line. Appendix 7.1 includes the detailed noise model inputs used to estimate the Project construction noise levels presented in this section.

TABLE 7-2: TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVEL SUMMARY

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})					
	Site Preparation	Grading	Building Construction	Paving	Architectural Coating	Highest Levels[2]
R1	65.8	67.8	60.8	58.8	55.8	67.8
R2	63.8	65.8	58.8	56.8	53.8	65.8
R3	61.2	63.2	56.2	54.2	51.2	63.2

[1] Noise receiver locations are shown on Exhibit 6-A.
[2] Construction noise level calculations based on distance from the construction activity, which is measured from the Project site boundary to the nearest receiver locations. CadnaA construction noise model inputs are included in Appendix 7.1.

7.5 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at nearest receiver locations, a construction-related daytime noise level threshold of 80 dBA L_{eq} is used as a reasonable threshold to assess the daytime construction noise level impacts. The construction noise analysis shows that the nearest receiver locations will satisfy the reasonable daytime 80 dBA L_{eq} significance threshold during Project construction activities as shown on Table 7-3. Therefore, the noise impacts due to Project construction noise is considered *less than significant* at all receiver locations.

TABLE 7-3: TYPICAL CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	67.8	80	No
R2	65.8	80	No
R3	63.2	80	No

[1] Noise receiver locations are shown on Exhibit 6-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations as shown on Table 7-2.
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

7.5 CONSTRUCTION VIBRATION ANALYSIS

Construction activity can result in varying degrees of ground vibration, depending on the equipment and methods employed. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Ground vibration levels associated with various types of construction equipment are summarized on Table 7-4. Based on the representative vibration levels presented for various construction equipment types, it is possible to estimate the potential for human response (annoyance) and building damage using the following vibration assessment methods defined by the FTA. To describe the vibration impacts the FTA provides the following equation: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

TABLE 7-4: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec) at 25 feet
Small bulldozer	0.003
Jackhammer	0.035
Loaded Trucks	0.076
Large bulldozer	0.089

Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual

Table 7-5 presents the expected Project related vibration levels at the nearby receiver locations. At distances ranging from 105 to 477 feet from Project construction activities, construction vibration velocity levels are estimated to range from 0.001 to 0.01 in/sec PPV. Based on maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec) for older residential buildings, the typical Project construction vibration levels will satisfy the building damage thresholds at all receiver locations. In addition, the typical construction vibration levels at the nearest sensitive receiver locations are unlikely to be sustained during the entire construction period but will occur rather only during the times that heavy construction equipment is operating adjacent to the Project site boundaries.

TABLE 7-5: CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Receiver[1]	Distance to Const. Activity (Feet)[2]	Typical Construction Vibration Levels PPV (in/sec)[3]					Thresholds PPV (in/sec)[4]	Thresholds Exceeded?[5]
		Small bulldozer	Jackhammer	Loaded Trucks	Large bulldozer	Highest Vibration Level		
R1	105'	0.000	0.004	0.009	0.010	0.010	0.3	No
R2	240'	0.000	0.001	0.003	0.003	0.003	0.3	No
R3	477'	0.000	0.000	0.001	0.001	0.001	0.3	No

[1] Receiver locations are shown on Exhibit 6-A.
[2] Distance from receiver location to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 7-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Tables 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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8 REFERENCES

1. **State of California.** *California Environmental Quality Act, Appendix G.* 2018.
2. **U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Noise and Air Quality Branch.** *Highway Traffic Noise Analysis and Abatement Policy and Guidance.* December 2011.
3. **California Department of Transportation Environmental Program.** *Technical Noise Supplement - A Technical Supplement to the Traffic Noise Analysis Protocol.* Sacramento, CA : s.n., September 2013.
4. **Environmental Protection Agency Office of Noise Abatement and Control.** *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.* March 1974. EPA/ONAC 550/9/74-004.
5. **U.S. Department of Transportation, Federal Highway Administration.** *Highway Traffic Noise in the United States, Problem and Response.* April 2000. p. 3.
6. **U.S. Environmental Protection Agency Office of Noise Abatement and Control.** *Noise Effects Handbook-A Desk Reference to Health and Welfare Effects of Noise.* October 1979 (revised July 1981). EPA 550/9/82/106.
7. **U.S. Department of Transportation, Federal Transit Administration.** *Transit Noise and Vibration Impact Assessment Manual.* September 2018.
8. **Office of Planning and Research.** *State of California General Plan Guidelines.* October 2017.
9. **State of California.** California Code of Regulations, Title 24, Part 2, Volume 1, Chapter 12, Section 1206.4, Allowable Interior Noise Level. *ICC Digital Coes.* [Online] 2019. https://codes.iccsafe.org/content/CABCV12019/chapter-12-interior-environment.
10. **City of Wildomar.** *General Plan Noise Element.* October 2003.
11. —. *Municipal Code, Chapter 9.48 Noise Regulation.*
12. **California Department of Transportation.** *Transportation and Construction Vibration Guidance Manual.* April 2020.
13. **U.S. Department of Transportation, Federal Highway Administration.** *FHWA Highway Traffic Noise Prediction Model.* December 1978. FHWA-RD-77-108.
14. **California Department of Transportation Environmental Program, Office of Environmental Engineering.** *Use of California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELs) in FHWA Highway Traffic Noise Prediction.* September 1995. TAN 95-03.
15. **City of Wildomar.** *General Plan Circulation Element.* 2003.
16. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.
17. **Department of Environment, Food and Rural Affiars (Defra).** *Update of Noise Database for Prediction of Noise on Construction and Open Sites.* 2004.
18. **FHWA.** *Roadway Construction Noise Model.* January 2006.

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9 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the proposed Monte Vista Ranch Project. The information contained in this noise study report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 584-3148.

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EDUCATION

Master of Science in Civil and Environmental Engineering
California Polytechnic State University, San Luis Obispo • December, 1993

Bachelor of Science in City and Regional Planning
California Polytechnic State University, San Luis Obispo • June, 1992

PROFESSIONAL REGISTRATIONS

PE – Registered Professional Traffic Engineer – TR 2537 • January, 2009
AICP – American Institute of Certified Planners – 013011 • June, 1997–January 1, 2012
PTP – Professional Transportation Planner • May, 2007 – May, 2013
INCE – Institute of Noise Control Engineering • March, 2004

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
ITE – Institute of Transportation Engineers

PROFESSIONAL CERTIFICATIONS

Certified Acoustical Consultant – County of Orange • February, 2011
FHWA-NHI-142051 Highway Traffic Noise Certificate of Training • February, 2013

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APPENDIX 4.1:

SITE PLAN

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Site Summary:

Total Site Area: 5.0 Ac

Total Units: 64

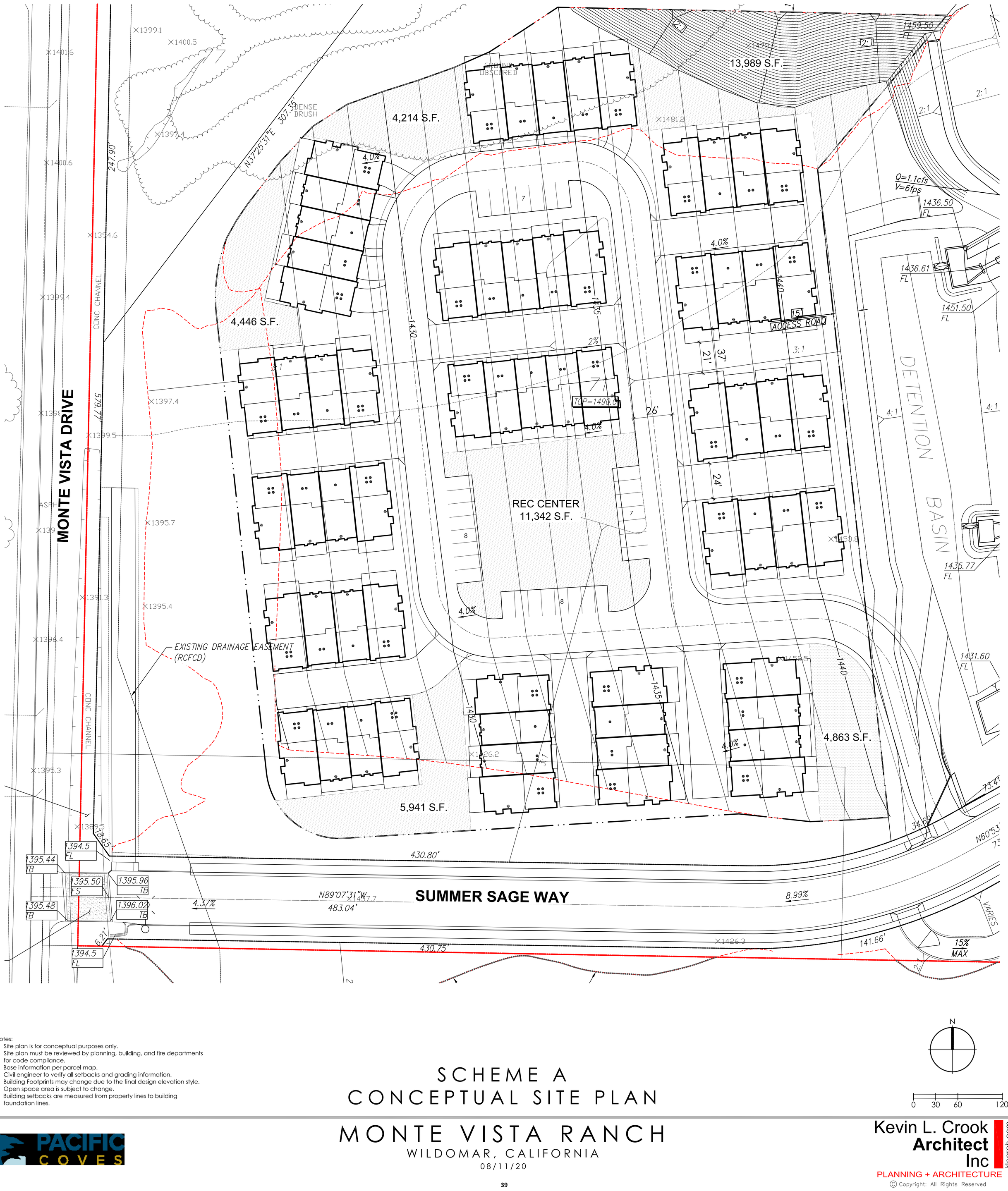
Density: 12.8 Du/ Ac

Open Space Provided: 44,795 S.F. (400x60 = 24,000 S.F. Required)

Parking: 158 Total Spaces (2.5:1 Overall)

Covered Spaces: 128 (2.0:1 Overall)

Uncovered Space: 30 (0.5:1 Overall)



Notes:
1. Site plan is for conceptual purposes only.
2. Site plan must be reviewed by planning, building, and fire departments for code compliance.
3. Base information per parcel map.
4. Civil engineer to verify all setbacks and grading information.
5. Building Footprints may change due to the final design elevation style.
6. Open space area is subject to change.
7. Building setbacks are measured from property lines to building foundation lines.

N

0 30 60 120

SCHEME A
CONCEPTUAL SITE PLAN

MONTE VISTA RANCH
WILDOMAR, CALIFORNIA
08/11/20

PACIFIC COVES

Kevin L. Crook **Architect** Inc
klcarch.com
JOB #: 20073
PLANNING + ARCHITECTURE
v 2.0

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Site Summary:

Total Site Area: 5.0 Ac

Total Units: 64

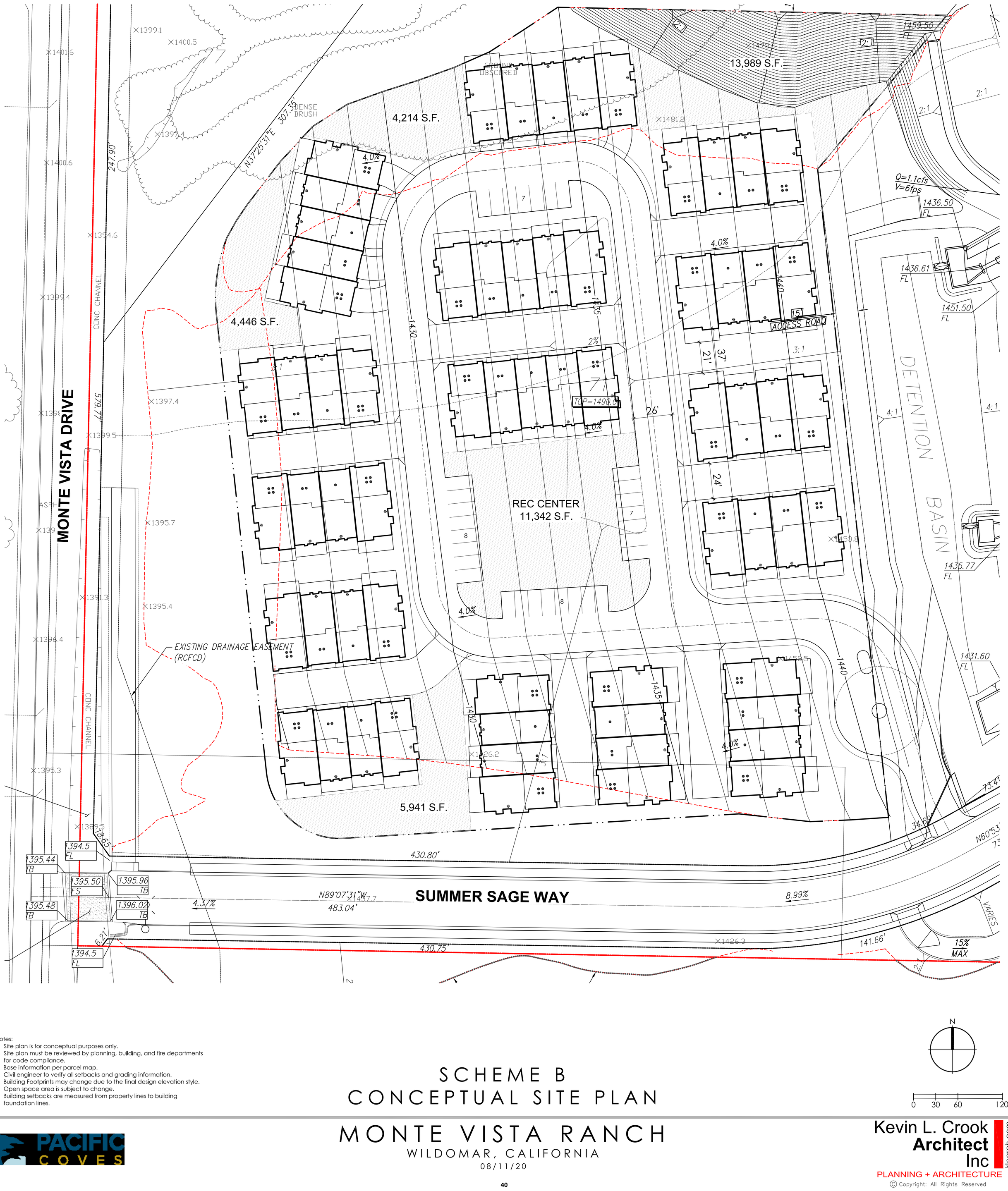
Density: 12.8 Du/ Ac

Open Space Provided: 39,932 S.F. (400x60 = 24,000 S.F. Required)

Parking: 158 Total Spaces (2.5:1 Overall)

Covered Spaces: 128 (2.0:1 Overall)

Uncovered Space: 30 (0.5:1 Overall)



Notes:
1. Site plan is for conceptual purposes only.
2. Site plan must be reviewed by planning, building, and fire departments for code compliance.
3. Base information per parcel map.
4. Civil engineer to verify all setbacks and grading information.
5. Building Footprints may change due to the final design elevation style.
6. Open space area is subject to change.
7. Building setbacks are measured from property lines to building foundation lines.

N

0 30 60 120

SCHEME B
CONCEPTUAL SITE PLAN

MONTE VISTA RANCH
WILDOMAR, CALIFORNIA
08/11/20

PACIFIC COVES

Kevin L. Crook **Architect** Inc
klcarch.com JOB #: 20073
PLANNING + ARCHITECTURE v 2.0

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APPENDIX 5.1:

ON-SITE TRAFFIC NOISE CALCULATIONS

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FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Monte Vista Dr.
Lot No: Northwest Home

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	125.0 feet
Centerline Dist. to Observer:	135.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,399.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,399.000		
Medium Trucks:	1,401.297		
Heavy Trucks:	1,407.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	137.339
Medium Trucks:	136.839
Heavy Trucks:	135.756

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-6.69	-1.20	*-0.33*	0.000	0.000
Medium Trucks:	79.85	-16.90	-6.66	-1.20	*-0.38*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-6.61	-1.20	*-0.51*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.4
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	66.0	64.1	61.8	56.3	64.9	65.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.5	55.5	64.1	64.7
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.4
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	66.0	64.1	61.8	56.3	64.9	65.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Monte Vista Dr.
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	146.0 feet
Centerline Dist. to Observer:	156.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,396.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,396.000		
Medium Trucks:	1,398.297		
Heavy Trucks:	1,404.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	158.644
Medium Trucks:	158.168
Heavy Trucks:	157.123

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-7.63	-1.20	*-0.36*	0.000	0.000
Medium Trucks:	79.85	-16.90	-7.61	-1.20	*-0.40*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-7.56	-1.20	*-0.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: I-15 Freeway
Lot No: Southwest Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	585.0 feet
Centerline Dist. to Observer:	595.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	589.274
Medium Trucks:	589.259
Heavy Trucks:	589.260

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.17	-1.20	*-1.13*	0.000	0.000
Medium Trucks:	82.53	-6.62	-16.17	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	85.83	-5.76	-16.17	-1.20	*-1.20*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: Summer Sage Way
Lot No: South Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	75.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,430.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,430.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	75.425
Medium Trucks:	75.155
Heavy Trucks:	74.786

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.78	-1.20	*-0.69*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.76	-1.20	*-0.82*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.73	-1.20	*-1.20*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard No Wall
Road Name: I-15 Freeway
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	663.0 feet
Centerline Dist. to Observer:	673.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	667.943
Medium Trucks:	667.930
Heavy Trucks:	667.931

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.99	-1.20	*-1.14*	0.000	0.000
Medium Trucks:	82.53	-6.62	-16.99	-1.20	*-1.15*	0.000	0.000
Heavy Trucks:	85.83	-5.76	-16.99	-1.20	*-1.20*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Monte Vista Dr.
Lot No: Northwest Home

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	125.0 feet
Centerline Dist. to Observer:	135.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,399.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,399.000		
Medium Trucks:	1,401.297		
Heavy Trucks:	1,407.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	137.819
Medium Trucks:	137.263
Heavy Trucks:	136.053

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-6.71	-1.20	*0.56*	-8.800	-11.800
Medium Trucks:	79.85	-16.90	-6.68	-1.20	*0.50*	-8.500	-11.500
Heavy Trucks:	83.81	-20.86	-6.62	-1.20	*0.38*	-7.900	-10.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.5	55.4	64.1	64.7
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.3
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	65.9	64.1	61.7	56.3	64.9	65.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.4	54.5	52.7	46.6	55.3	55.9
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.8
Heavy Trucks:	47.2	45.8	36.8	38.0	46.4	46.5
Vehicle Noise:	57.2	55.4	53.0	47.6	56.2	56.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Monte Vista Dr.
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	146.0 feet
Centerline Dist. to Observer:	156.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,396.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,396.000		
Medium Trucks:	1,398.297		
Heavy Trucks:	1,404.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	158.644
Medium Trucks:	158.168
Heavy Trucks:	157.123

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-7.63	-1.20	*-0.36*	0.000	0.000
Medium Trucks:	79.85	-16.90	-7.61	-1.20	*-0.40*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-7.56	-1.20	*-0.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: I-15 Freeway
Lot No: Southwest Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	585.0 feet
Centerline Dist. to Observer:	595.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	589.234
Medium Trucks:	589.215
Heavy Trucks:	589.207

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.17	-1.20	*0.06*	-5.600	-8.600
Medium Trucks:	82.53	-6.62	-16.17	-1.20	*0.05*	-5.500	-8.500
Heavy Trucks:	85.83	-5.76	-16.17	-1.20	*0.04*	-5.400	-8.400

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.9	59.0	57.2	51.2	59.8	60.4
Medium Trucks:	53.0	51.5	45.2	43.6	52.1	52.3
Heavy Trucks:	57.3	55.9	46.8	48.1	56.4	56.6
Vehicle Noise:	62.9	61.2	57.8	53.4	61.9	62.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: Summer Sage Way
Lot No: South Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	75.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,430.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,430.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	75.425
Medium Trucks:	75.155
Heavy Trucks:	74.786

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.78	-1.20	*-0.69*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.76	-1.20	*-0.82*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.73	-1.20	*-1.20*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Backyard With Wall
Road Name: I-15 Freeway
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	663.0 feet
Centerline Dist. to Observer:	673.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	667.924
Medium Trucks:	667.907
Heavy Trucks:	667.900

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.99	-1.20	*0.06*	-5.600	-8.600
Medium Trucks:	82.53	-6.62	-16.99	-1.20	*0.05*	-5.500	-8.500
Heavy Trucks:	85.83	-5.76	-16.99	-1.20	*0.05*	-5.500	-8.500

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.4	50.3	59.0	59.6
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	62.1	60.4	57.0	52.5	61.1	61.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Monte Vista Dr.
Lot No: Northwest Home

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	125.0 feet
Centerline Dist. to Observer:	135.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,399.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,399.000		
Medium Trucks:	1,401.297		
Heavy Trucks:	1,407.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	137.819
Medium Trucks:	137.263
Heavy Trucks:	136.053

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-6.71	-1.20	*0.56*	-8.800	-11.800
Medium Trucks:	79.85	-16.90	-6.68	-1.20	*0.50*	-8.500	-11.500
Heavy Trucks:	83.81	-20.86	-6.62	-1.20	*0.38*	-7.900	-10.900

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.2	63.3	61.5	55.4	64.1	64.7
Medium Trucks:	55.1	53.6	47.2	45.7	54.1	54.3
Heavy Trucks:	55.1	53.7	44.7	45.9	54.3	54.4
Vehicle Noise:	65.9	64.1	61.7	56.3	64.9	65.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	56.4	54.5	52.7	46.6	55.3	55.9
Medium Trucks:	46.6	45.1	38.7	37.2	45.6	45.8
Heavy Trucks:	47.2	45.8	36.8	38.0	46.4	46.5
Vehicle Noise:	57.2	55.4	53.0	47.6	56.2	56.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Monte Vista Dr.
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	146.0 feet
Centerline Dist. to Observer:	156.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,396.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,396.000		
Medium Trucks:	1,398.297		
Heavy Trucks:	1,404.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	158.644
Medium Trucks:	158.168
Heavy Trucks:	157.123

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-7.63	-1.20	*-0.36*	0.000	0.000
Medium Trucks:	79.85	-16.90	-7.61	-1.20	*-0.40*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-7.56	-1.20	*-0.52*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.2	62.3	60.6	54.5	63.1	63.7
Medium Trucks:	54.1	52.6	46.3	44.7	53.2	53.4
Heavy Trucks:	54.2	52.8	43.7	45.0	53.3	53.5
Vehicle Noise:	65.0	63.2	60.8	55.4	64.0	64.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: I-15 Freeway
Lot No: Southwest Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	585.0 feet
Centerline Dist. to Observer:	595.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	589.234
Medium Trucks:	589.215
Heavy Trucks:	589.207

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.17	-1.20	*0.06*	-5.600	-8.600
Medium Trucks:	82.53	-6.62	-16.17	-1.20	*0.05*	-5.500	-8.500
Heavy Trucks:	85.83	-5.76	-16.17	-1.20	*0.04*	-5.400	-8.400

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.8	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.9	59.0	57.2	51.2	59.8	60.4
Medium Trucks:	53.0	51.5	45.2	43.6	52.1	52.3
Heavy Trucks:	57.3	55.9	46.8	48.1	56.4	56.6
Vehicle Noise:	62.9	61.2	57.8	53.4	61.9	62.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: Summer Sage Way
Lot No: South Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	75.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,430.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,430.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	75.425
Medium Trucks:	75.155
Heavy Trucks:	74.786

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.78	-1.20	*-0.69*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.76	-1.20	*-0.82*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.73	-1.20	*-1.20*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.1	60.2	58.4	52.4	61.0	61.6
Medium Trucks:	53.8	52.3	46.0	44.4	52.9	53.1
Heavy Trucks:	54.8	53.3	44.3	45.6	53.9	54.0
Vehicle Noise:	63.4	61.6	58.8	53.7	62.3	62.8

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: First Floor With Wall
Road Name: I-15 Freeway
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	663.0 feet
Centerline Dist. to Observer:	673.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	5.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	667.924
Medium Trucks:	667.907
Heavy Trucks:	667.900

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.99	-1.20	*0.06*	-5.600	-8.600
Medium Trucks:	82.53	-6.62	-16.99	-1.20	*0.05*	-5.500	-8.500
Heavy Trucks:	85.83	-5.76	-16.99	-1.20	*0.05*	-5.500	-8.500

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	60.1	58.2	56.4	50.3	59.0	59.6
Medium Trucks:	52.2	50.7	44.4	42.8	51.3	51.5
Heavy Trucks:	56.4	55.0	45.9	47.2	55.5	55.7
Vehicle Noise:	62.1	60.4	57.0	52.5	61.1	61.5

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Monte Vista Dr.
Lot No: Northwest Home

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	125.0 feet
Centerline Dist. to Observer:	135.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,399.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,399.000		
Medium Trucks:	1,401.297		
Heavy Trucks:	1,407.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	139.646
Medium Trucks:	139.005
Heavy Trucks:	137.567

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-6.79	-1.20	*-1.01*	0.000	0.000
Medium Trucks:	79.85	-16.90	-6.76	-1.20	*-1.10*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-6.70	-1.20	*-1.32*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.1	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.3
Heavy Trucks:	55.1	53.6	44.6	45.9	54.2	54.3
Vehicle Noise:	65.9	64.0	61.6	56.2	64.8	65.3

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.1	63.2	61.4	55.3	64.0	64.6
Medium Trucks:	55.0	53.5	47.1	45.6	54.0	54.3
Heavy Trucks:	55.1	53.6	44.6	45.9	54.2	54.3
Vehicle Noise:	65.9	64.0	61.6	56.2	64.8	65.3

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Monte Vista Dr.
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	20,700 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	2,070 vehicles
Vehicle Speed:	55 mph
Near/Far Lane Distance:	36 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	146.0 feet
Centerline Dist. to Observer:	156.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,396.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,396.000		
Medium Trucks:	1,398.297		
Heavy Trucks:	1,404.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	160.814
Medium Trucks:	160.215
Heavy Trucks:	158.860

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	72.73	0.34	-7.71	-1.20	*-4.15*	0.000	0.000
Medium Trucks:	79.85	-16.90	-7.69	-1.20	*-4.31*	0.000	0.000
Heavy Trucks:	83.81	-20.86	-7.63	-1.20	*-4.73*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.3	60.5	54.4	63.1	63.7
Medium Trucks:	54.1	52.6	46.2	44.6	53.1	53.3
Heavy Trucks:	54.1	52.7	43.7	44.9	53.3	53.4
Vehicle Noise:	64.9	63.1	60.7	55.3	63.9	64.4

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	64.1	62.3	60.5	54.4	63.1	63.7
Medium Trucks:	54.1	52.6	46.2	44.6	53.1	53.3
Heavy Trucks:	54.1	52.7	43.7	44.9	53.3	53.4
Vehicle Noise:	64.9	63.1	60.7	55.3	63.9	64.4

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: I-15 Freeway
Lot No: Southwest Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	585.0 feet
Centerline Dist. to Observer:	595.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	589.419
Medium Trucks:	589.369
Heavy Trucks:	589.283

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.18	-1.20	*-2.61*	0.000	0.000
Medium Trucks:	82.53	-6.62	-16.17	-1.20	*-2.64*	0.000	0.000
Heavy Trucks:	85.83	-5.76	-16.17	-1.20	*-2.72*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	66.5	64.6	62.8	56.7	65.4	66.0
Medium Trucks:	58.5	57.0	50.7	49.1	57.6	57.8
Heavy Trucks:	62.7	61.3	52.2	53.5	61.8	62.0
Vehicle Noise:	68.5	66.7	63.4	58.9	67.4	67.9

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: Summer Sage Way
Lot No: South Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	10,400 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	1,040 vehicles
Vehicle Speed:	40 mph
Near/Far Lane Distance:	12 feet

Site Data

Barrier Height:	**0.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	65.0 feet
Centerline Dist. to Observer:	75.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,430.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,430.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	97.42%
Medium Trucks:	84.8%	4.9%	10.3%	1.84%
Heavy Trucks:	86.5%	2.7%	10.8%	0.74%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	77.136
Medium Trucks:	76.603
Heavy Trucks:	75.564

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	67.36	-1.27	-2.93	-1.20	*-4.92*	0.000	0.000
Medium Trucks:	76.31	-18.51	-2.88	-1.20	*-5.31*	0.000	0.000
Heavy Trucks:	81.16	-22.46	-2.79	-1.20	*-6.33*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.2	60.9	61.5
Medium Trucks:	53.7	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	54.7	53.3	44.2	45.5	53.8	54.0
Vehicle Noise:	63.2	61.4	58.7	53.6	62.2	62.7

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	62.0	60.1	58.3	52.2	60.9	61.5
Medium Trucks:	53.7	52.2	45.9	44.3	52.8	53.0
Heavy Trucks:	54.7	53.3	44.2	45.5	53.8	54.0
Vehicle Noise:	63.2	61.4	58.7	53.6	62.2	62.7

FHWA-RD-77-108 HIGHWAY NOISE PREDICTION MODEL (CALVENO) - 10/1/2012

Scenario: Second Floor With Wall
Road Name: I-15 Freeway
Lot No: West Homes

Project Name: Monte Vista Ranch
Job Number: 13777
Analyst: P. Mara

SITE SPECIFIC INPUT DATA

Highway Data

Average Daily Traffic (Adt):	132,000 vehicles
Peak Hour Percentage:	10%
Peak Hour Volume:	13,200 vehicles
Vehicle Speed:	70 mph
Near/Far Lane Distance:	165 feet

Site Data

Barrier Height:	**6.0 feet**
Barrier Type (0-Wall, 1-Berm):	0.0
Centerline Dist. to Barrier:	663.0 feet
Centerline Dist. to Observer:	673.0 feet
Barrier Distance to Observer:	10.0 feet
Observer Height (Above Pad):	14.0 feet
Pad Elevation:	1,425.0 feet
Road Elevation:	1,425.0 feet
Barrier Elevation:	1,425.0 feet
Road Grade:	0.0%

NOISE MODEL INPUTS

Site Conditions (Hard = 10, Soft = 15)

Autos:	15
Medium Trucks (2 Axles):	15
Heavy Trucks (3+ Axles):	15

Vehicle Mix

VehicleType	*Day*	*Evening*	*Night*	*Daily*
Autos:	77.5%	12.9%	9.6%	91.30%
Medium Trucks:	84.8%	4.9%	10.3%	3.92%
Heavy Trucks:	86.5%	2.7%	10.8%	4.78%

Noise Source Elevations (in feet)

Autos:	1,425.000		
Medium Trucks:	1,427.297		
Heavy Trucks:	1,433.006	*Grade Adjustment:*	0.0

Lane Equivalent Distance (in feet)

Autos:	668.071
Medium Trucks:	668.027
Heavy Trucks:	667.951

FHWA Noise Model Calculations

VehicleType	*REMEL*	*Traffic Flow*	*Distance*	*Finite Road*	*Fresnel*	*Barrier Atten*	*Berm Atten*
Autos:	76.79	7.05	-16.99	-1.20	*-2.63*	0.000	0.000
Medium Trucks:	82.53	-6.62	-16.99	-1.20	*-2.66*	0.000	0.000
Heavy Trucks:	85.83	-5.76	-16.99	-1.20	*-2.72*	0.000	0.000

Unmitigated Noise Levels (without Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

Mitigated Noise Levels (with Topo and barrier attenuation)

VehicleType	*Leq Peak Hour*	*Leq Day*	*Leq Evening*	*Leq Night*	*Ldn*	*CNEL*
Autos:	65.7	63.8	62.0	55.9	64.6	65.2
Medium Trucks:	57.7	56.2	49.9	48.3	56.8	57.0
Heavy Trucks:	61.9	60.5	51.4	52.7	61.0	61.2
Vehicle Noise:	67.6	65.9	62.6	58.1	66.6	67.1

APPENDIX 7.1:

CADNAA CONSTRUCTION NOISE MODEL CALCULATIONS

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13777 - Monte Vista

CadnaA Noise Prediction Model: 13777_Construction.cna
Date: 27.05.21
Analyst: B. Lawson

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.01
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	999.99
Min. Length of Section (#(Unit,LEN))	1.01
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	960.00
Reference Time Night (min)	480.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	5.00
Night-time Penalty (dB)	10.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Incl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.50
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver Noise Levels

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Night	CNEL	Day	Night	CNEL	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(ft)		(ft)	(ft)	(ft)
RECEIVERS		R1	67.8	67.8	74.5	80.0	0.0	0.0				5.00	a	6252855.30	2171914.19	5.00
RECEIVERS		R2	65.8	65.8	72.4	80.0	0.0	0.0				5.00	a	6252947.95	2171247.09	5.00
RECEIVERS		R3	63.2	63.2	69.9	80.0	0.0	0.0				5.00	a	6251802.90	2171799.44	5.00

Area Source(s)

Name	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Operating Time			Height
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Special	Night	(ft)
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	(min)	(min)	(min)	
SITEBOUNDARY		CONSTRUCTION	122.1	122.1	122.1	79.0	79.0	79.0	Lw"	79					8

Name	Height			Coordinates			
	Begin		End	x	y	z	Ground
	(ft)		(ft)	(ft)	(ft)	(ft)	(ft)
SITEBOUNDARY	8.00	a		6252759.03	2171871.97	8.00	0.00
				6252670.05	2171767.81	8.00	0.00
				6252723.00	2171329.44	8.00	0.00
				6252668.32	2171325.53	8.00	0.00
				6252620.14	2171331.61	8.00	0.00
				6252605.82	2171330.31	8.00	0.00
				6252427.43	2171318.15	8.00	0.00
				6252352.34	2171312.08	8.00	0.00

Name	Height		Coordinates			
	Begin	End	x	y	z	Ground
	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)
			6252333.68	2171316.42	8.00	0.00
			6252317.62	2171324.23	8.00	0.00
			6252310.24	2171334.21	8.00	0.00
			6252305.04	2171343.76	8.00	0.00
			6252301.56	2171353.31	8.00	0.00
			6252287.67	2171470.06	8.00	0.00
			6252264.67	2171679.26	8.00	0.00
			6252265.11	2171696.63	8.00	0.00
			6252270.31	2171715.72	8.00	0.00
			6252290.71	2171748.28	8.00	0.00
			6252325.87	2171791.24	8.00	0.00
			6252336.72	2171799.49	8.00	0.00
			6252345.40	2171805.57	8.00	0.00
			6252361.89	2171812.95	8.00	0.00
			6252382.73	2171820.32	8.00	0.00
			6252424.39	2171834.21	8.00	0.00
			6252449.57	2171845.50	8.00	0.00
			6252482.99	2171866.76	8.00	0.00
			6252494.71	2171875.88	8.00	0.00

Appendix 13

Monte Vista Ranch Traffic Analysis

Monte Vista Ranch (Tract No. 32024, Lot 71)

TRAFFIC ANALYSIS

CITY OF WILDOMAR

PREPARED BY:

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MAY 17, 2021

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LIST OF ABBREVIATED TERMS

(1)	Reference
ADT	Average Daily Traffic
CA MUTCD	California Manual on Uniform Traffic Control Devices
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DIF	Development Impact Fee
HCM	Highway Capacity Manual
HDM	Highway Design Manual
ITE	Institute of Transportation Engineers
LOS	Level of Service
NCHRP	National Cooperative Highway Research Program
OPR	Office of Planning and Research
PHF	Peak Hour Factor
Project	Monte Vista Ranch
RBBD	Road and Bridge Benefit District
RCTC	Riverside County Transportation Commission
RivTAM	Riverside Transportation Analysis Model
RTA	Riverside Transit Agency
RTP	Regional Transportation Plan
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategies
TA	Traffic Analysis
TUMF	Transportation Uniform Mitigation Fee
WRCOG	Western Riverside Council of Governments
V/C	Volume to Capacity
VMT	Vehicle Miles Traveled

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1 INTRODUCTION

This report presents the results of the traffic analysis (TA) for the proposed Monte Vista Ranch (Tract No. 32024, Lot 71) development ("Project"), which is located on the northeast corner of Monte Vista Drive and Summer Sage Drive in the City of Wildomar. Exhibit 1-1 shows the Project's location relative to the surrounding area.

The purpose of this TA is to evaluate the potential deficiencies related to traffic, identify circulation system deficiencies that may result from the development of the proposed Project, and to recommend improvements to resolve identified deficiencies in order to achieve acceptable operational conditions at study area intersections and ensure consistency with the City's General Plan. This TA has been prepared in accordance with the County of Riverside's Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled (December 2020) and through consultation with City of Wildomar staff during the scoping process. (1) The Project traffic study scoping agreement is provided in Appendix 1.1 of this TA, which has been approved by the City of Wildomar.

1.1 SUMMARY OF FINDINGS

The Project is to construct the following improvements as design features in conjunction with development of the site:

- Project to install a stop control on the southbound approach of Driveway 1 at Summer Sage Drive and accommodate a southbound shared left-right turn lane.

Additional details and intersection lane geometrics are provided in Section 1.6 *Recommendations* of this report. The Project Applicant would be required to pay requisite fees and/or fair share contributions consistent with the City's requirements (see Section 7 *Local and Regional Funding Mechanisms*).

1.2 PROJECT OVERVIEW

The current site plan reflects 64 multifamily housing (low-rise) residential dwelling units, however, the Project has been evaluated assuming 65 multifamily housing (low-rise) residential dwelling units for the purposes of this analysis (per a previous plan). The Project is proposed to be developed in a single phase with an anticipated Opening Year of 2023. The preliminary site use plan for the proposed Project is shown on Exhibit 1-2. As indicated on Exhibit 1-1, vehicular access will be provided via a full access driveway (Driveway 1) on Summer Sage Drive. Regional access to the Project site is available from the I-15 Freeway via Bundy Canyon Road or Baxter Road interchanges.

EXHIBIT 1-1: LOCATION MAP



Trips generated by the Project's proposed land uses have been estimated based on trip generation rates collected by the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition, 2017 for Multifamily Housing (Low-Rise) (ITE Land Use Code 220). (2) The proposed Project is anticipated to generate a total of 476 two-way trips per day with 30 AM peak hour trips and 36 PM peak hour trips. The assumptions and methods used to estimate the Project's trip generation characteristics are discussed in greater detail in Section 4.1 *Project Trip Generation* of this report.

1.3 ANALYSIS SCENARIOS

For the purposes of this traffic study, potential deficiencies to traffic and circulation have been assessed for each of the following conditions:

- Existing (2021)
- Opening Year Cumulative (2023) Without Project
- Opening Year Cumulative (2023) With Project
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project

1.3.1 EXISTING (2021) CONDITIONS

Information for Existing (2021) conditions is disclosed to represent the baseline traffic conditions as they existed at the time this report was prepared. Due to the currently ongoing COVID-19 pandemic, traffic counts had to be adjusted to establish a pre-COVID baseline. Since there is no historic (pre-COVID) count data available for the intersection of Monte Vista Drive and Summer Sage Drive. We have obtained a historic traffic count (2019) for the intersection of Monte Vista Drive and Bundy Canyon Road and collected new traffic counts at both the intersection of Monte Vista Drive at Bundy Canyon Road and Summer Sage Drive. Based on the count comparison of the current 2021 and the adjusted 2019 data at Monte Vista Drive and Bundy Canyon Road, an adjustment factor was developed and applied to the 2021 Monte Vista Drive at Summer Sage Drive traffic counts in order to establish a pre-COVID 2021 baseline for the purposes of the analysis. The through volumes for the Project driveway have been derived from the final adjusted volumes at Monte Vista Drive and Summer Sage Drive.

1.3.2 OPENING YEAR CUMULATIVE (2023) CONDITIONS

The Opening Year Cumulative (2023) conditions analysis determines the potential near-term cumulative circulation system deficiencies. To account for background traffic growth, traffic associated with other known cumulative development projects in conjunction with an ambient growth from Existing (2021) conditions of 4.04% is included for Opening Year Cumulative (2023) traffic conditions. The list of cumulative development projects was compiled from information provided by the City of Wildomar and is consistent with other recent studies in the study area.

EXHIBIT 1-2: PRELIMINARY SITE PLAN



1.3.3 HORIZON YEAR (2040) CONDITIONS

Traffic projections for Horizon Year Without Project conditions were derived from the Riverside Transportation Analysis Model (RivTAM). The Horizon Year conditions analysis will be utilized to determine if improvements funded through regional transportation mitigation fee programs, such as the Western Riverside Council of Governments (WRCOG) Transportation Uniform Mitigation Fee (TUMF), City of Wildomar Development Impact Fee (DIF) programs, or other approved funding mechanism such as the Road and Bridge Benefit District (RBBD) can accommodate the long-range cumulative traffic at the target Level of Service (LOS) identified in the City of Wildomar (lead agency) General Plan. (3) Other improvements needed beyond the "funded" improvements (such as localized improvements to non-TUMF, non-DIF, or non-RBBD facilities) are identified as such. Each of these regional transportation fee programs are discussed in more detail in Section 7 *Local and Regional Funding Mechanisms*.

1.4 STUDY AREA

To ensure that this TA satisfies the City of Wildomar's traffic study requirements, Urban Crossroads, Inc. prepared a Project traffic study scoping package for review by City of Wildomar staff prior to the preparation of this report. This agreement provides an outline of the Project study area, trip generation, trip distribution, and analysis methodology. The agreement approved by the City of Wildomar is included in Appendix 1.1 of this TA.

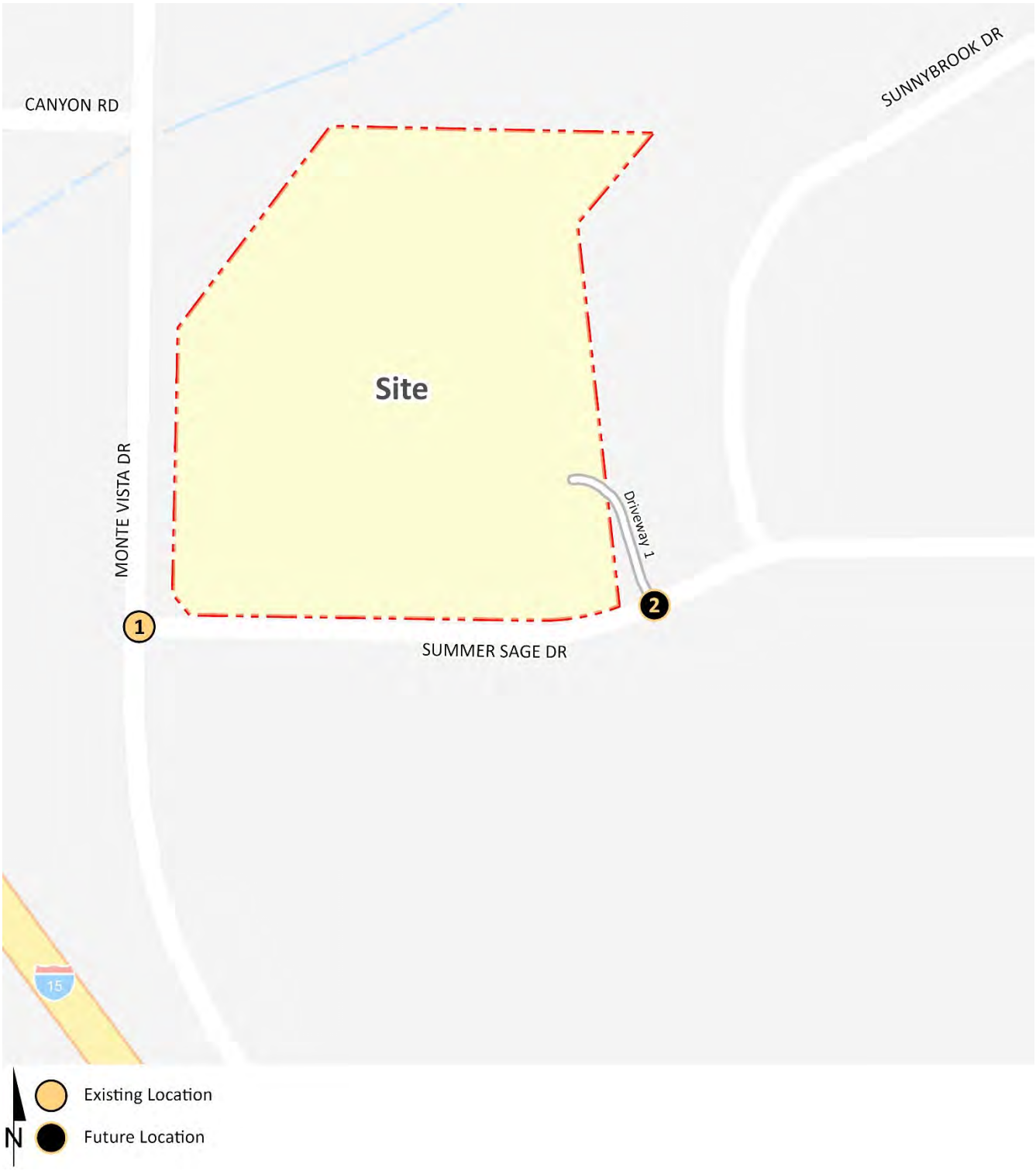
The 2 study area intersections shown on Exhibit 1-3 and listed in Table 1-1 were selected for evaluation in this TA based on consultation with City of Wildomar staff. The Project contributes fewer than 50 peak hour trips to all study area intersections. The "50 peak hour trip" criteria represents a minimum number of trips at which a typical intersection would have the potential to be substantively affected by a given development proposal. The 50 peak hour trip criterion is a traffic engineering rule of thumb that is accepted and widely used within Riverside County for estimating a potential area of influence (i.e., study area).

TABLE 1-1: INTERSECTION ANALYSIS LOCATIONS

ID	Intersection Location	Jurisdiction	CMP?
1	Monte Vista Dr. & Summer Sage Dr.	City of Wildomar	No
2	Driveway 1 & Summer Sage Dr. – Future Intersection	City of Wildomar	No

The intent of a Congestion Management Program (CMP) is to more directly link land use, transportation, and air quality, thereby prompting reasonable growth management programs that will effectively utilize new transportation funds, alleviate traffic congestion and related deficiencies, and improve air quality. The County of Riverside CMP became effective with the passage of Proposition 111 in 1990 and updated most recently updated in 2011. The Riverside County Transportation Commission (RCTC) adopted the 2011 CMP for the County of Riverside in December 2011. (4) There are no study area intersections identified as a Riverside County CMP intersection.

EXHIBIT 1-3: LOCATION MAP



1.5 DEFICIENCIES

This section provides a summary of deficiencies by analysis scenario. Section 2 *Methodologies* provides information on the methodologies used in the analysis and Section 5 *Opening Year Cumulative (2023) Traffic Analysis* and Section 6 *Horizon Year (2040) Traffic Analysis* includes the detailed analysis. A summary of LOS results for all analysis scenarios is presented on Table 1-2.

TABLE 1-2: SUMMARY OF LOS

#	Intersection	Existing		2023 Without Project		2023 With Project		2040 Without Project		2040 With Project	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
1	Monte Vista Dr. & Summer Sage Dr.	●	●	●	●	●	●	●	●	●	●
2	Driveway 1 & Summer Sage Dr.	N/A	N/A	N/A	N/A	●	●	N/A	N/A	●	●

● = A - D ● = E ● = F

As shown on Table 1-2, there are no LOS deficiencies anticipated for any of the study area intersections under Existing traffic conditions or any future analysis scenarios.

1.6 RECOMMENDATIONS

1.6.1 SITE ADJACENT AND SITE ACCESS RECOMMENDATIONS

The following recommendations are based on the minimum improvements needed to accommodate site access and maintain acceptable peak hour operations. The site adjacent recommendations are shown on Exhibits 1-4 and are anticipated to be completed with the development of Phase 1. There is no additional site adjacent or site access recommendations for Project Buildout.

Recommendation 1 – Driveway 1 & Summer Sage Drive – The following improvements are necessary to accommodate site access:

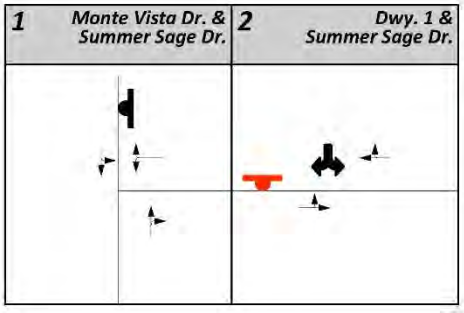
- Project to install a stop control on the southbound approach and construct a shared left-right turn lane.
- Maintain the existing eastbound and westbound through lanes.

No intersection control or lane geometric changes are recommended at the intersection of Monte Vista Drive and Summer Sage Drive from existing conditions.

Summer Sage Drive is currently built to its ultimate cross-section along the Project's frontage. As such, no additional improvements are recommended.

EXHIBIT 1-4: SITE ADJACENT ROADWAY AND SITE ACCESS RECOMMENDATIONS





= Stop Sign
= Stop Sign Improvement
= Existing Lane
= Lane Improvement

On-site traffic signing and striping should be implemented agreeable with the provisions of the California Manual on Uniform Traffic Control Devices (CA MUTCD) and in conjunction with detailed construction plans for the Project site.

Sight distance at each project access point should be reviewed with respect to standard California Department of Transportation (Caltrans) and City of Wildomar sight distance standards at the time of preparation of final grading, landscape, and street improvement plans.

1.6.2 QUEUING ANALYSIS

A queuing analysis was conducted along the site adjacent roadways of Monte Vista Drive and Summer Sage Drive for Horizon Year (2040) traffic conditions to determine adequate spacing and storage necessary to accommodate long-term 95th percentile peak hour queues. The analysis was conducted for the weekday AM and weekday PM peak hours using the Synchro/SimTraffic modeling software. The Horizon Year (2040) queuing results are provided in Appendix 1.2.

1.7 SIGHT DISTANCE

At the request of City staff, sight distance has been evaluated for the intersection of Monte Vista Drive and Summer Sage Drive based on Riverside County Standard No. 821. As defined by the Caltrans Highway Design Manual (HDM), sight distance is the continuous length of highway ahead visible to the driver.

At unsignalized intersections, stopping sight distance must provide a substantially clear line of sight between the driver of the vehicle waiting on the minor road (Summer Sage Drive) and the driver of an approaching vehicle on the major road (Monte Vista Drive). For the purposes of this analysis, a 7 ½ second criterion has been applied to the outside travel lanes in either direction to provide the most conservative sight distance. The 7 ½ second criterion allows waiting vehicles to either cross all lanes of through traffic by turning left or cross the near lanes by turning right without requiring through traffic to radically alter their speed. The sight distance is based on the posted speed limit.

Adequate visibility for vehicular and pedestrian traffic can be provided at each Project driveway by limiting sight obstructions within the limited use area. The limited use area is determined by starting with a point located 15-feet back from the edge of the traveled way which represents the position of the driver in a vehicle waiting to exit the driveway (minor approach) then a line is drawn to the center of the farthest lane (representing the location of an approaching vehicle) at the required distance per Riverside County Standard No. 821 along the major roadway in both directions of travel. It should be noted, Monte Vista Drive is classified as a Secondary in the City of Wildomar General Plan, with a 100-foot right-of-way.

The sight distance for Monte Vista Drive and Summer Sage Drive is shown on Exhibit 1-5 with the limited use areas defined. The limited use area is located within private property east of Monte Vista Drive. It is recommended that any landscaping/hardscape within the limited use area not exceed 3.0-feet in height. The limited use area shall be kept clear of any landscaping or any other obstructions that may impede the visibility of the driver, including on-street parking. Advance intersection and street name signing should be provided for the northbound direction of travel.

EXHIBIT 1-5: SIGHT DISTANCE



1.8 VEHICLE MILES TRAVELED (VMT)

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt Vehicle Miles Traveled (VMT) as a replacement for automobile delay-based LOS as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018). (5) Based on OPR's Technical Advisory, the WRCOG prepared a WRCOG SB 743 Implementation Pathway Document Package (March 2019) to assist its member agencies with implementation tools necessary to adopt analysis methodology, impact thresholds and mitigation approaches for VMT. To add to the previous work effort, WRCOG in February 2020 released its Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment, which provides specific procedures for complying with the new CEQA requirements for VMT analysis. (6) Utilizing the Technical Advisory and WRCOG Guidelines, the City of Wildomar recently adopted VMT CEQA Threshold Policy Guidelines. (7) The adopted City Guidelines have been utilized to prepare this VMT analysis. The City Guidelines state that the City's adopted VMT impact threshold is 3.0 percent below existing VMT as calculated by WRCOG.

A VMT analysis has been prepared for the proposed Project under a separate cover. A copy of the VMT analysis is provided in Appendix 1.3. The proposed Project did not meet any of the City's applicable VMT screening thresholds. A project level VMT analysis was prepared based on City Guidelines. The Project was found to generate VMT at a level 27.4% below the City's adopted VMT impact threshold of 3.0% below existing VMT as calculated by WRCOG, resulting in a finding of less than significant. The Project's potential impact to cumulative conditions is also considered less than significant.

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2 METHODOLOGIES

This section of the report presents the methodologies used to perform the traffic analyses summarized in this report. Since the City of Wildomar does not have their own traffic study guidelines, the methodologies described are consistent with the County of Riverside traffic study guidelines. (1)

2.1 LEVEL OF SERVICE

Traffic operations of roadway facilities are described using the term "Level of Service" (LOS). LOS is a qualitative description of traffic flow based on several factors such as speed, travel time, delay, and freedom to maneuver. Six levels are typically defined ranging from LOS A, representing completely free-flow conditions, to LOS F, representing breakdown in flow resulting in stop-and-go conditions. LOS E represents operations at or near capacity, an unstable level where vehicles are operating with the minimum spacing for maintaining uniform flow.

2.2 INTERSECTION CAPACITY ANALYSIS

The definitions of LOS for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control. The LOS is typically dependent on the quality of traffic flow at the intersections along a roadway. The Highway Capacity Manual (HCM) methodology expresses the LOS at an intersection in terms of delay time for the various intersection approaches. (8) The HCM uses different procedures depending on the type of intersection control.

2.2.1 SIGNALIZED INTERSECTIONS

The City of Wildomar requires signalized intersection operations analysis based on the methodology described in the HCM (6th Edition). Intersection LOS operations are based on an intersection's average control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. For signalized intersections, LOS is directly related to the average control delay per vehicle and is correlated to a LOS designation as described in Table 2-1. Study area intersections have been evaluated using the Synchro (Version 10) analysis software package.

The traffic modeling and signal timing optimization software package Synchro (Version 10) is utilized to analyze signalized intersections within the study area. Synchro is a macroscopic traffic software program that is based on the signalized intersection capacity analysis as specified in the HCM. Macroscopic level models represent traffic in terms of aggregate measures for each movement at the study intersections. Equations are used to determine measures of effectiveness such as delay and queue length. The level of service and capacity analysis performed by Synchro takes into consideration optimization and coordination of signalized intersections within a network.

TABLE 2-1: SIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay (Seconds), V/C ≤ 1.0	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Operations with very low delay occurring with favorable progression and/or short cycle length.	0 to 10.00	A	F
Operations with low delay occurring with good progression and/or short cycle lengths.	10.01 to 20.00	B	F
Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.01 to 35.00	C	F
Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.01 to 55.00	D	F
Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	55.01 to 80.00	E	F
Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths	80.01 and up	F	F

Source: HCM, 6th Edition

A saturation flow rate of 1900 has been utilized for all study area intersections located within the City. The peak hour traffic volumes are adjusted using a peak hour factor (PHF) to reflect peak 15-minute volumes. Common practice for LOS analysis is to use a peak 15-minute rate of flow. However, flow rates are typically expressed in vehicles per hour. The PHF is the relationship between the peak 15-minute flow rate and the full hourly volume (e.g. PHF = [Hourly Volume] / [4 x Peak 15-minute Flow Rate]). The use of a 15-minute PHF produces a more detailed analysis as compared to analyzing vehicles per hour. Existing PHFs have been used for all analysis scenarios. Per the HCM, PHF values over 0.95 often are indicative of high traffic volumes with capacity constraints on peak hour flows while lower PHF values are indicative of greater variability of flow during the peak hour. (8)

2.2.2 UNSIGNALIZED INTERSECTIONS

The City of Wildomar requires the operations of unsignalized intersections be evaluated using the methodology described the HCM. (8) The LOS rating is based on the weighted average control delay expressed in seconds per vehicle (see Table 2-2).

TABLE 2-2: UNSIGNALIZED INTERSECTION LOS THRESHOLDS

Description	Average Control Delay Per Vehicle (Seconds)	Level of Service, V/C ≤ 1.0	Level of Service, V/C > 1.0
Little or no delays.	0 to 10.00	A	F
Short traffic delays.	10.01 to 15.00	B	F
Average traffic delays.	15.01 to 25.00	C	F
Long traffic delays.	25.01 to 35.00	D	F
Very long traffic delays.	35.01 to 50.00	E	F
Extreme traffic delays with intersection capacity exceeded.	> 50.00	F	F

Source: HCM, 6th Edition

At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement and for the left turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. Per the HCM, the highest delay and associated LOS on the minor approach is reported for two-way stop-controlled intersections. For all-way stop controlled intersections, LOS is computed for the intersection as a whole and the average delay is reported (similar to signalized intersections).

2.3 TRAFFIC SIGNAL WARRANT ANALYSIS METHODOLOGY

The term "signal warrants" refers to the list of established criteria used by the Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TA uses the signal warrant criteria presented in the latest edition of the Caltrans California Manual on Uniform Traffic Control Devices *(CA MUTCD)*. (9)

The signal warrant criteria for Existing conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. The Caltrans CA MUTCD indicates that the installation of a traffic signal should be considered if one or more of the signal warrants are met. (9) Specifically, this TA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for existing study area intersections for all analysis scenarios. Warrant 3 is appropriate to use for this TA because it provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating above 40 miles per hour). For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

Traffic signal warrant analyses were performed for all unsignalized study area intersections. The Existing conditions traffic signal warrant analysis is presented in the subsequent section, Section 3 *Area Conditions* of this report. The traffic signal warrant analyses for future conditions are presented in Section 5 *Opening Year Cumulative (2023) Traffic Analysis* and Section 6 *Horizon Year (2040) Traffic Analysis* of this report.

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with LOS. An intersection may satisfy a signal warrant condition and operate at or above acceptable LOS or operate below acceptable LOS and not meet a signal warrant.

2.4 MINIMUM LEVEL OF SERVICE (LOS)

The City of Wildomar defines intersection performance deficiency standards consistent with those of the County of Riverside General Plan Circulation Element. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target level of service (LOS): (10)

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

Since the City of Wildomar utilizes the County of Riverside LOS criteria, the applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within the Elsinore Area Plan.

2.5 DEFICIENCY CRITERIA

This section outlines the methodology used in this analysis related to identifying circulation system deficiencies. The LOS-based traffic study will be utilized for conditions of approval and to demonstrate consistency with the General Plan goals/policies. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following thresholds will be utilized:

- A project-related deficiency occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable "pre-project" operation (LOS A, B, C, or D) to deficient operation (LOS E or F);
- A project-related deficiency occurs at a study intersection if the addition of project-generated trips changes the pre-project delay by the value shown below (Table 2-3).

TABLE 2-3: CITY OF WILDOMAR INTERSECTION LEVEL OF SERVICE STANDARDS

Pre-Project Los	Project-Related Delay Increase	Required Improvement
E or F	More than 5.0 seconds	Reduce delay increase to within 5.0 seconds

The City of Wildomar significance thresholds will be applied at study area intersections for the purposes of determining project-related deficiencies. A fair share analysis will also be conducted for applicable study area intersections.

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3 AREA CONDITIONS

This section provides a summary of the existing circulation network, the City of Wildomar General Plan Circulation Network, and a review of existing peak hour intersection operations and traffic signal warrant analyses.

3.1 EXISTING CIRCULATION NETWORK

Pursuant to the scoping agreement with City of Wildomar staff (Appendix 1.1), the study area includes a total of 2 existing and future intersections as shown previously on Exhibit 1-3. Exhibit 3-1 illustrates the study area intersections located near the proposed Project and identifies the number of through traffic lanes for existing roadways and intersection traffic controls.

3.2 GENERAL PLAN CIRCULATION ELEMENTS

As noted previously, the Project site is located within the City of Wildomar. The roadway classifications and planned (ultimate) roadway cross-sections of the major roadways within the study area, as identified on City of Wildomar General Plan Circulation Element, are described subsequently. Exhibit 3-2 shows the City of Wildomar General Plan Circulation Element and Exhibit 3-3 illustrates the City of Wildomar General Plan roadway cross-sections.

Secondary Streets are four-lane roadways and may include a painted median. These roadways typically have a 100-foot right-of-way and a 64-foot curb-to-curb measurement. These roadways typically direct traffic through major development areas and a lesser capacity than Major Roadways. The following study area roadway within the City of Wildomar is classified as a Secondary Street:

- Monte Vista Drive

3.3 BICYCLE & PEDESTRIAN FACILITIES

The City of Wildomar community and regional multi-use trails are shown on Exhibit 3-4. There is a proposed historic and patron trail to the north of the Project site (Dejong Family Trail) and the proposed Monte Vista roadside multi-use trail. Exhibit 3-5 illustrates the existing pedestrian facilities, including sidewalks and crosswalks. As shown on Exhibit 3-5, there are limited pedestrian facilities in the vicinity of the Project site.

EXHIBIT 3-1: EXISTING NUMBER OF THROUGH LANES AND INTERSECTION CONTROLS



1 Monte Vista Dr. & Summer Sage Dr.	2 Dwy. 1 & Summer Sage Dr.
2U, 2U, 2U	Future Intersection

= Stop Sign
4 = Number of Lanes
U = Undivided
SPEED LIMIT 25 = Speed Limit (MPH)

EXHIBIT 3-2: CITY OF WILDOMAR GENERAL PLAN CIRCULATION ELEMENT

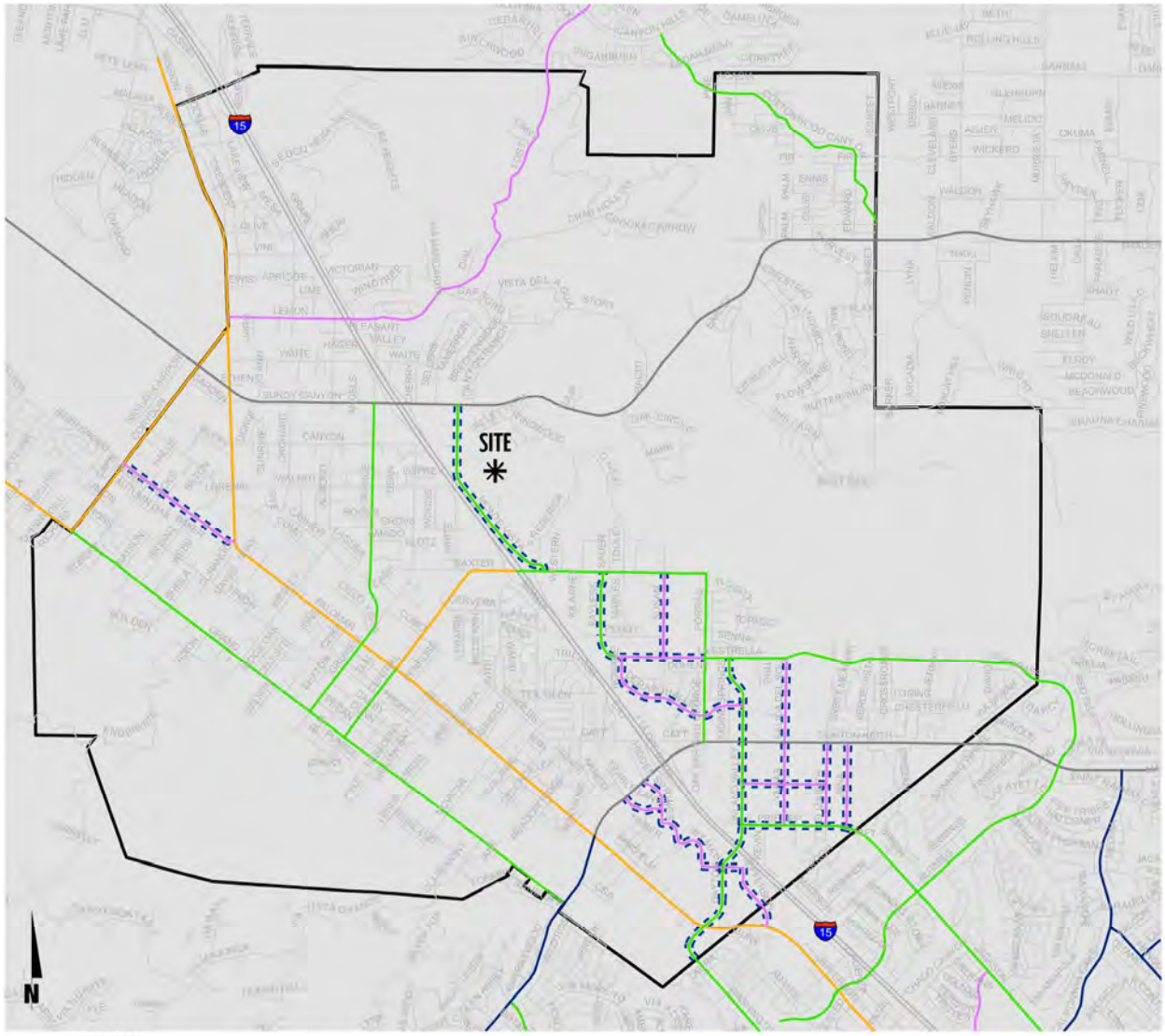
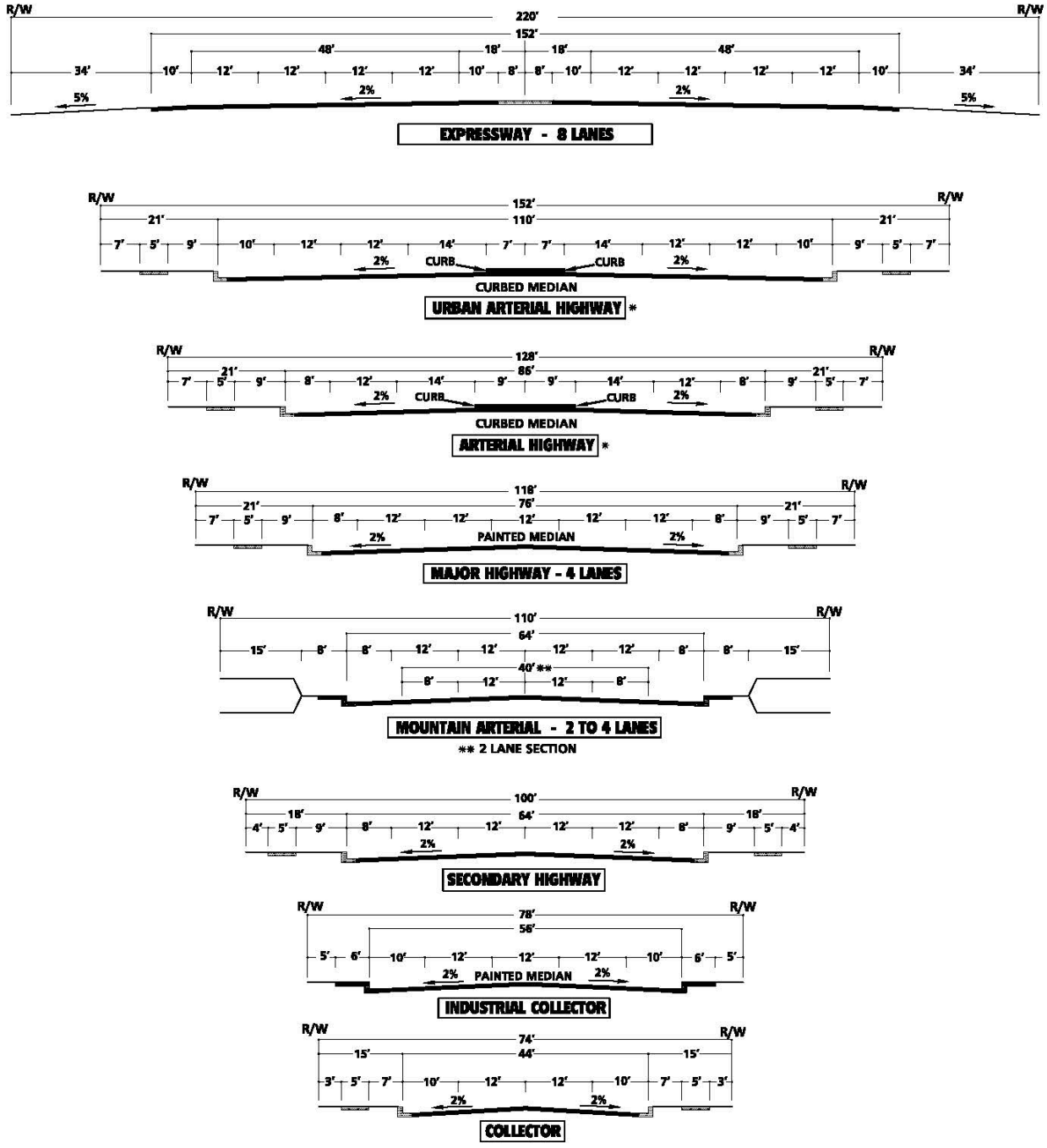


EXHIBIT 3-3: CITY OF WILDOMAR ROADWAY CROSS-SECTIONS



* IMPROVEMENTS MAY BE RECONFIGURED TO ACCOMMODATE EXCLUSIVE TRANSIT LANES OR ALTERNATIVE LANE ARRANGEMENTS ADDITIONAL RIGHT OF WAY MAY BE REQUIRED AT INTERSECTIONS TO ACCOMMODATE ULTIMATE IMPROVEMENTS FOR STATE HIGHWAYS SHALL CONFORM TO CALTRANS DESIGN STANDARDS.

NOTE: THE CITY OF WILDOMAR HAS ADOPTED THE COUNTY OF RIVERSIDE'S GENERAL PLAN AND STANDARDS

EXHIBIT 3-4: CITY OF WILDOMAR COMMUNITY/REGIONAL ROADSIDE, OFF-ROAD MULTI-USE TRAILS

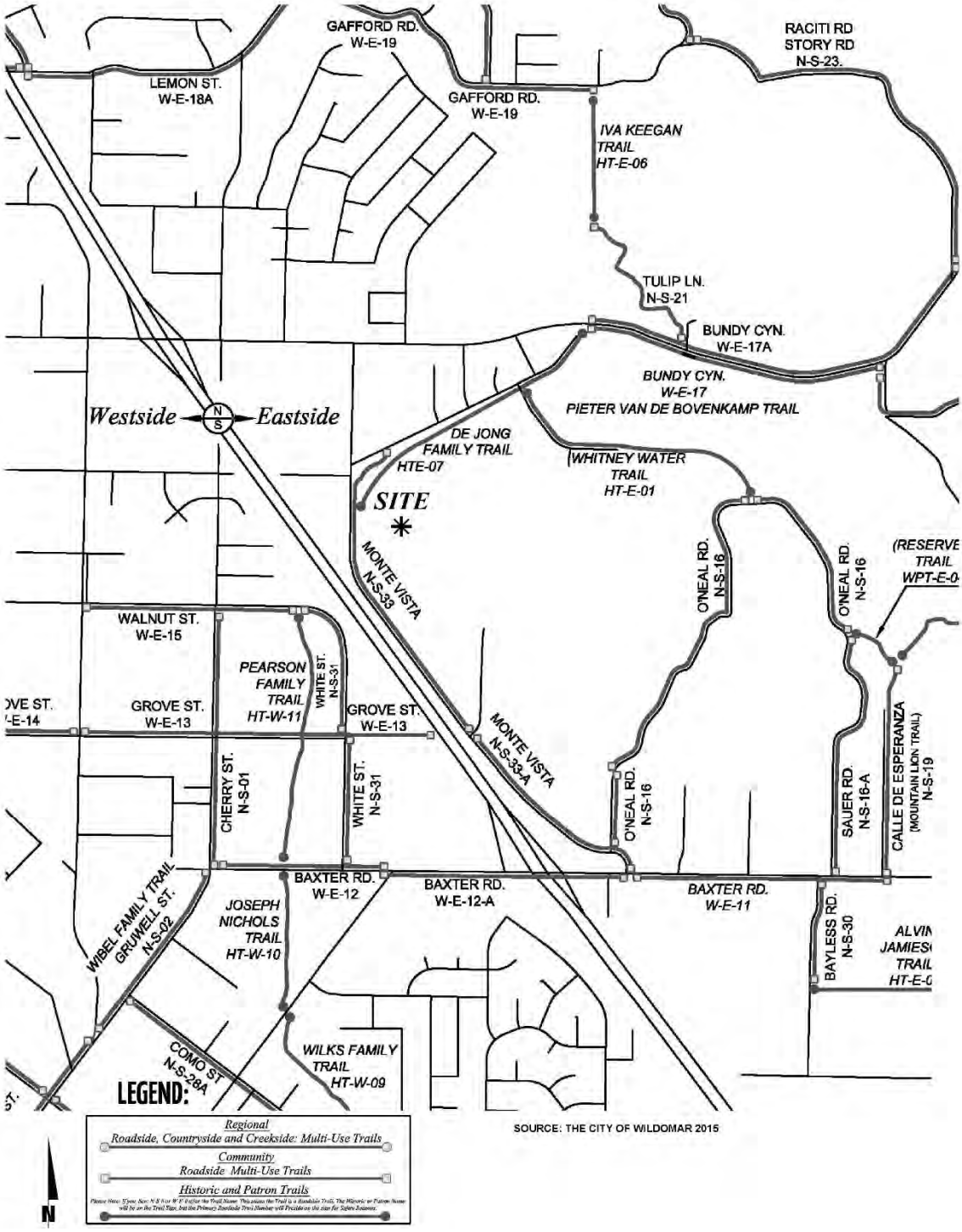


EXHIBIT 3-5: EXISTING PEDESTRIAN FACILITIES



3.4 TRANSIT SERVICE

The study area is currently served by Riverside Transit Agency (RTA) with existing bus services along the I-15 Freeway and on City streets to the west of the I-15 Freeway. RTA Route 205/206 runs along the I-15 Freeway, but does not provide bus service/stops within the study area. The transit services are illustrated on Exhibit 3-6. There are no existing transit routes that could potentially serve the Project. Transit service is reviewed and updated by RTA periodically to address ridership, budget, and community demand needs. Changes in land use can affect these periodic adjustments which may lead to either enhanced or reduced service where appropriate.

3.5 EXISTING TRAFFIC COUNTS

The intersection LOS analysis is based on the traffic volumes observed during the peak hour conditions using traffic count data collected in September 2019 and January 2021. The following peak hours were selected for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 6:00 PM)

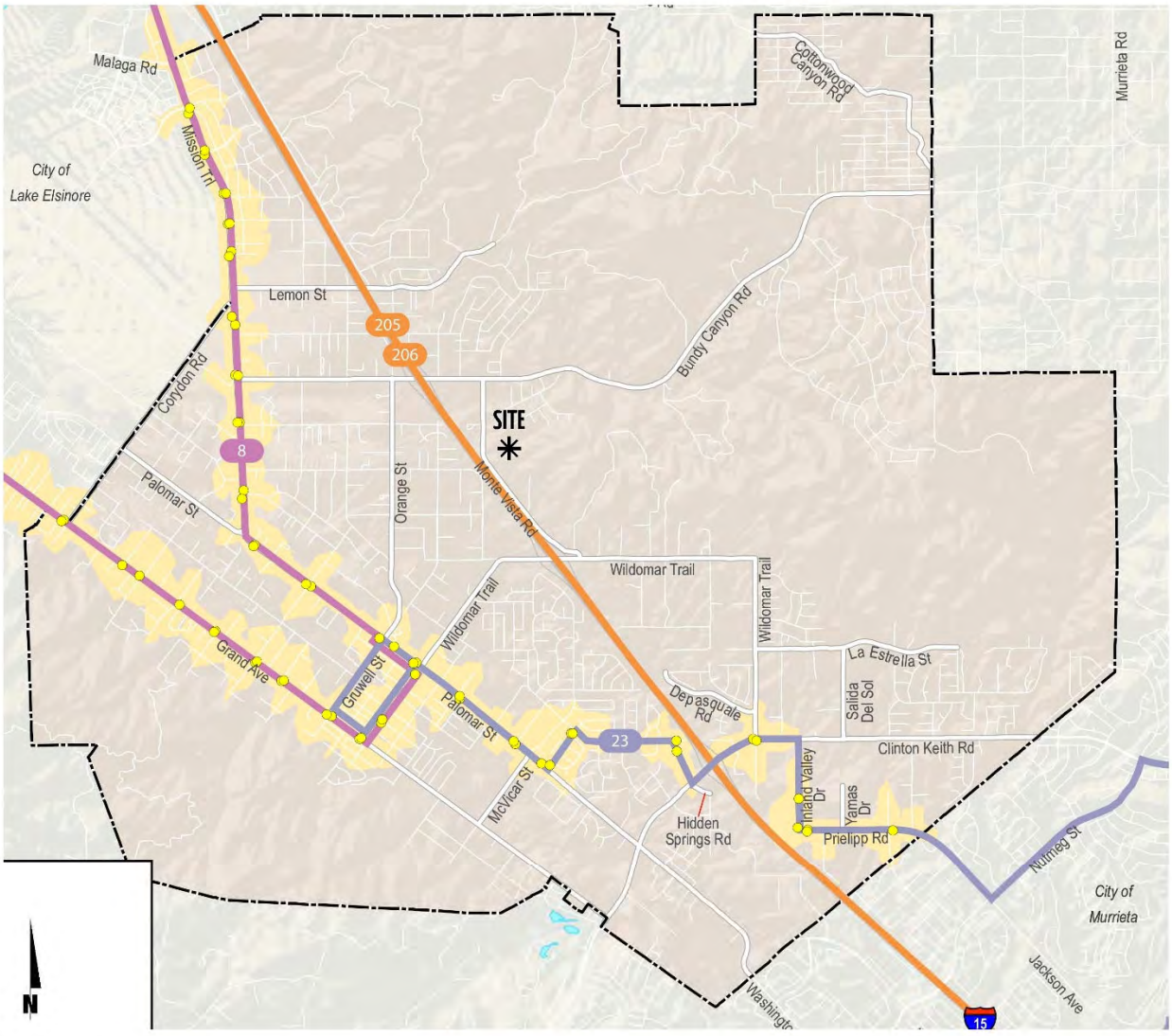
Due to the currently ongoing COVID-19 pandemic, schools and businesses within the study area were closed or operating at less than full capacity at the time this study was prepared. As such, historic traffic counts from September 2019 were utilized in conjunction with a 2% per year growth rate (for a total of 4.04%) to develop traffic volumes for 2021 conditions at the intersection of Monte Vista Drive and Bundy Canyon Road. The historic weekday AM and weekday PM peak hour count data is representative of typical weekday peak hour traffic conditions in the study area. There were no observations made in the field that would indicate atypical traffic conditions on the count dates, such as construction activity or detour routes and near-by schools were in session and operating on normal schedules. The raw manual peak hour turning movement traffic count data sheets are included in Appendix 3.1.

The adjusted historic traffic count at the intersection of Monte Vista Drive and Bundy Canyon Road was compared to a recent traffic count collected in January 2021. Based on the count comparison of the current 2021 and the adjusted 2019 data at Monte Vista Drive and Bundy Canyon Road, an adjustment factor was developed and applied to the 2021 Monte Vista Drive at Summer Sage Drive traffic counts in order to establish a pre-COVID 2021 baseline for the purposes of the analysis. The through volumes for the Project driveway have been derived from the final adjusted volumes at Monte Vista Drive and Summer Sage Drive. We also reviewed historic daily traffic along Monte Vista Drive (as provided by City staff), however, these comparisons showed reductions in traffic and therefore were not used.

Existing weekday ADT volumes on arterial highways throughout the study area are shown on Exhibit 3-7. Existing ADT volumes were based upon factored intersection peak hour counts collected by Urban Crossroads, Inc. using the following formula for each intersection leg consistent with other studies prepared in the vicinity:

Weekday PM Peak Hour (Approach Volume + Exit Volume) x 12.61 = Leg Volume

EXHIBIT 3-6: EXISTING TRANSIT ROUTES



NOTE: CITY OF WILDOMAR DRAFT GENERAL PLAN UPDATE JUNE 2020

LEGEND:

- Bus Stops
- Bus Route
- Alternate Bus Route
- 1/4 Mile Walkshed from Bus Stop

A comparison of the PM peak hour and daily traffic volumes of various roadway segments within the study area indicated that the peak-to-daily relationship is approximately 7.93 percent. As such, the above equation utilizing a factor of 12.61 estimates the ADT volumes on the study area roadway segments assuming a peak-to-daily relationship of approximately 7.93 percent (i.e., 1/0.0793 = 12.61) and was assumed to sufficiently estimate ADT volumes for planning-level analyses. Existing weekday AM and weekday PM peak hour intersection volumes are also shown on Exhibit 3-7.

3.6 EXISTING (2021) INTERSECTION OPERATIONS ANALYSIS

Existing peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection operations analysis results are summarized in Table 3-1 which indicates that the study area intersections are currently operating at an acceptable LOS (i.e., LOS D or better) during the peak hours. The intersection operations analysis worksheets are included in Appendix 3.2 of this TA.

TABLE 3-1: INTERSECTION ANALYSIS FOR EXISTING (2021) CONDITIONS

#	Intersection	Traffic Control[2]	Delay[1] (Secs.)		Level of Service	
			AM	PM	AM	PM
1	Monte Vista Dr. & Summer Sage Dr.	CSS	9.6	9.1	A	A
2	Driveway 1 & Summer Sage Dr.		Future Intersection			

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

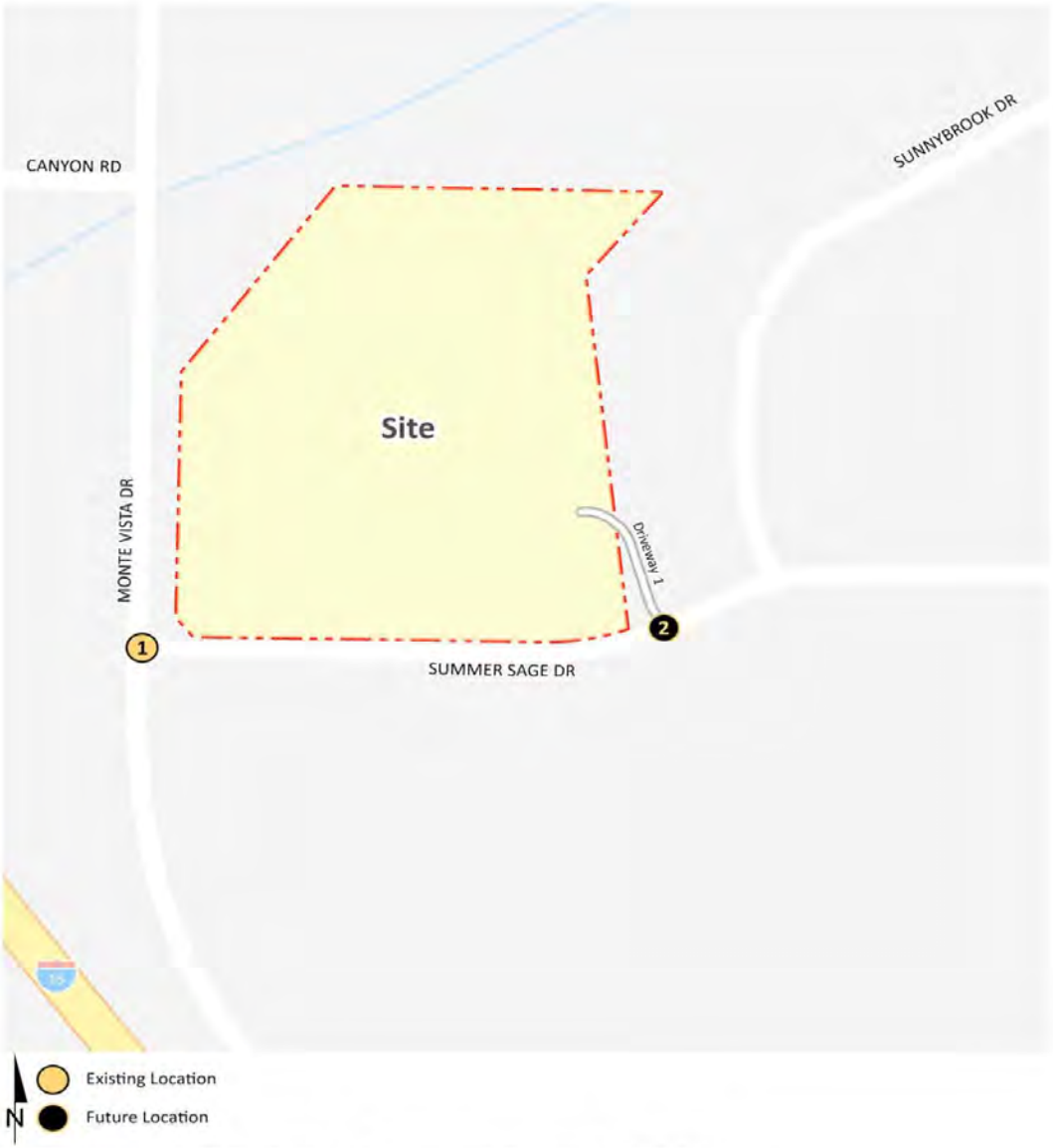
[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single lane) are shown.

[2] CSS = Cross-street Stop

3.7 EXISTING (2021) TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants for Existing traffic conditions are based on existing peak hour intersection turning volumes. The unsignalized study area intersection of Monte Vista Drive and Summer Sage Drive does not currently warrant a traffic signal for Existing (2021) traffic conditions (see Appendix 3.3).

EXHIBIT 3-7: EXISTING (2021) TRAFFIC VOLUMES



1	Monte Vista Dr. & Summer Sage Dr.	2	Driveway 1 & Summer Sage Dr.
2,650	286(86) ↓ 30(4) ↳	200	9(4) ↱ 11(4) ←
2,000	103(64) → 8(5) ↱	200	38(9) → 20(8) ←

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4 PROJECTED FUTURE TRAFFIC

The Project is to consist of 65 multifamily housing (low-rise) residential dwelling units. The Project is proposed to be developed in a single phase with an anticipated Opening Year of 2023. Vehicular access will be provided via a full access driveway (Driveway 1) on Summer Sage Drive. Regional access to the Project site is available from the I-15 Freeway via Bundy Canyon Road or Baxter Road interchanges.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 4-1 illustrating daily and peak hour trip generation estimates based on the ITE Trip Generation Manual, 10th Edition (2017), for Multifamily Housing (Low-Rise) (ITE Land Use Code 220). (2)

TABLE 4-1: PROJECT TRIP GENERATION RATES

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:									
Multifamily Housing (Low-Rise)	220	DU	0.11	0.35	0.46	0.35	0.21	0.56	7.32

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

As shown on Table 4-2, the proposed Project is anticipated to generate a total of approximately 476 two-way trips per day with 30 AM peak hour trips and 36 PM peak hour trips.

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
Multifamily Housing (Low-Rise)	65	DU	7	23	30	23	13	36	476

[1] DU = Dwelling Units

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution patterns are graphically depicted on Exhibit 4-1.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking, or bicycling have not been considered in this TA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, the Project only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-2.

4.5 BACKGROUND TRAFFIC

4.5.1 OPENING YEAR CUMULATIVE CONDITIONS

Future year traffic forecasts have been based upon background (ambient) growth at 2% per year for 2023 traffic conditions. The total ambient growth is 4.04% for 2023 traffic conditions (compounded growth of 2 percent per year over 2 years or $1.02^{2\ years}$). The ambient growth factor is intended to approximate regional traffic growth. This ambient growth rate is added to existing traffic volumes to account for area-wide growth not reflected by cumulative development projects. Ambient growth has been added to daily and peak hour traffic volumes on surrounding roadways, in addition to traffic generated by the development of future projects that have been approved but not yet built and/or for which development applications have been filed and are under consideration by governing agencies. Opening Year Cumulative (2023) traffic volumes are provided in Section 5 of this TA. The traffic generated by the proposed Project was then manually added to the base volume to determine Opening Year Cumulative “With Project” forecasts.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION



4.5.2 HORIZON YEAR (2040) CONDITIONS

The adopted Southern California Association of Governments (SCAG) 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) (September 2020) growth forecasts for the City of Wildomar identifies projected growth in population of 35,400 in 2016 to 55,200 in 2045, or a 55.93% increase over the 29-year period. (11) The change in population equates to roughly a 1.54% growth rate, compounded annually. Similarly, growth over the same 29-year period in households is projected to increase by 84.91%, or a 2.14% annual growth rate. Finally, growth in employment over the same 29-year period is projected to increase by 72.31%, or a 1.89% annual growth rate.

Based on a comparison of Existing (2021) traffic volumes to the Horizon Year (2040) forecasts, the average growth rate is estimated at approximately 5.95%, compounded annually between Existing (2021) and 2040 traffic conditions. The annual growth rate at each individual intersection is not lower than 4.12% compounded annually to as high as 7.78% compounded annually over the same time period. Therefore, the annual growth rate utilized for the purposes of this analysis would appear to conservatively approximate the anticipated regional growth in traffic volumes in the City of Wildomar for Opening Year Cumulative and Horizon Year (2040) traffic conditions, especially when considered along with the addition of project-related traffic, which would tend to overstate as opposed to understate the potential effects to traffic and circulation.

4.6 CUMULATIVE DEVELOPMENT TRAFFIC

A cumulative project list was developed for the purposes of this analysis through consultation with planning and engineering staff from the City of Wildomar. The cumulative project list includes known and foreseeable projects that are anticipated to contribute traffic to the study area intersections. Where applicable, cumulative projects anticipated to contribute measurable traffic (i.e., 50 or more peak hour trips) to study area intersections have been manually added to the study area network to generate Opening Year Cumulative (2023) forecasts. In other words, this list of cumulative development projects has been reviewed to determine which projects would likely contribute measurable traffic through the study area intersections (e.g., those cumulative projects in close proximity to the proposed Project). For the purposes of this analysis, the cumulative projects that were determined to affect one or more of the study area intersections are shown on Exhibit 4-3, listed in Table 4-2, and have been considered for inclusion.

EXHIBIT 4-2: PROJECT ONLY TRAFFIC VOLUMES



1 Monte Vista Dr. & Summer Sage Dr.			2 Driveway 1 & Summer Sage Dr.	
250		500	500	
	4(12) ↳	↱ 12(7)	23(13) ↲	
		↰ 12(7)		7(23) ↱
		↱ 4(12)		
		250	500	

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 4-3: CUMULATIVE DEVELOPMENT LOCATION MAP

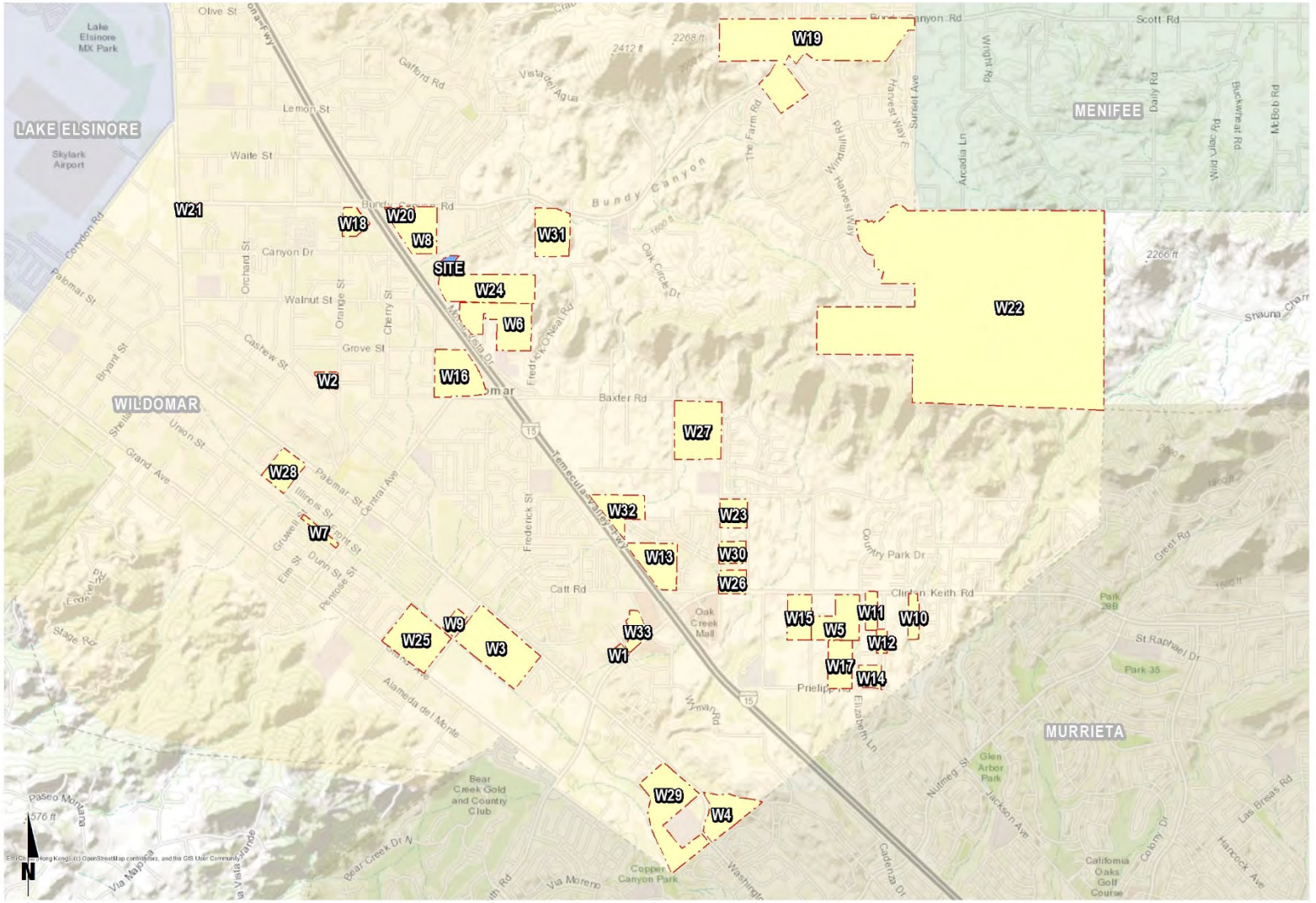


TABLE 4-2: CUMULATIVE DEVELOPMENT LAND USE SUMMARY

#	Project Name	Land Use[1]	Quantity	Units[2]
W1	Wildomar Crossings	Free Standing Discount Store	10.000	TSF
		Auto Parts Sales	7.004	TSF
		Fast-Food w/ Drive Through	2.600	TSF
		Retail	3.300	TSF
		Fast-Food w/o Drive Through	3.300	TSF
W2	Lesle Tract Map	SFDR	10	DU
W3	Richmond American	SFDR	149	DU
W4	Camelia Townhouse Project	Condo/Townhomes	163	DU
W5	Rancon Medical & Retail Center	Retail	200.000	TSF
		Office	94.000	TSF
W6	Cornerstone Church Preschool & Admin. Building	School	170	STU
		Office	25.462	TSF
W7	Elm Street Subdivision	SFDR	14	DU
W8	Walmart Retail Project	Free-Standing Discount Superstore	193.792	TSF
W9	McVicar Residential Project	SFDR	47	DU
W10	Smith Ranch Self Storage	Self-Storage	150.000	TSF
		Office	10	TSF
W11	Life-Storage Mini Warehouse	Self-Storage	60.800	TSF
W12	Milestone RV/Boat Storage	Self-Storage	8.300	TSF
W13	Westpark Promenade Development (mixed use)	Shopping Center	118.354	TSF
		Condo/Townhomes	191	DU
W14	Villa Sienna Apartment Project	Condo/Townhomes	180	DU
W15	Grove Park Mixed Use Project	Condo/Townhomes	162	DU
		Retail	50.000	TSF
W16	Baxter Village	Shopping Center	75.000	TSF
		SFDR	67	DU
		Condo/Townhomes	204	DU
W17	Horizons/Strata Mixed Use Project	Assisted Living	86	BED
		Condo/Townhomes	138	DU
W18	Orange Bundy/Parcel Map	Retail	79.497	TSF
		Fast Food w/ Drive Through	1.500	TSF
		Gas Station w/ Market	6	VFP

#	Project Name	Land Use[1]	Quantity	Units[2]
W19	Oak Creek Canyon	SFDR	275	DU
W20	Bundy Canyon Plana	Shopping Center	36.990	TSF
W21	Wildomar Shooting Academy[3]	Gun Shooting Range	--	--
W22	Wildomar Meadows	SFDR	1505	DU
		Passive Park	13.5	AC
		Active Park	10.0	AC
W23	Diversified Pacific Homes	SFDR	51	DU
W24	Pacific Cove	SFDR	70	DU
W25	Beazer Homes	SFDR	108	DU
W26	Clinton Keith Village Retail Center	Shopping Center	40.000	TSF
W27	Baxter/Susan GPA/TTM	SFDR	48	DU
W28	Ione/Palomar Residential	SFDR	60	DU
W29	Rhoades Residential Project	SFDR	131	DU
W30	Nova Homes Residential	SFDR	77	DU
W31	Darling/Bundy Canyon Residential	Condo/Townhomes	140	DU
W32	Faith Bible Church	Church	45.155	TSF
W33	The Commons at Hidden Springs	Fast-Food w/ Drive Through	7.800	TSF
		Shopping Center	10.870	TSF
		Supermarket	26.500	TSF
		Pharmacy w/ Drive Through	24.700	TSF
		Coffee/Donut Shop w/ Drive Through	1.800	TSF

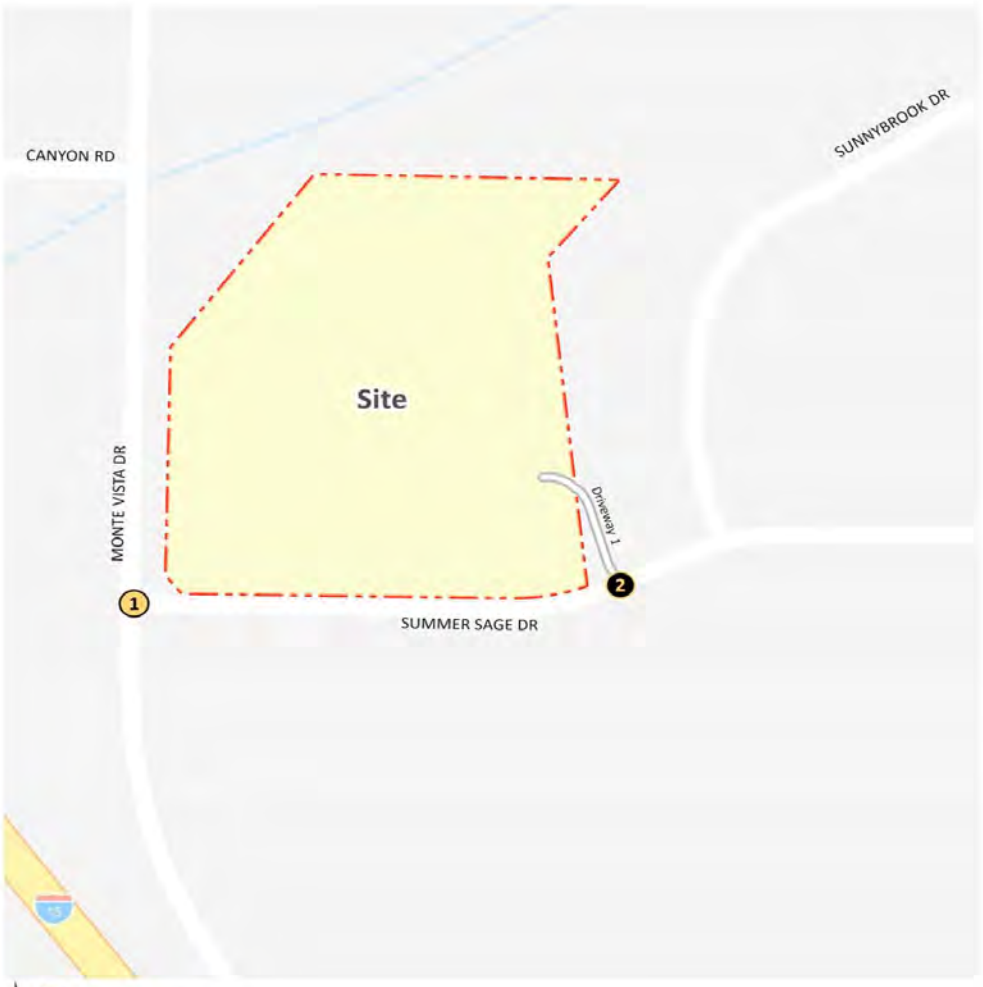
[1] SFDR = Single Family Detached Residential

[2] AC = Acres; DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions; STU = Students

Although it is unlikely that all of these cumulative projects would be fully built and occupied by Years 2023, they have been included in an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies. Any other cumulative projects located beyond the cumulative study area that are not expected to contribute measurable traffic to study area intersections have not been included since the traffic would dissipate due to the distance from the Project site and study area intersections. Any additional traffic generated by other projects not on the cumulative projects list is likely accounted for through background ambient growth factors that have been applied to the peak hour volumes at study area intersections as discussed in Section 4.5 *Background Traffic*. Cumulative Only ADT and peak hour intersection turning movement volumes are shown on Exhibit 4-4.

For the purposes of this study, absorption percentages have been applied to the cumulative development traffic. 60% of the cumulative development traffic is added for Opening Year Cumulative (2023) traffic volumes and 100% of the cumulative development traffic is added for Horizon Year (2040) traffic volumes.

EXHIBIT 4-4: CUMULATIVE ONLY TRAFFIC VOLUMES



1 Monte Vista Dr. & Summer Sage Dr.				2 Driveway 1 & Summer Sage Dr.			
5,150			500				500
← 117(197)	↳ 4(13)	↱ 13(8)				← 26(16)	
		↰ 13(8)					
		153(175) →	↱ 4(13)		8(26) →		
		5,150	500				

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

4.7 NEAR-TERM TRAFFIC CONDITIONS

The "buildup" approach combines existing traffic counts with a background ambient growth factor to forecast the near-term 2023 traffic conditions. An ambient growth factor of 2.0% per year, compounded annually, accounts for background (area-wide) traffic increases that occur over time up to the years 2023 from the year 2021. Traffic volumes generated by cumulative development projects are then added to assess the Opening Year Cumulative (2023) traffic conditions. Lastly, Project traffic is added to assess "With Project" traffic conditions. The 2023 roadway network is similar to the existing conditions roadway network with the exception of intersections proposed to be developed by the Project. The near-term traffic analysis includes the following traffic conditions, with the various traffic components:

- Opening Year Cumulative (2023) Without Project
    - Existing 2021 counts
    - Ambient growth traffic (4.04%)
    - Cumulative Development Project traffic (60%)
- Opening Year Cumulative (2023) With Project
    - Existing 2021 counts
    - Ambient growth traffic (4.04%)
    - Cumulative Development Project traffic (60%)
    - Project traffic

4.8 HORIZON YEAR TRAFFIC FORECASTS

Traffic projections for Horizon Year conditions were derived from the RivTAM regional model using accepted procedures for model forecast refinement and smoothing. The traffic forecasts reflect the area-wide growth anticipated between Existing and Horizon Year traffic conditions. The base model year for the RivTAM regional model is Year 2012 and the future year model is Year 2040.

In most instances the traffic model zone structure is not designed to provide accurate turning movements along arterial roadways unless refinement and reasonableness checking is performed. Therefore, the Horizon Year peak hour forecasts were refined using the model derived long-range forecasts, base (validation) year model forecasts, along with existing peak hour traffic count data collected at each analysis location.

The refined future peak hour approach and departure volumes obtained from these calculations are then entered into a spreadsheet program consistent with the National Cooperative Highway Research Program (NCHRP Report 255), along with initial estimates of turning movement proportions. A linear programming algorithm is used to calculate individual turning movements which match the known directional roadway segment forecast volumes computed in the previous step. This program computes a likely set of intersection turning movements from intersection approach counts and the initial turning proportions from each approach leg.

Typically, the model growth is prorated and is subsequently added to the existing (base validation) traffic volumes to represent Horizon Year traffic conditions. However, review of the resulting model growth indicates negative growth for some of the study area intersections. In an effort to conduct a conservative analysis, reductions to traffic forecasts from either Existing or Opening Year Cumulative traffic conditions were not assumed as part of this analysis. As such, in conjunction with the addition of cumulative projects that are not consistent with the General Plan, additional growth has also been applied on a movement-by-movement basis, where applicable, to estimate reasonable Horizon Year forecasts. Horizon Year turning volumes were compared to Opening Year Cumulative volumes in order to ensure a minimum growth as a part of the refinement process. The minimum growth includes any additional growth between Opening Year Cumulative and Horizon Year traffic conditions that is not accounted for by the traffic generated by cumulative development projects and ambient growth rates assumed between Existing (2021) and Horizon Year traffic conditions. Future estimated peak hour traffic data was used for new intersections and intersections with an anticipated change in travel patterns to further refine the Horizon Year peak hour forecasts.

The future Horizon Year Without Project peak hour turning movements were then reviewed by Urban Crossroads for reasonableness, and in some cases, were adjusted to achieve flow conservation, reasonable growth, and reasonable diversion between parallel routes. Flow conservation checks ensure that traffic flow between two closely spaced intersections, such as two freeway ramp locations, is verified in order to make certain that vehicles leaving one intersection are entering the adjacent intersection and that there is no unexplained loss of vehicles. The result of this traffic forecasting procedure is a series of traffic volumes which are suitable for traffic operations analysis.

In an effort to conduct a conservative analysis and overstate as opposed to understate potential traffic deficiencies, the Horizon Year traffic forecasts include background traffic, traffic generated by other cumulative development projects within the study area, and the traffic generated by the proposed Project. The intersection of Monte Vista Drive and Summer Sage Drive does not appear in the RivTAM traffic model (due to the lower classification of Summer Sage Drive). As such in order to develop long-range forecasts for the study area intersections, the post processed volumes for the intersection of Monte Vista Drive and Bundy Canyon Road were used to determine the northbound and southbound through traffic along Monte Vista Drive at Summer Sage Drive. The turning movements to and from Summer Sage Drive were nominally increased (by 10%) to account for nominal growth to the east on top of the cumulative traffic volumes for near-term traffic conditions. Through traffic at the Driveway on Summer Sage Drive were calculated by flow conserving the eastbound and westbound traffic from the intersection of Monte Vista Drive and Summer Sage Drive.

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5 OPENING YEAR CUMULATIVE (2023) TRAFFIC ANALYSIS

This section discusses the methods used to develop Opening Year Cumulative (2023) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

5.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Opening Year Cumulative (2023) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection improvements at the Project's driveway).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Opening Year Cumulative conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).

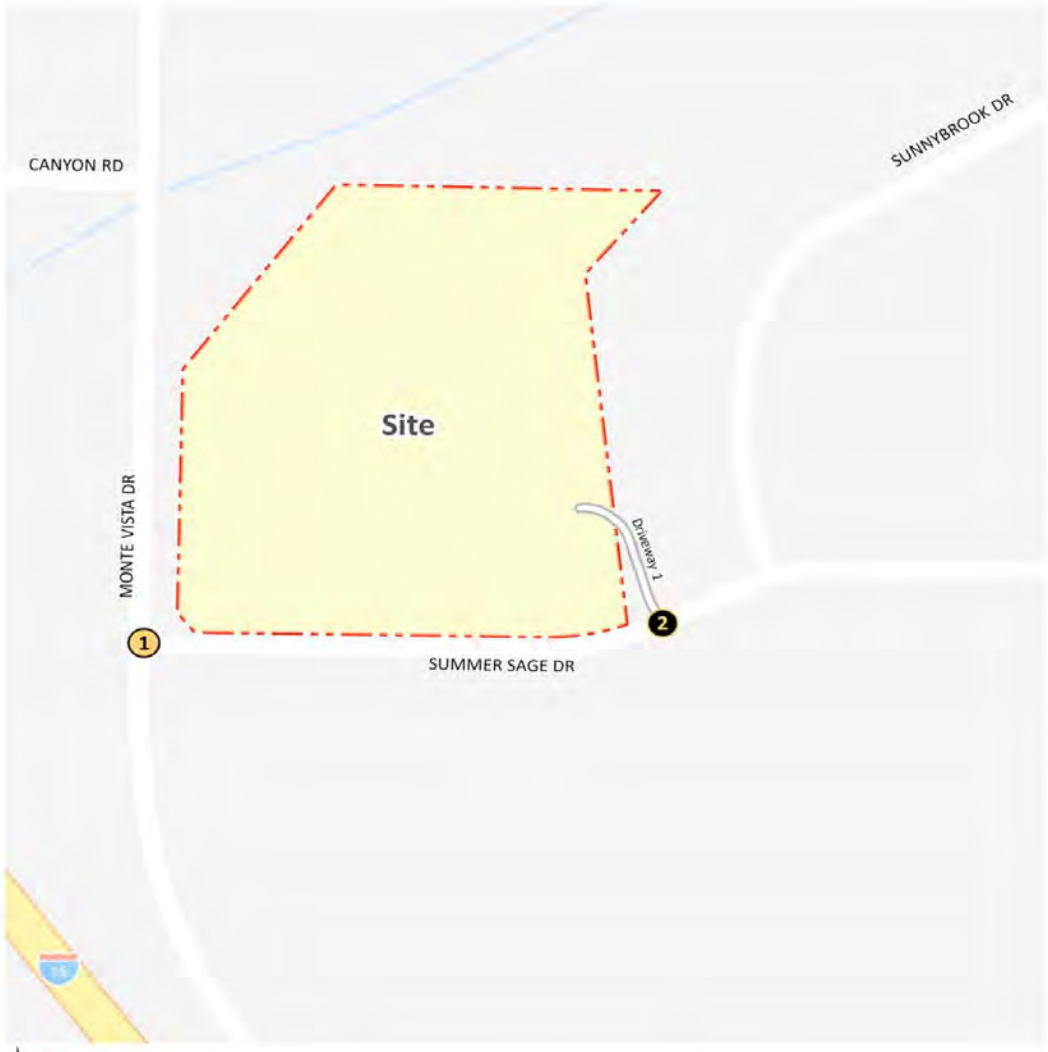
5.2 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes adjusted Existing traffic volumes plus an ambient growth factor of 4.04% plus 60% of the traffic from pending and approved but not yet constructed known development projects in the area. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2023) Without Project conditions are shown on Exhibit 5-1.

5.3 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes Existing traffic volumes, an ambient growth factor of 4.04%, 60% of the traffic from pending and approved but not yet constructed known development projects in the area and the addition of Project traffic. The ADT and peak hour intersection turning movement volumes which can be expected for Opening Year Cumulative (2023) With Project conditions are shown on Exhibit 5-2.

EXHIBIT 5-1: OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC VOLUMES

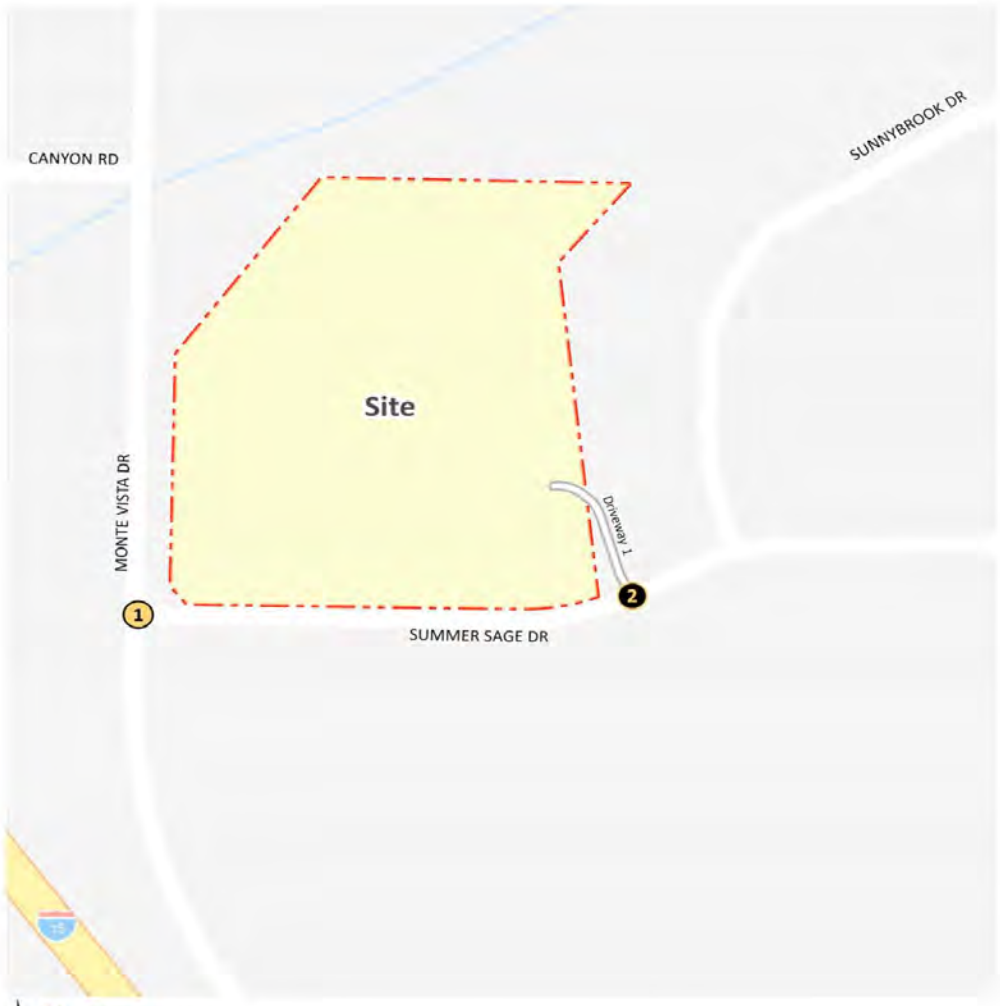


1 Monte Vista Dr. & Summer Sage Dr.						2 Driveway 1 & Summer Sage Dr.					
				550						550	
5,800	↓ 368(208)	↳ 34(12)	↰ 17(9)						← 36(18)		
			↰ 19(9)								
				↑ 199(172)	↱ 10(13)			44(25) →			
				5,150		550					

##(##) AM(PM) Peak Hour Intersection Volumes

***Average Daily Trips***

EXHIBIT 5-2: OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC VOLUMES



1	Monte Vista Dr. & Summer Sage Dr.	2	Driveway 1 & Summer Sage Dr.
6,050	1,000	500	550
368(208) ←	38(24) ↳	23(13) ↲	← 36(18)
	↰ 29(16)		
	↰ 31(16)		
	199(172) →	7(23) ↳	
	14(25) ↱	44(25) →	
	5,400	1,000	

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

5.4 INTERSECTION OPERATIONS ANALYSIS

5.4.1 OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT TRAFFIC CONDITIONS

Opening Year Cumulative (2023) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection analysis results are summarized in Table 5-1, which indicate that the study area intersections are anticipated to continue to operate at an acceptable LOS during the peak hours under Opening Year Cumulative (2023) Without Project traffic conditions. The intersection operations analysis worksheets for Opening Year Cumulative Without Project traffic conditions are included in Appendix 5.1 of this TA.

TABLE 5-1: INTERSECTION ANALYSIS FOR OPENING YEAR CUMULATIVE (2023) CONDITIONS

#	Intersection	Traffic Control[2]	2023 Without Project Delay[1] (Secs.) AM	2023 Without Project Delay[1] (Secs.) PM	2023 Without Project LOS[3] AM	2023 Without Project LOS[3] PM	2023 With Project Delay[1] (Secs.) AM	2023 With Project Delay[1] (Secs.) PM	2023 With Project LOS[3] AM	2023 With Project LOS[3] PM	Change in Delay AM	Change in Delay PM	Project-Related Deficiency?[4]
1	Monte Vista Dr. & Summer Sage Dr.	CSS	14.7	10.6	B	B	15.7	11.0	C	B	1.0	0.4	No
2	Driveway 1 & Summer Sage Dr.	**CSS**	Future Intersection				8.6	8.4	A	A	--	--	--

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements

[2] CSS = Cross-street Stop; **CSS** = Improvement

[3] LOS = Level of Service

[4] Project-related deficiency if change in delay exceeds 5.0 seconds for intersections at LOS E or LOS F under pre-project conditions.

5.4.2 OPENING YEAR CUMULATIVE (2023) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 5-1, there are no study area intersections anticipated to operate at an unacceptable LOS with the addition of Project traffic. The intersection operations analysis worksheets for Opening Year Cumulative (2023) With Project traffic conditions are included in Appendix 5.2 of this TA.

5.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Opening Year Cumulative (2023) traffic conditions based on peak hour intersection turning movements volumes or ADT (for planning level warrants). There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under Opening Year Cumulative (2023) Without and With Project traffic conditions (see Appendix 5.3 and Appendix 5.4).

5.6 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Wildomar deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, and improvements needed to improve operations back to acceptable levels. No intersection improvements have been recommended as the intersections are anticipated to operate at acceptable LOS (see Table 5-1).

6 HORIZON YEAR (2040) TRAFFIC ANALYSIS

This section discusses the methods used to develop Horizon Year (2040) Without and With Project traffic forecasts, and the resulting intersection operations and traffic signal warrant analyses.

6.1 ROADWAY IMPROVEMENTS

The lane configurations and traffic controls assumed to be in place for Horizon Year (2040) conditions are consistent with those shown previously on Exhibit 3-1, with the exception of the following:

- Project driveways and those facilities assumed to be constructed by the Project to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection improvements at the Project's driveway).
- Driveways and those facilities assumed to be constructed by cumulative developments to provide site access are also assumed to be in place for Horizon Year conditions only (e.g., intersection and roadway improvements along the cumulative development's frontages and driveways).
- Other parallel facilities, that although not evaluated for the purposes of this analysis, are anticipated to be in place for Horizon Year traffic conditions and would affect the travel patterns within the study area.

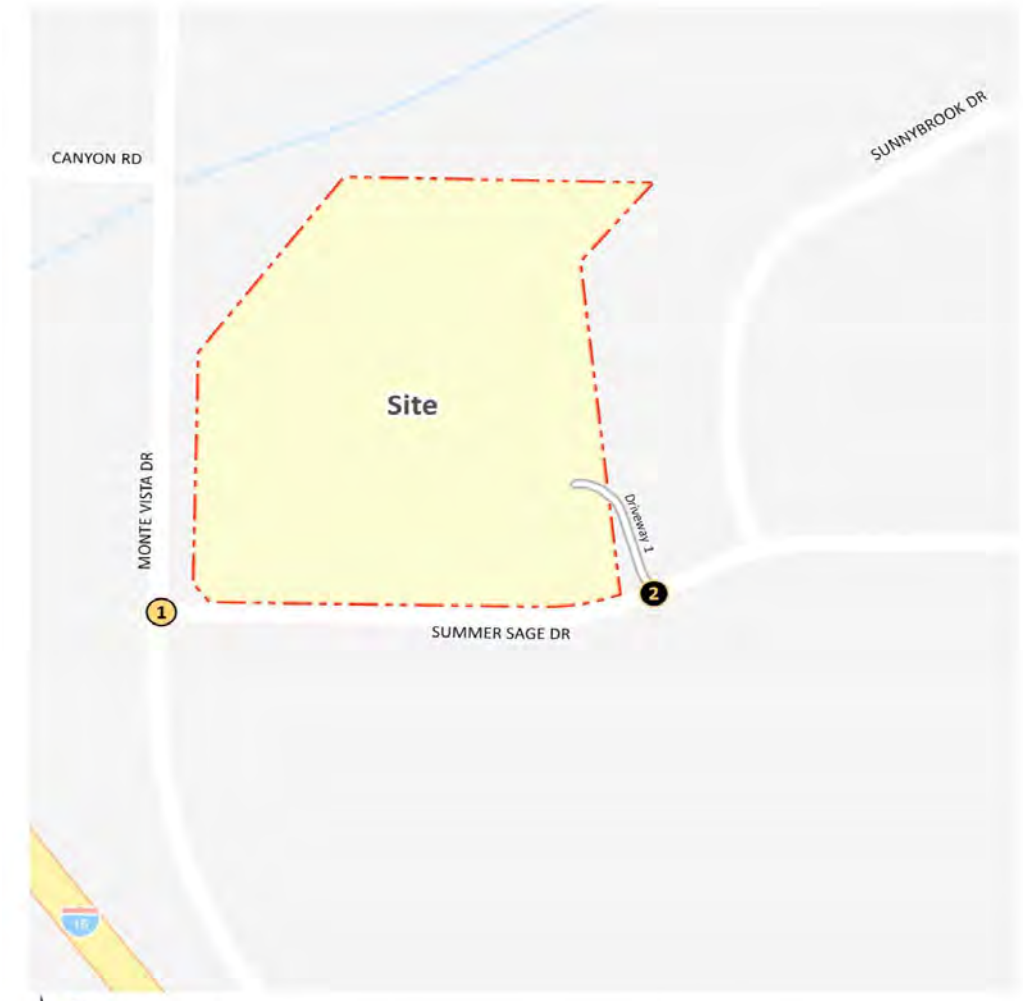
6.2 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-process volumes obtained from the RivTAM (see Section 4.8 *Horizon Year Traffic Forecasts* of this TA for a detailed discussion on the post-processing methodology). The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) Without Project traffic conditions are shown on Exhibit 6-1.

6.3 HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUME FORECASTS

This scenario includes the refined post-process volumes obtained from the RivTAM plus the traffic generated by the buildout of the proposed Project. The weekday ADT and weekday AM and PM peak hour volumes which can be expected for Horizon Year (2040) With Project traffic conditions are shown on Exhibit 6-2.

EXHIBIT 6-1: HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC VOLUMES

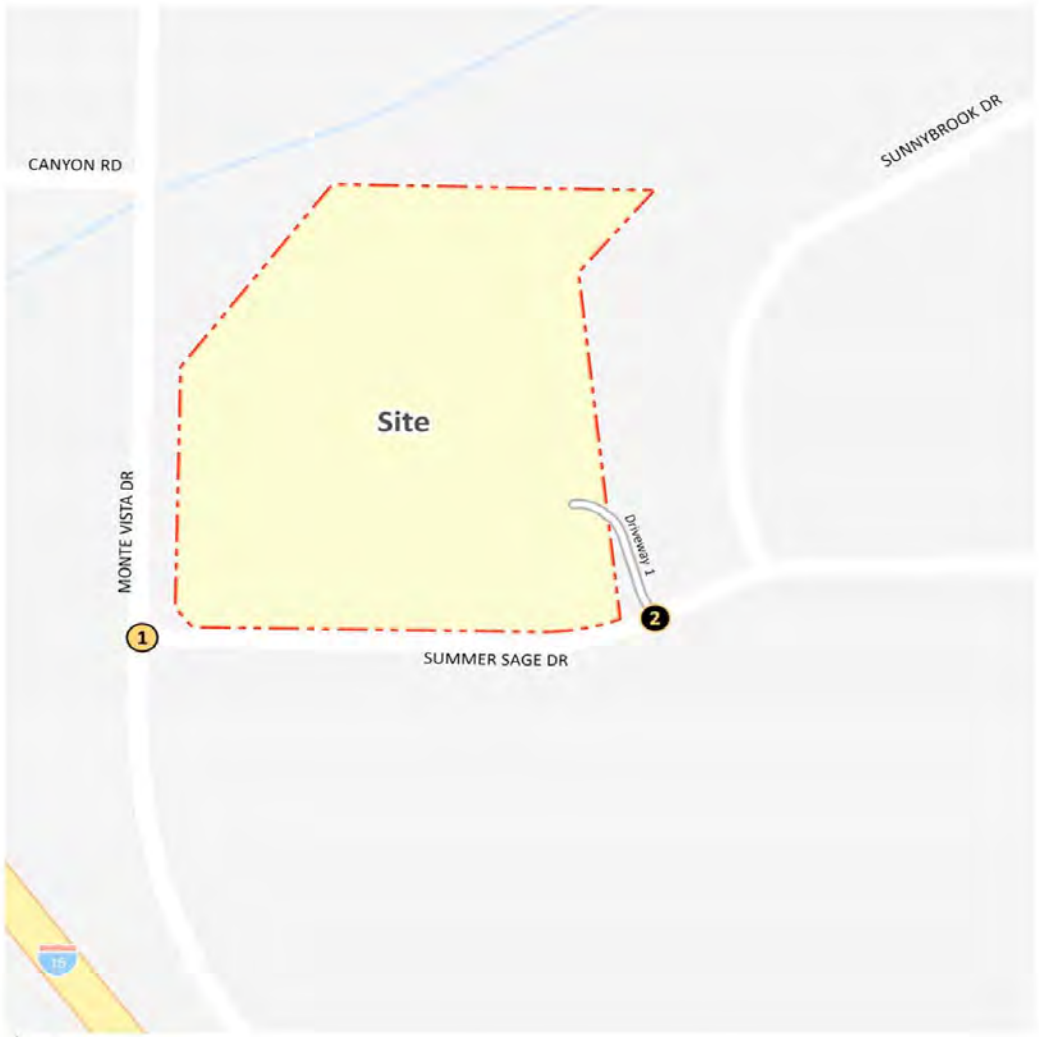


1 Monte Vista Dr. & Summer Sage Dr.			2 Driveway 1 & Summer Sage Dr.	
7,650	538(319) ↓	37(13) ↳		
		↰ 19(10)		600
		↰ 21(10)		← 40(20)
		304(289) →		48(27) →
		11(14) ↱		
		5,700	600	

##(##) AM(PM) Peak Hour Intersection Volumes

Average Daily Trips

EXHIBIT 6-2: HORIZON YEAR (2040) WITH PROJECT TRAFFIC VOLUMES



1	Monte Vista Dr. & Summer Sage Dr.	2	Driveway 1 & Summer Sage Dr.
7,850	538(319) ↓ 41(25) ↓	1,050	31(17) ↱ 33(17) ↰
5,900	304(289) ↑ 15(26) ↱	1,050	500 23(13) ↲ 7(23) ↴ 48(27) ↑ 600 40(20) ←

##(##) AM(PM) Peak Hour Intersection Volumes

***Average Daily Trips***

6.4 INTERSECTION OPERATIONS ANALYSIS

6.4.1 HORIZON YEAR (2040) WITHOUT PROJECT TRAFFIC CONDITIONS

Horizon Year (2040) peak hour traffic operations have been evaluated for the study area intersections based on the analysis methodologies presented in Section 2.2 *Intersection Capacity Analysis* of this report. The intersection analysis results are summarized in Table 6-1, which indicate that the study area intersections are anticipated to operate at an acceptable LOS during the peak hours under Horizon Year (2040) Without Project traffic conditions. The intersection operations analysis worksheets for Horizon Year (2040) Without Project traffic conditions are included in Appendix 6.1 of this TA.

TABLE 6-1: INTERSECTION ANALYSIS FOR HORIZON YEAR (2040) CONDITIONS

#	Intersection	Traffic Control[2]	2040 Without Project Delay[1] (Secs.) AM	PM	LOS[3] AM	PM	2040 With Project Delay[1] (Secs.) AM	PM	LOS[3] AM	PM	Change in Delay AM	PM	Project-Related Deficiency?[4]
1	Monte Vista Dr. & Summer Sage Dr.	CSS	22.2	12.7	C	B	25.5	13.3	D	B	3.3	0.6	No
2	Driveway 1 & Summer Sage Dr.	**CSS**	Future Intersection				8.6	8.5	A	A	--	--	--

BOLD = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

[1] Per the Highway Capacity Manual (6th Edition), overall average intersection delay and level of service are shown for intersections with a traffic signal or all-way stop control. For intersections with cross street stop control, the delay and level of service for the worst individual movement (or movements sharing a single

[2] CSS = Cross-street Stop; **CSS** = Improvement

[3] LOS = Level of Service

[4] Project-related deficiency if change in delay exceeds 5.0 seconds for intersections at LOS E or LOS F under pre-project conditions.

6.4.2 HORIZON YEAR (2040) WITH PROJECT TRAFFIC CONDITIONS

As shown in Table 6-1, the study area intersections are anticipated to continue to operate at an acceptable LOS with the addition of Project traffic, consistent with Horizon Year (2040) traffic conditions. The intersection operations analysis worksheets for Horizon Year (2040) With Project traffic conditions are included in Appendix 6.2 of this TA.

6.5 TRAFFIC SIGNAL WARRANTS ANALYSIS

Traffic signal warrants have been performed (based on CA MUTCD) for Horizon Year (2040) traffic conditions based on peak hour intersection turning movements volumes or ADT (for planning level warrants). There are no unsignalized study area intersections anticipated to meet a traffic signal warrant under Horizon Year (2040) Without and With Project traffic conditions (see Appendix 6.3 and Appendix 6.4).

6.6 DEFICIENCIES AND RECOMMENDED IMPROVEMENTS

This section provides a summary of deficiencies, based on the City of Wildomar deficiency criteria discussed in Section 2.5 *Deficiency Criteria*, and improvements needed to improve operations back to acceptable levels. No intersection improvements have been recommended as the intersections are anticipated to operate at acceptable LOS (see Table 6-1).

7 LOCAL AND REGIONAL FUNDING MECHANISMS

Transportation improvements within the City of Wildomar are funded through a combination of improvements constructed by the Project, development impact fee programs or fair share contributions. Fee programs applicable to the Project are described below.

7.1 RIVERSIDE COUNTY TRANSPORTATION UNIFORM MITIGATION FEE (TUMF)

The TUMF program is administered by the WRCOG based upon a regional Nexus Study most recently updated in 2016 to address major changes in right of way acquisition and improvement cost factors. (3) This regional program was put into place to ensure that development pays its fair share and that funding is in place for construction of facilities needed to maintain the requisite level of service and critical to mobility in the region. TUMF is a truly regional mitigation fee program and is imposed and implemented in every jurisdiction in Western Riverside County.

7.2 CITY OF WILDOMAR DEVELOPMENT IMPACT FEE (DIF) PROGRAM

The Project will also be subject to City of Wildomar's DIF program which includes a component for roads and signals. Chapter Three and Four of the City of Wildomar Development Impact Fee Nexus Report (April 2015) discusses the local (as opposed to regional) streets and signal improvements planned for the City through build-out of the existing City limits.

7.3 SOUTHWEST ROAD AND BRIDGE BENEFIT DISTRICT (RBBD)

The City of Wildomar is anticipated to experience substantial growth. Extensive improvements are necessitated by new development within the region. In particular, Riverside County recognized the effects of this growth on the vicinity of the study area when it formed the Southwest RBBD. The proposed Project lies within Zone A of the Southwest RBBD. Zone A is generally bounded by the City of Lake Elsinore's southern boundary to the north, Corydon Road/Grand Avenue to the west, Sunset Avenue/Murrieta Road to the east, and the City of Murrieta's northern boundary to the south. As discussed above, the facilities improvements that will be ultimately constructed as a result of the collection of these fees and assessments are significant. They include:

Southwest Road and Bridge Benefits District (Zone A):

- Bundy Canyon Road improvements from Mission Trail to Sunset Avenue

7.4 MEASURE A

Measure A, Riverside County's half-cent sales tax for transportation, was adopted by voters in 1988 and extended in 2002. It will continue to fund transportation improvements through 2039. Measure A funds a wide variety of transportation projects and services throughout the County. RCTC is responsible for administering the program. Measure A dollars are spent in accordance with a voter-approved expenditure plan that was adopted as part of the 1988 election.

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8 REFERENCES

1. **Riverside County Transportation Department.** *Transportation Analysis Guidelines for Level of Service Vehicle Miles Traveled.* County of Riverside : s.n., December 2020.
2. **Institute of Transportation Engineers.** *Trip Generation Manual.* 10th Edition. 2017.
3. **Western Riverside Council of Governments.** *TUMF Nexus Study, 2016 Program Update.* July 2017.
4. **Riverside County Transportation Commission.** *2011 Riverside County Congestion Management Program.* County of Riverside : RCTC, December 14, 2011.
5. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
6. **Western Riverside Council of Governments (WRCOG).** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* February 13, 2020.
7. **City of Wildomar.** *Vehicle Miles Travelled (VMT) CEQA Threshold Policy Guidelines.* City of Wildomar : s.n., June 2020.
8. **Transportation Research Board.** *Highway Capacity Manual (HCM).* 6th Edition. s.l. : National Academy of Sciences, 2016.
9. **California Department of Transportation.** California Manual on Uniform Traffic Control Devices (MUTCD). [book auth.] California Department of Transportation. *California Manual on Uniform Traffic Control Devices (CAMUTCD).* 2017.
10. **County of Riverside.** *County of Riverside General Plan.* County of Riverside : s.n., December 8, 2015.
11. **Southern California Association of Governments.** *2020 Regional Transportation Plan/Sustainable Communities Strategy.* s.l. : SCAG, Adopted September 2020.

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APPENDIX 1.1:

APPROVED TRAFFIC STUDY SCOPING AGREEMENT

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SCOPING AGREEMENT FOR TRAFFIC IMPACT STUDY

This letter acknowledges the City of Wildomar requirements for Traffic impact analysis of the following project. The analysis must follow either the Riverside County Transportation Department Traffic Study Guidelines dated **October 2020**

Case No.
Related Cases-
SP No.
EIR No.
GPA No.
CZ No.
Project Name: Monte Vista Ranch (Tract No. 32024)
Project Address: NEC of Monte Vista Drive and Summer Sage Drive
Project Description: 65 Multifamily Housing (Low-Rise) Residential Dwelling Units

	Consultant	Developer
Name:	Charlene So, Urban Crossroads, Inc.	Erik Lunde, Pacific Coves Investments, LLC
Address:		
Telephone:	949-861-0177	714-318-3500
Fax:		

A. Trip Generation Source:

Current GP Land Use: Business Park
Current Zoning: Commercial-Office (C-O)
Proposed Land Use: High Density Residential (HDR)
Proposed Zoning: Multiple-Family Dwellings (R-2)

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips				7	23	30
PM Trips				23	13	36

Internal Trip Allowance Yes No X (__%Trip Discount)
Pass-By Trip Allowance Yes No X (__%Trip Discount)

B. Trip Geographic Distribution: N 50 % S 50 % E 0 % W 0 %
(See attached exhibits for detailed assignment)

C. Background Traffic

Project Build-out Year: 2023
Annual Ambient Growth Rate: 2%
Phase Year(s): N/A
Other area projects to be analyzed: City to provide any additional cumulative projects (if applicable)
Model/ Forecast methodology: RivTAM

D. Study Intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies)

1. Monte Vista Dr. & Summer Sage Dr.
2. Driveway 1 & Summer Sage Dr.

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E. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies)

F. Other Jurisdictional Impacts

Is this project within a City's Sphere of Influence or one- mile radius of City boundaries? Yes No X
If so, name of City Jurisdiction:

G. Site Plan (Provide reduced copy)

H. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by local agency)

Stopping sight distance analysis for Intersection #1

J. Existing Conditions

Traffic count data must be new or recent within one year. Provide traffic count dates if using other than new counts.
Date of counts See Memo

Recommended by:

Charlene So
Consultant's Representative

1/14/2021
Date

Scoping Agreement Submitted on 11/17/2020
Revised on 1/14/2021

Approved Scoping Agreement:

Dan York
City Engineer

1/25/2021
Date

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URBAN CROSSROADS
urbanxroads.com

January 14, 2021

Mr. Daniel York
City of Wildomar
23873 Clinton Keith Rd.
Wildomar, CA 92595

SUBJECT: MONTE VISTA RANCH (TRACT NO. 32024, LOT 71) SCOPING AGREEMENT (REVISED)

Dear Mr. Daniel York:

Urban Crossroads, Inc. is pleased to submit this scoping agreement to the City of Wildomar for the proposed Monte Vista Ranch development ("Project"), which is located on the northeast corner of Monte Vista Drive and Summer Sage Drive in the City of Wildomar. It is our understanding that the Project is to consist of 65 multifamily (low-rise) residential dwelling units. The letter describes the proposed Project trip generation, trip distribution, and analysis methodology, which have been used to establish the draft proposed Project study area and analysis locations. As the City of Wildomar does not have their own traffic study guidelines, the Draft Riverside County Transportation Department Traffic Impact Analysis Preparation Guide (October 2020) will be utilized for the purposes of this LOS-based traffic operations analysis.

PROJECT DESCRIPTION

Exhibit 1 shows the Project's location relative to the surrounding area. A preliminary site plan for the proposed Project is shown on Exhibit 2. It is our understanding that the Project is to consist of 65 multifamily (low-rise) residential dwelling units. For the purposes of this traffic study, the Project is assumed to be constructed in a single phase with an Opening Year of 2023. Study area intersections have been identified on Exhibit 3. Although the Project is anticipated to contribute fewer than 50 peak hour trips, the site adjacent intersection of Monte Vista Drive and Summer Sage Drive and Project driveway have been identified as analysis locations for the purposes of this focused traffic analysis. As identified in Exhibit 3, vehicular access will be provided via Driveway 1 on Summer Sage Drive (assumed to allow for full access).

TRIP GENERATION

Trip generation represents the amount of traffic that is attracted and produced by a development, and is based upon the specific land uses planned for a given project. Trip generation rates for the Project are shown in Table 1 illustrating daily and peak hour trip generation estimates based on the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition (2017), for Multifamily (Low-Rise) Housing (ITE Land Use Code 220). The proposed Project is anticipated to generate a total of 476 trip-ends per day with 30 AM peak hour trips and 36 PM peak hour trips, as shown on Table 1.

TABLE 1: PROJECT TRIP GENERATION SUMMARY

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:									
Multifamily Housing (Low-Rise)	220	DU	0.11	0.35	0.46	0.35	0.21	0.56	7.32

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
Multifamily Housing (Low-Rise)	65	DU	7	23	30	23	13	36	476

[1] DU = Dwelling Units

TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the route where the Project traffic would distribute. The Project trip distribution patterns are graphically depicted on Exhibit 4.

ANALYSIS SCENARIOS

The following analysis scenarios will be analyzed for this traffic study:

- Existing (2020)
- Opening Year Cumulative (2023) Without Project
- Opening Year Cumulative (2023) With Project (if applicable, with improvements)
- Horizon Year (2040) Without Project
- Horizon Year (2040) With Project (if applicable, with improvements)

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STUDY AREA

Consistent with the City of Wildomar's traffic study guidelines the study area limits have been set based upon a threshold of 50 peak hour project trips. In other words, the study area includes any intersection of Collector roadway or higher classification street with another Collector roadway or higher classification street, at which the proposed Project will add 50 or more peak hour trips. Although the Project is anticipated to contribute fewer than 50 peak hour trips to the study area intersections, the driveway and the site adjacent intersection of Monte Vista Drive and Summer Sage Drive are proposed to be evaluated for the purposes of this analysis to determine peak hour operations and any potential changes related to site adjacent roadway improvements. The proposed intersection analysis locations have been identified on Exhibit 3.

LEVEL OF SERVICE (LOS) CRITERIA

The City of Wildomar defines intersection performance deficiency standards consistent with those of the County of Riverside General Plan Circulation Element. Riverside County General Plan Policy C 2.1 states that the County will maintain the following County-wide target level of service (LOS):

The following minimum target levels of service have been designated for the review of development proposals in the unincorporated areas of Riverside County with respect to transportation impacts on roadways designated in the Riverside County Circulation Plan which are currently County maintained, or are intended to be accepted into the County maintained roadway system:

- *LOS C shall apply to all development proposals in any area of the Riverside County not located within the boundaries of an Area Plan, as well as those areas located within the following Area Plans: REMAP, Eastern Coachella Valley, Desert Center, Palo Verde Valley, and those non-Community Development areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS D shall apply to all development proposals located within any of the following Area Plans: Eastvale, Jurupa, Highgrove, Reche Canyon/Badlands, Lakeview/Nuevo, Sun City/Menifee Valley, Harvest Valley/Winchester, Southwest Area, The Pass, San Jacinto Valley, Western Coachella Valley and those Community Development Areas of the Elsinore, Lake Mathews/Woodcrest, Mead Valley and Temescal Canyon Area Plans.*
- *LOS E may be allowed by the Board of Supervisors within designated areas where transit-oriented development and walkable communities are proposed.*

The applicable minimum LOS utilized for the purposes of this analysis is LOS D per the County-wide target LOS for projects located within the Elsinore Area Plan.

DEFICIENCIES

CITY OF WILDOMAR

The LOS-based traffic study will be utilized for conditions of approval and to demonstrate consistency with the General Plan goals/policies. To determine whether the addition of project-related traffic at a study intersection would result in a deficiency, the following thresholds will be utilized:

- A project-related deficiency occurs at a study intersection if the addition of project-generated trips reduces the peak hour level of service of the study intersection to change from acceptable "pre-project" operation (LOS A, B, C, or D) to deficient operation (LOS E or F);
- A project-related deficiency occurs at a study intersection if the addition of project-generated trips changes the pre-project delay by the value shown below (Table 2).

TABLE 2: CITY OF WILDOMAR INTERSECTION LEVEL OF SERVICE STANDARDS

Pre-Project Los	Project-Related Delay Increase	Required Improvement
E or F	More than 5.0 seconds	Reduce delay increase to within 5.0 seconds

The City of Wildomar significance thresholds will be applied at study area intersections for the purposes of determining project-related deficiencies. A fair share analysis will also be conducted for applicable study area intersections.

EXISTING COUNT DATA

The following peak hours are proposed for analysis:

- Weekday AM Peak Hour (peak hour between 7:00 AM and 9:00 AM)
- Weekday PM Peak Hour (peak hour between 4:00 PM and 7:00 PM)

In light of the current ongoing COVID-19 pandemic, Urban Crossroads will need to work with City staff and other local traffic count companies to obtain historic traffic counts for the proposed study area intersections. Historic traffic counts would be adjusted by 2% per year (or other growth as directed by City staff) to establish a 2020 baseline for the purposes of the traffic study.

There is no historic count data available for the intersection of Monte Vista Avenue and Summer Sage Drive. We have obtained a historic traffic count (2019) for the intersection of Monte Vista Avenue and Bundy Canyon Road. As such, we are proposing to collect new traffic counts at both the intersection of Monte Vista Avenue at Bundy Canyon Road and Summer Sage Drive. Based on the count comparison of the current 2020 and the adjusted 2019 data at Monte Vista Avenue and Bundy Canyon, a similar

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adjustment factor will be applied to Monte Vista Avenue at Summer Sage Drive in order to establish a non-COVID 2020 baseline for the purposes of the analysis. The through volumes for the Project driveway will be derived from the final adjusted volumes at Monte Vista Avenue and Summer Sage Drive.

It is our understanding that the City may have average daily traffic volumes available within the vicinity of the Project. We will reach out to City staff to obtain the available count data and utilize if applicable to establish a 2020 baseline for our analysis.

AMBIENT GROWTH

Consistent with other City of Wildomar studies, an ambient growth rate of 2 percent per year (compounded annually) will be used for this analysis to approximate background traffic growth not identified by nearby cumulative development projects.

TRAFFIC SIGNAL WARRANTS

Applicable traffic signal warrants will be evaluated for all unsignalized study area intersections for each of the analysis scenarios.

CUMULATIVE DEVELOPMENT PROJECTS

The cumulative projects shown on Table 3 and illustrated on Exhibit 5 have been compiled based on current information found on the City of Wildomar's website, information previously provided by the City of Wildomar for other traffic studies, and knowledge of other recent projects near the study area. If applicable, please indicate the cumulative projects that should be removed or information on any additional cumulative projects to be added to the list on Table 3 and illustrated on Exhibit 5.

VEHICLE MILES TRAVELED (VMT)

A VMT analysis will also be prepared under separate cover from the level of service (LOS) based traffic operations analysis. The recently adopted City of Wildomar Vehicle Miles Traveled (VMT) guidelines (June 2020) will be utilized for the VMT analysis.

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If you have any questions, please contact me directly at (949) 861-0177.

Respectfully submitted,

URBAN CROSSROADS, INC.

Charlene So

Charlene So, PE
Associate Principal

Table 3

Table 1 of 2

List of Cumulative Developments

#	Project Name	Land Use[1]	Quantity	Units[2]
W1	Wildomar Crossings	Free Standing Discount Store	10.000	TSF
		Auto Parts Sales	7.004	TSF
		Fast-Food w/ Drive Through	2.600	TSF
		Retail	3.300	TSF
		Fast-Food w/o Drive Through	3.300	TSF
W2	Lesle Tract Map	SFDR	10	DU
W3	Richmond American	SFDR	149	DU
W4	Camelia Townhouse Project	Condo/Townhomes	163	DU
W5	Rancon Medical & Retail Center	Retail	200.000	TSF
		Office	94.000	TSF
W6	Cornerstone Church Preschool & Admin. Building	School	170	STU
		Office	25.462	TSF
W7	Elm Street Subdivision	SFDR	14	DU
W8	Walmart Retail Project	Free-Standing Discount Superstore	193.792	TSF
W9	McVicar Residential Project	SFDR	47	DU
W10	Smith Ranch Self Storage	Self-Storage	150.000	TSF
		Office	10	TSF
W11	Life-Storage Mini Warehouse	Self-Storage	60.800	TSF
W12	Milestone RV/Boat Storage	Self-Storage	8.300	TSF
W13	Westpark Promenade Development (mixed use)	Shopping Center	118.354	TSF
		Condo/Townhomes	191	DU
W14	Villa Sienna Apartment Project	Condo/Townhomes	180	DU
W15	Grove Park Mixed Use Project	Condo/Townhomes	162	DU
		Retail	50.000	TSF
W16	Baxter Village	Shopping Center	75.000	TSF
		SFDR	67	DU
		Condo/Townhomes	204	DU
W17	Horizons/Strata Mixed Use Project	Assisted Living	86	BED
		Condo/Townhomes	138	DU
W18	Orange Bundy/Parcel Map	Retail	79.497	TSF
		Fast Food w/ Drive Through	1.500	TSF
		Gas Station w/ Market	6	VFP

Table 3
Table 2 of 2

List of Cumulative Developments

#	Project Name	Land Use[1]	Quantity	Units[2]
W19	Oak Creek Canyon	SFDR	275	DU
W20	Bundy Canyon Plana	Shopping Center	36.990	TSF
W21	Wildomar Shooting Academy[3]	Gun Shooting Range	--	--
W22	Wildomar Meadows	SFDR	1505	DU
		Passive Park	13.5	AC
		Active Park	10.0	AC
W23	Diversified Pacific Homes	SFDR	51	DU
W24	Pacific cove Inv.	SFDR	70	DU
W25	Beazer Homes	SFDR	108	DU
W26	Clinton Keith Village Retail Center	Shopping Center	40.000	TSF
W27	Baxter/Susan GPA/TTM	SFDR	48	DU
W28	Ione/Palomar Residential	SFDR	60	DU
W29	Rhoades Residential Project	SFDR	131	DU
W30	Nova Homes Residential	SFDR	77	DU
W31	Darling/Bundy Canyon Residential	Condo/Townhomes	140	DU
W32	Faith Bible Church	Church	45.155	TSF
W33	The Commons at Hidden Springs	Fast-Food w/ Drive Through	7.800	TSF
		Shopping Center	10.870	TSF
		Supermarket	26.500	TSF
		Pharmacy w/ Drive Through	24.700	TSF
		Coffee/Donut Shop w/ Drive Through	1.800	TSF

[1] SFDR = Single Family Detached Residential

[2] AC = Acres; DU = Dwelling Units; TSF = Thousand Square Feet; VFP = Vehicle Fueling Positions; STU = Students

.93;2658Ã/8<479:4Ã1.*Ã)."%0/# Ä!/. Ä$(!&Ä)'&"Ä,/.! ,(&&+$-

EXHIBIT 1: LOCATION MAP



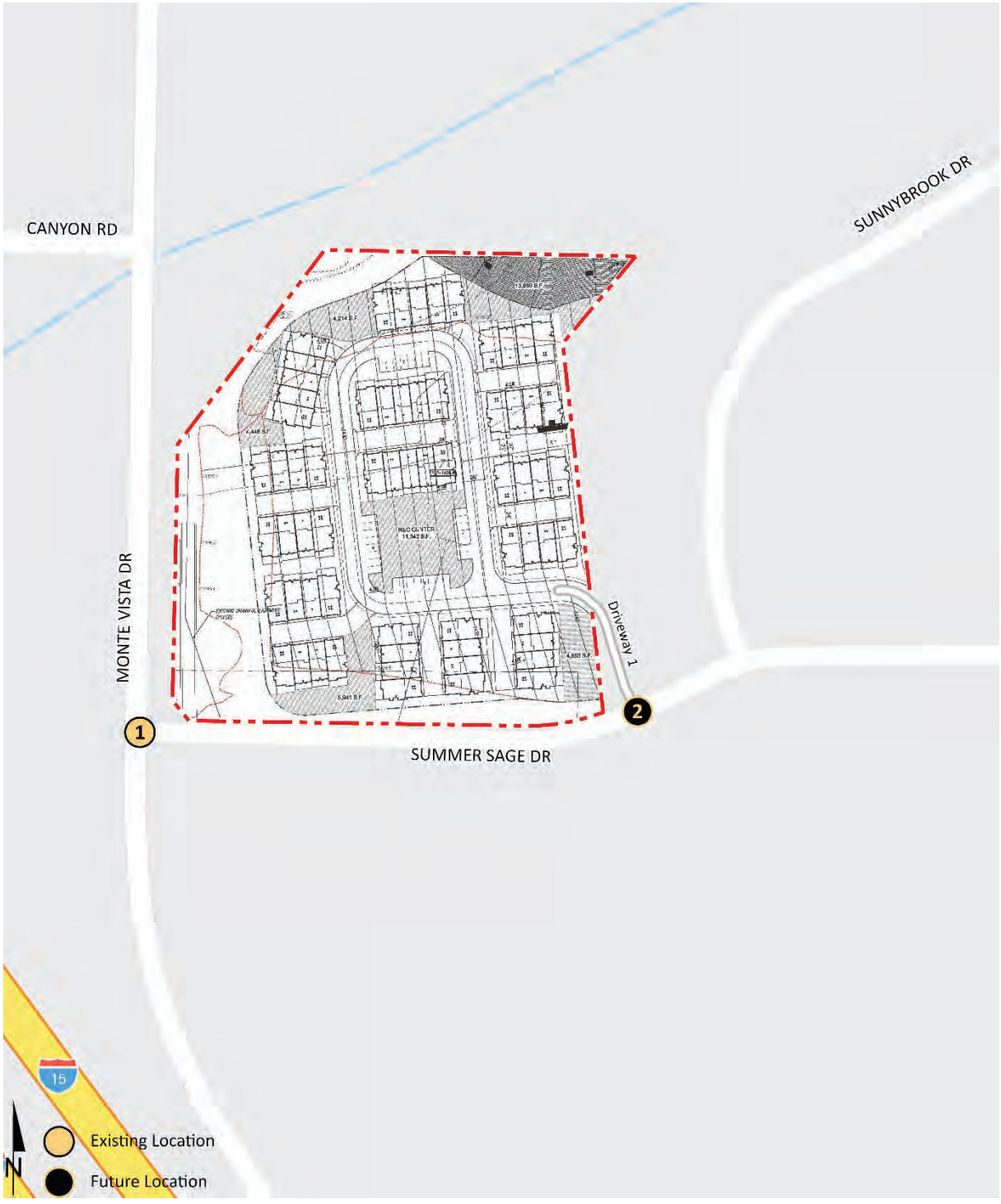
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EXHIBIT 2: PRELIMINARY SITE PLAN



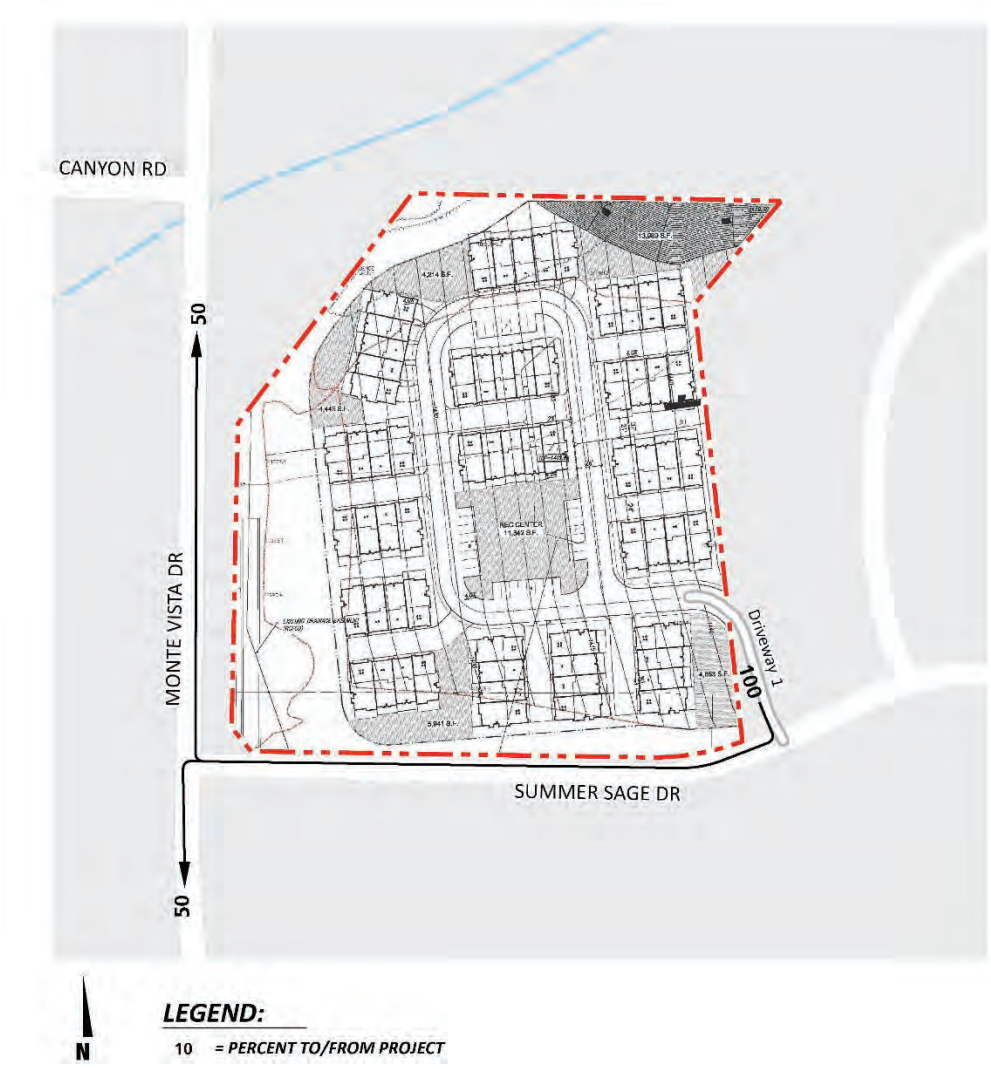
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EXHIBIT 3: STUDY AREA



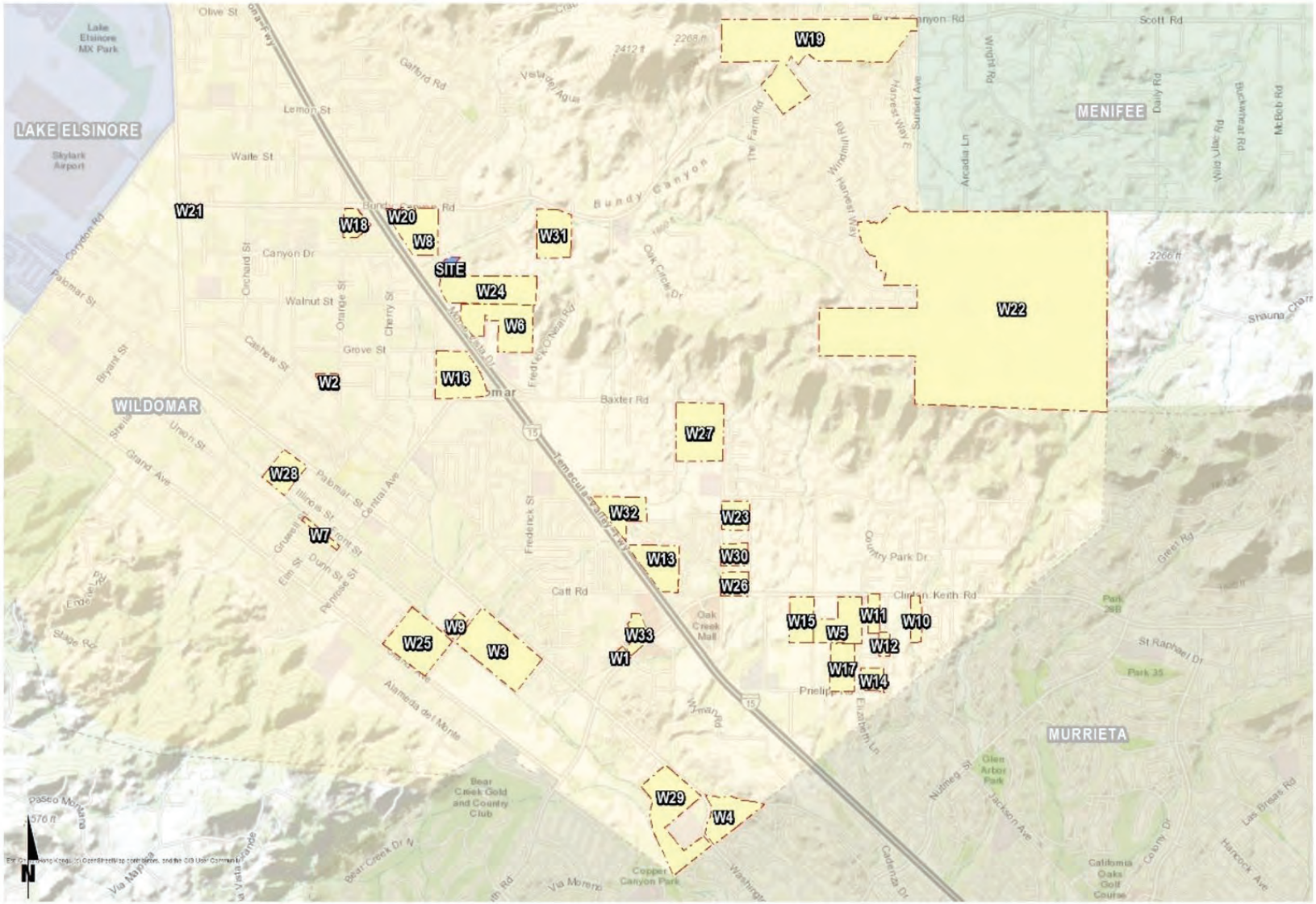
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EXHIBIT 4: PROJECT TRIP DISTRIBUTION



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EXHIBIT 5: CUMULATIVE DEVELOPMENT LOCATION MAP



URBAN CROSSROADS

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APPENDIX 1.2:

SITE ADJACENT QUEUES

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Intersection: 1: Monte Vista Dr. & Summer Sage Dr.

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	79	77
Average Queue (ft)	30	10
95th Queue (ft)	57	41
Link Distance (ft)	1180	1286
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Summer Sage Dr. & Driveway 1

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	6	25
Average Queue (ft)	0	10
95th Queue (ft)	4	27
Link Distance (ft)	1180	532
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Intersection: 1: Monte Vista Dr. & Summer Sage Dr.

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	50	4	42
Average Queue (ft)	21	0	5
95th Queue (ft)	44	3	25
Link Distance (ft)	1180	1075	1286
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Summer Sage Dr. & Driveway 1

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	12	20
Average Queue (ft)	0	7
95th Queue (ft)	6	23
Link Distance (ft)	1180	532
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

APPENDIX 1.3:

VMT ANALYSIS

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URBAN CROSSROADS

February 9, 2021

Mr. Erik Lunde
Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220
Newport Beach, CA 92660

SUBJECT: MONTE VISTA VILLAGE VEHICLE MILES TRAVELED (VMT) ANALYSIS

Dear Mr. Erik Lunde:

The following vehicle miles traveled (VMT) analysis has been prepared for the proposed Monte Vista Village (**Project**), which is located on the northeast corner of Summer Sage Way and Monte Vista Drive in the City of Wildomar. The Project is to consist of 65 multifamily housing (low-rise) dwelling units.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (1) Based on OPR's Technical Advisory, the Western Riverside Council of Governments (WRCOG) prepared a WRCOG SB 743 Implementation Pathway Document Package (March 2019) to assist its member agencies with implementation tools necessary to adopt analysis methodology, impact thresholds and mitigation approaches for VMT. To add to the previous work effort, WRCOG in February 2020 released its Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (**WRCOG Guidelines**), which provides specific procedures for complying with the new CEQA requirements for VMT analysis. (2) Utilizing the Technical Advisory and WRCOG Guidelines, the City of Wildomar adopted VMT CEQA Threshold Policy Guidelines in June of 2020 (**City Guidelines**). (3) The adopted City Guidelines have been utilized to prepare this VMT analysis.

PROJECT SCREENING

The City Guidelines provide details on criteria that can be used to identify when a proposed land development project is anticipated to result in a less than significant impact without the need to conduct a more detailed VMT analysis. The following types of land development projects are anticipated to have a less than significant project VMT impact:

- Any project that generates or attracts 110 or fewer trips per day. This generally corresponds to the following "typical" development potentials:
    - 11 single family housing units
    - 16 multi-family, condominiums, or townhouse housing units
    - 10,000 sq. ft. of office
    - 15,000 sq. ft. of light industrial
    - 63,000 sq. ft. of warehousing
    - 79,000 sq. ft. of high cube transload and short-term storage warehouse
- Projects statutorily or categorically exempt from CEQA.
- Locally serving retail 50,000 square feet or less.
- Mixed use projects with at least 30 percent residential.

The proposed Project would exceed 110 trips per day (see Attachment A), is not exempt from CEQA, and does not contain a mixed of land uses where at least 30 percent are residential. As the Project does not screen out based on the City's adopted VMT thresholds, a project level VMT analysis has been prepared.

PROJECT VMT ASSESSMENT

The Riverside Transportation Analysis Model (RIVTAM) is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households and employment. The City Guidelines identifies RIVTAM as the appropriate tool for conducting VMT analysis for land use projects in the City of Wildomar.

Project VMT has been calculated using the most current version of RIVTAM. Adjustments in socio-economic data (SED) (i.e., population and housing) have been made to the traffic analysis zone (TAZ) 3,739 within the RIVTAM model to reflect the Project's proposed land uses (i.e., residential). Since the park/open space land uses are exempt from VMT analysis, TAZ 3,739 was utilized to model the residential component of the Project only. Table 1 summarizes the population estimates for the Project.

TABLE 1: POPULATION ESTIMATES

Land Use	Dwelling Units	Population per household	Estimated Population[1]
Residential	65	3.10	202

Adjustments to population factors for the Project's TAZ were made to the RIVTAM base year model (2012). The model was then run with the updated SED factors included for the Project TAZ.

[1] Average household size provided by City staff.

Consistent with the thresholds contained in the City Guidelines, calculation of VMT for the residential use proposed by the Project are evaluated using total trips[2]. The total VMT can be determined with the RIVTAM model by using the origin-destination (OD) trip matrix. Project generated total VMT was calculated for the base year model (2012). The total VMT is then normalized by dividing by the number of Project service population (SP). Since the Project does not have an employment component, the service population consists entirely of population. As shown in Table 2, the Project baseline VMT per SP is 23.88.

TABLE 2: PROJECT VMT PER SERVICE POPULATION

	Project
Total VMT	4,824
Service Population (SP)	202
VMT per SP[3]	23.88

The City Guidelines state that the City's adopted VMT impact threshold is 3.0 percent below existing VMT as calculated by WRCOG. WRCOG publishes VMT data for each of its member agencies as derived from the RIVTAM model for the base year (2012) model (as described in the Methodology section of the City Guidelines).

Table 3 illustrates a comparison between the baseline project generated total VMT per SP to the existing City of Wildomar VMT per SP. As shown, project generated VMT per SP would be 27.4 percent below the existing City of Wildomar VMT per SP. As such, the Project's impact based on project generated VMT is less than significant.

TABLE 3: PROJECT VMT PER SP COMPARISON

	Existing Citywide	Baseline Project
Total VMT per SP	32.87	23.88
Percent Change		-27.4%
Potential Impact		No

CUMULATIVE VMT ASSESSMENT

The Technical Advisory states that "a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of less than significant project impact would imply a less than

[2] City Guidelines; Page 6.
[3] Total VMT/SP is a measure of all vehicle trips and trip purposes, which is consistent with City Guidelines.

significant cumulative impact, and vice versa."[4] The Project's less than significant finding at the project level would indicate that there is also not adverse cumulative impact to VMT resulting from the development of the Project.

CONCLUSION

The proposed Project did not meet any of the City's applicable VMT screening thresholds. A project level VMT analysis was prepared based on City Guidelines. The Project was found to generate VMT at a level 27.4% below the City's adopted VMT impact threshold of 3.0% below existing VMT as calculated by WRCOG, resulting in a finding of less than significant. The Project's potential impact to cumulative conditions is also considered less than significant.

If you have any questions, please contact me directly at aevatt@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
President

Robert Vu, PE
Transportation Engineer

[4] Technical Advisory; Page 6.

REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
2. **Western Riverside Council of Governments (WRCOG).** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* February 13, 2020.
3. **City of Wildomar.** *Vehicle Miles Travelled (VMT) CEQA Threshold Policy Guidelines.* City of Wildomar : s.n., June 2020.

ATTACHMENT A
PROJECT TRIP GENERATION

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:									
Multifamily Housing (Low-Rise)	220	DU	0.11	0.35	0.46	0.35	0.21	0.56	7.32

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
Multifamily Housing (Low-Rise)	65	DU	7	23	30	23	13	36	476

[1] DU = Dwelling Units

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APPENDIX 3.1:

EXISTING TRAFFIC COUNTS

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INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Tue, Jan 26, 21

LOCATION: Wildomar
NORTH & SOUTH: Monte Vista
EAST & WEST: Bundy Canyon

PROJECT #: SC2790
LOCATION #: 1
CONTROL: STOP N

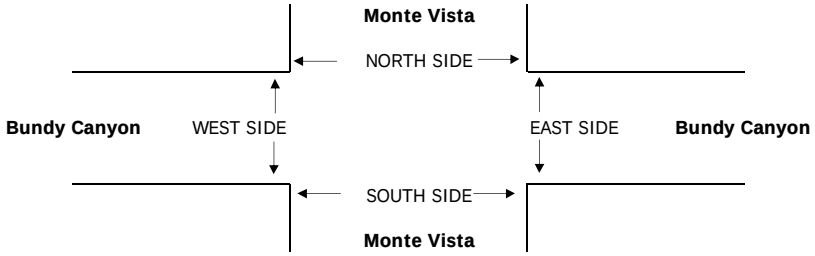
NOTES:

AM / PM / MD / OTHER / OTHER

N ▲ S ▼ W ◄ E ►

☑ Add U-Turns to Left Turns

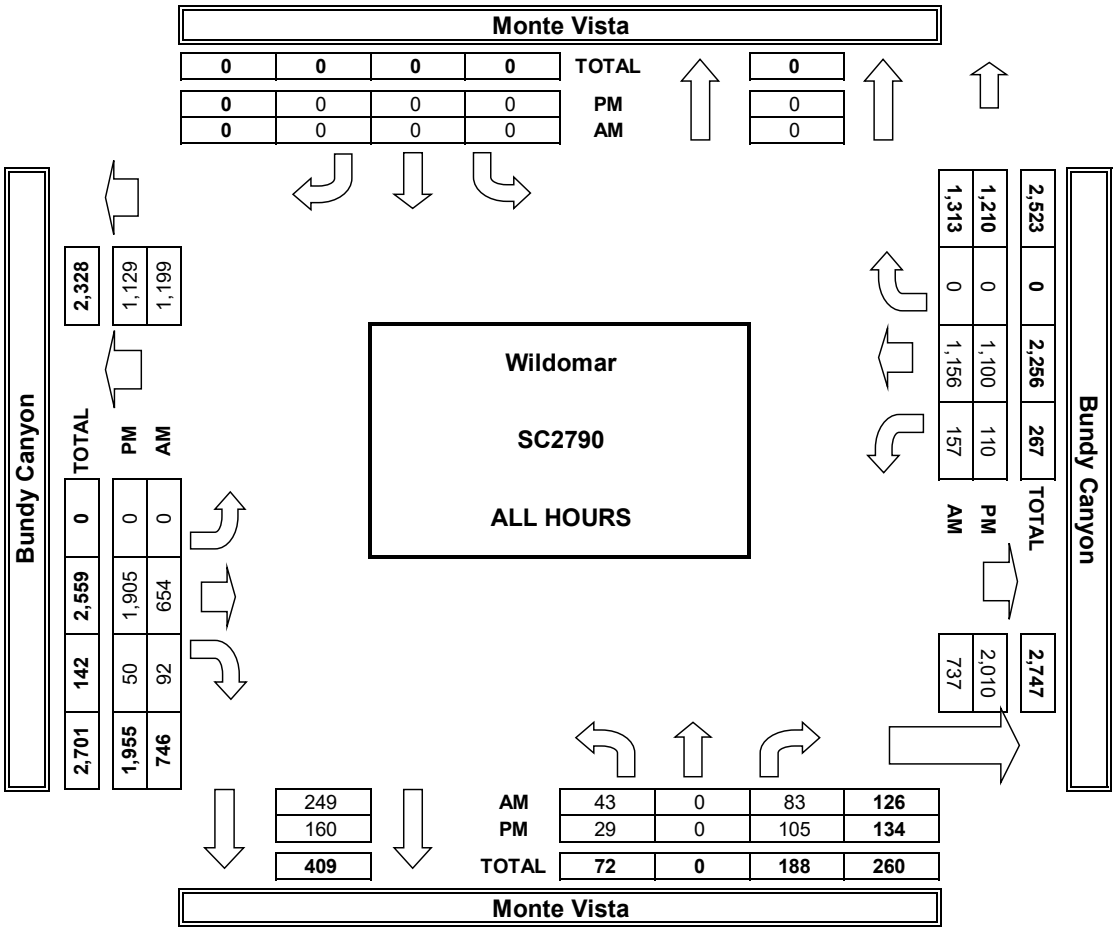
		NORTHBOUND Monte Vista			SOUTHBOUND Monte Vista			EASTBOUND Bundy Canyon			WESTBOUND Bundy Canyon				U-TURNS				
	LANES:	NL 0	NT X	NR 0	SL X	ST X	SR X	EL X	ET 1	ER 0	WL 1	WT 1	WR X	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	0	4	0	0	0	0	60	7	10	112	0	193	0	0	0	0	0
	7:15 AM	1	0	2	0	0	0	0	62	9	16	155	0	245	0	0	0	0	0
	7:30 AM	3	0	9	0	0	0	0	102	9	23	125	0	271	0	0	0	0	0
	7:45 AM	4	0	17	0	0	0	0	93	22	40	169	0	345	0	0	0	0	0
	8:00 AM	7	0	17	0	0	0	0	73	16	21	164	0	298	0	0	0	0	0
	8:15 AM	7	0	9	0	0	0	0	94	11	16	142	0	279	0	0	0	0	0
	8:30 AM	13	0	14	0	0	0	0	88	5	17	155	0	292	0	0	0	0	0
	8:45 AM	8	0	11	0	0	0	0	82	13	14	134	0	262	0	0	0	0	0
	VOLUMES	43	0	83	0	0	0	0	654	92	157	1,156	0	2,185	0	0	0	0	0
	APPROACH %	34%	0%	66%	0%	0%	0%	0%	88%	12%	12%	88%	0%						
	APP/DEPART	126	/	0	0	/	249	746	/	737	1,313	/	1,199	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	31	0	57	0	0	0	0	348	54	94	630	0	1,214					
	APPROACH %	35%	0%	65%	0%	0%	0%	0%	87%	13%	13%	87%	0%						
	PEAK HR FACTOR		0.815			0.000			0.874			0.866		0.880					
	APP/DEPART	88	/	0	0	/	148	402	/	405	724	/	661	0					
PM	4:00 PM	5	0	18	0	0	0	0	242	5	13	154	0	437	0	0	0	0	0
	4:15 PM	3	0	11	0	0	0	0	230	6	24	169	0	443	0	0	0	0	0
	4:30 PM	3	0	15	0	0	0	0	241	9	8	124	0	400	0	0	0	0	0
	4:45 PM	3	0	18	0	0	0	0	236	9	13	154	0	433	0	0	0	0	0
	5:00 PM	2	0	13	0	0	0	0	256	9	13	126	0	419	0	0	0	0	0
	5:15 PM	6	0	11	0	0	0	0	256	7	14	121	0	415	0	0	0	0	0
	5:30 PM	5	0	9	0	0	0	0	244	3	14	134	0	409	0	0	0	0	0
	5:45 PM	2	0	10	0	0	0	0	200	2	11	118	0	343	0	0	0	0	0
	VOLUMES	29	0	105	0	0	0	0	1,905	50	110	1,100	0	3,299	0	0	0	0	0
	APPROACH %	22%	0%	78%	0%	0%	0%	0%	97%	3%	9%	91%	0%						
	APP/DEPART	134	/	0	0	/	160	1,955	/	2,010	1,210	/	1,129	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	14	0	62	0	0	0	0	949	29	58	601	0	1,713					
	APPROACH %	18%	0%	82%	0%	0%	0%	0%	97%	3%	9%	91%	0%						
	PEAK HR FACTOR		0.826			0.000			0.978			0.854		0.967					
	APP/DEPART	76	/	0	0	/	87	978	/	1,011	659	/	615	0					

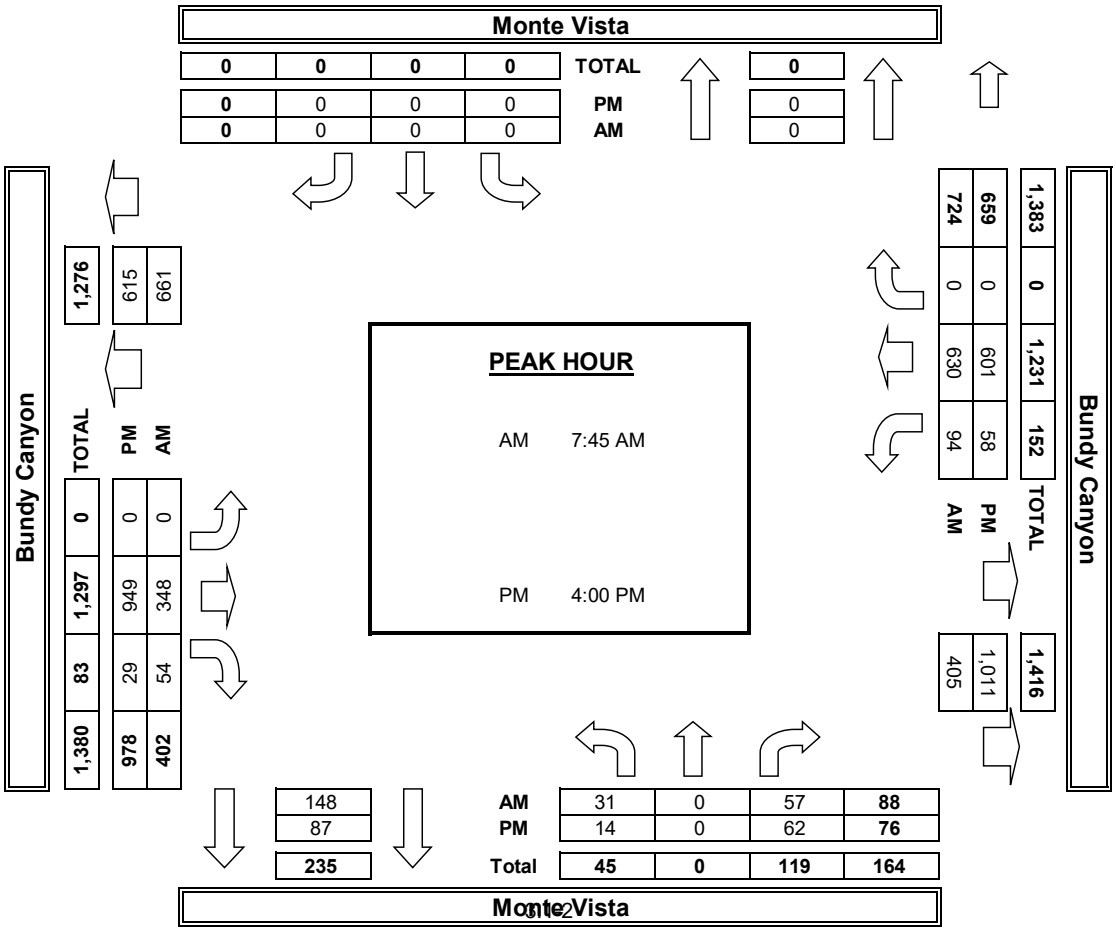


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	1	1	0	0	2	1	1	0	0	2	0	0	0	0	0
	8:45 AM	3	0	0	0	3	3	0	0	0	3	0	0	0	0	0
	TOTAL	5	1	0	0	6	5	1	0	0	6	0	0	0	0	0
	AM BEGIN PEAK HR	7:45 AM					1	1	0	0	2					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0
	PM BEGIN PEAK HR	4:00 PM					1	0	0	0	1					

AimTD LLC

TURNING MOVEMENT COUNTS





Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S: Monte Vista Drive
E/W: Bundy Canyon Road
Weather: Clear

File Name : 10_WDM_Monte Vista_Bundy Canyon AM
Site Code : 99919645
Start Date : 9/25/2019
Page No : 1

Groups Printed- Total Volume

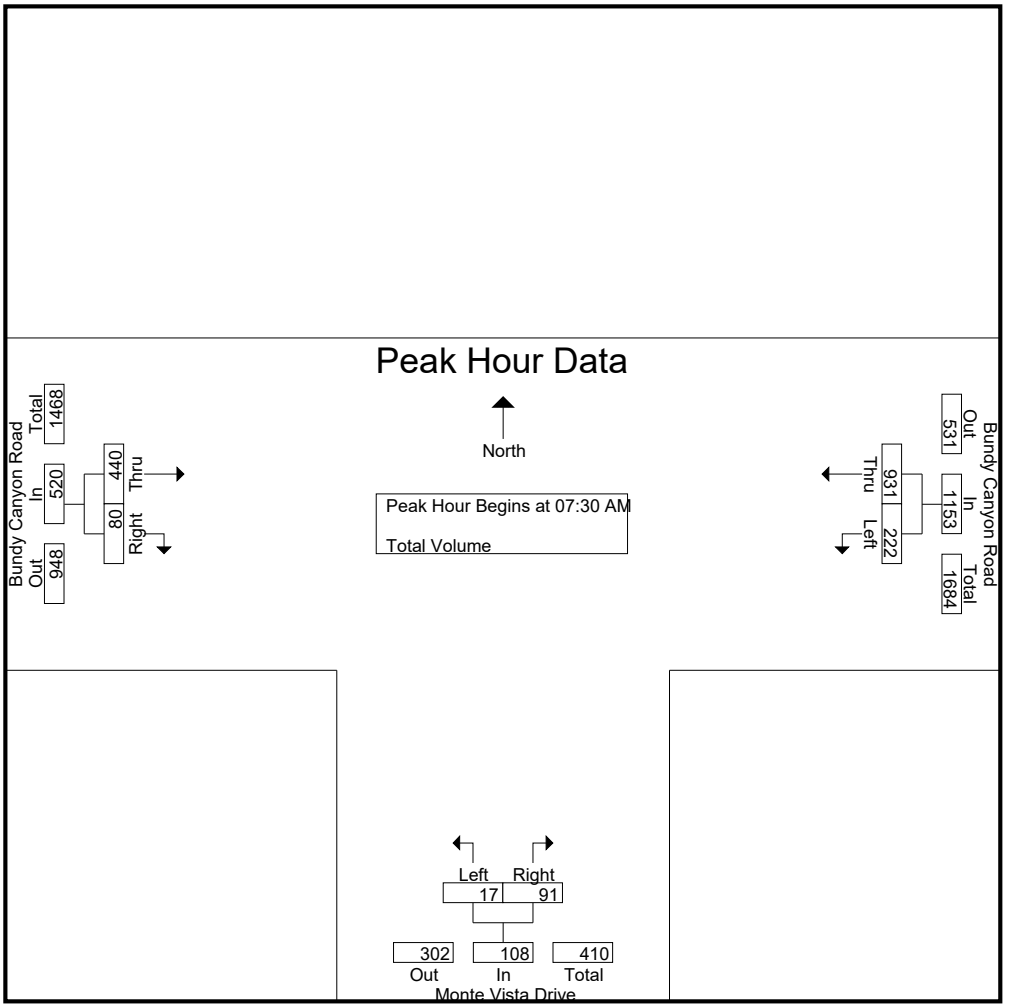
	Bundy Canyon Road Westbound			Monte Vista Drive Northbound			Bundy Canyon Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
07:00 AM	31	187	218	1	8	9	101	4	105	332
07:15 AM	53	188	241	0	11	11	115	14	129	381
07:30 AM	99	228	327	3	25	28	100	27	127	482
07:45 AM	65	250	315	4	28	32	101	30	131	478
Total	248	853	1101	8	72	80	417	75	492	1673
08:00 AM	32	230	262	5	26	31	127	7	134	427
08:15 AM	26	223	249	5	12	17	112	16	128	394
08:30 AM	16	141	157	7	10	17	121	11	132	306
08:45 AM	14	140	154	5	14	19	102	11	113	286
Total	88	734	822	22	62	84	462	45	507	1413
Grand Total	336	1587	1923	30	134	164	879	120	999	3086
Apprch %	17.5	82.5		18.3	81.7		88	12		
Total %	10.9	51.4	62.3	1	4.3	5.3	28.5	3.9	32.4	

	Bundy Canyon Road Westbound			Monte Vista Drive Northbound			Bundy Canyon Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	**99**	228	**327**	3	25	28	100	27	127	**482**
07:45 AM	65	**250**	315	4	**28**	**32**	101	**30**	131	478
08:00 AM	32	230	262	**5**	26	31	**127**	7	**134**	427
08:15 AM	26	223	249	5	12	17	112	16	128	394
Total Volume	222	931	1153	17	91	108	440	80	520	1781
% App. Total	19.3	80.7		15.7	84.3		84.6	15.4		
PHF	.561	.931	.881	.850	.813	.844	.866	.667	.970	.924

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S: Monte Vista Drive
E/W: Bundy Canyon Road
Weather: Clear

File Name : 10_WDM_Monte Vista_Bundy Canyon AM
Site Code : 99919645
Start Date : 9/25/2019



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM			07:30 AM			07:45 AM		
+0 mins.	**99**	228	**327**	3	25	28	101	**30**	131
+15 mins.	65	**250**	315	4	**28**	**32**	**127**	7	**134**
+30 mins.	32	230	262	**5**	26	31	112	16	128
+45 mins.	26	223	249	5	12	17	121	11	132
Total Volume	222	931	1153	17	91	108	461	64	525
% App. Total	19.3	80.7		15.7	84.3		87.8	12.2	
PHF	.561	.931	.881	.850	.813	.844	.907	.533	.979

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S: Monte Vista Drive
E/W: Bundy Canyon Road
Weather: Clear

File Name : 10_WDM_Monte Vista_Bundy Canyon PM
Site Code : 99919645
Start Date : 9/25/2019
Page No : 1

Groups Printed- Total Volume

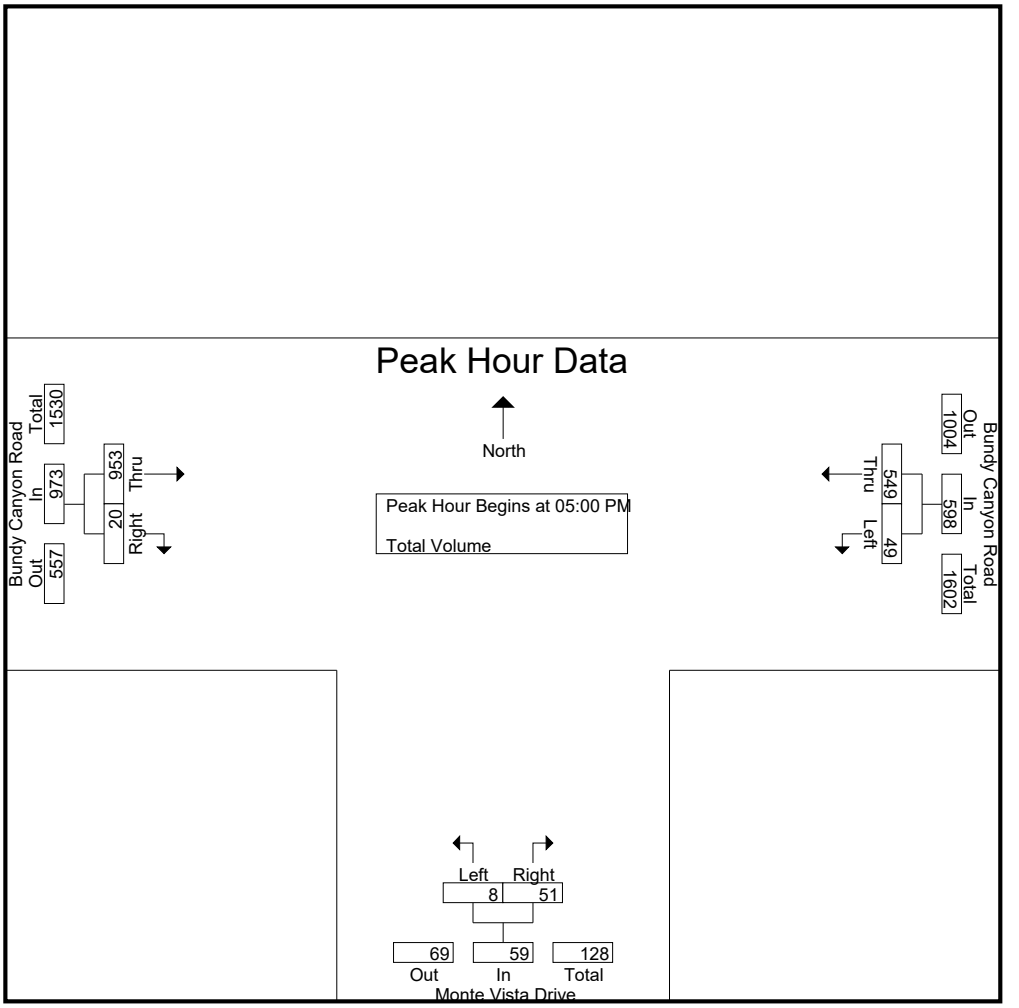
	Bundy Canyon Road Westbound			Monte Vista Drive Northbound			Bundy Canyon Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
04:00 PM	15	137	152	4	30	34	215	3	218	404
04:15 PM	10	138	148	4	17	21	244	7	251	420
04:30 PM	16	138	154	6	9	15	229	5	234	403
04:45 PM	12	148	160	7	17	24	194	0	194	378
Total	53	561	614	21	73	94	882	15	897	1605
05:00 PM	14	149	163	1	16	17	222	2	224	404
05:15 PM	12	155	167	1	12	13	238	8	246	426
05:30 PM	13	119	132	2	14	16	257	5	262	410
05:45 PM	10	126	136	4	9	13	236	5	241	390
Total	49	549	598	8	51	59	953	20	973	1630
Grand Total	102	1110	1212	29	124	153	1835	35	1870	3235
Apprch %	8.4	91.6		19	81		98.1	1.9		
Total %	3.2	34.3	37.5	0.9	3.8	4.7	56.7	1.1	57.8	

	Bundy Canyon Road Westbound			Monte Vista Drive Northbound			Bundy Canyon Road Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	**14**	149	163	1	**16**	**17**	222	2	224	404
05:15 PM	12	**155**	**167**	1	12	13	238	**8**	246	**426**
05:30 PM	13	119	132	2	14	16	**257**	5	**262**	410
05:45 PM	10	126	136	**4**	9	13	236	5	241	390
Total Volume	49	549	598	8	51	59	953	20	973	1630
% App. Total	8.2	91.8		13.6	86.4		97.9	2.1		
PHF	.875	.885	.895	.500	.797	.868	.927	.625	.928	.957

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Wildomar
N/S: Monte Vista Drive
E/W: Bundy Canyon Road
Weather: Clear

File Name : 10_WDM_Monte Vista_Bundy Canyon PM
Site Code : 99919645
Start Date : 9/25/2019
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM			04:00 PM			05:00 PM		
+0 mins.	**16**	138	154	4	**30**	**34**	222	2	224
+15 mins.	12	148	160	4	17	21	238	**8**	246
+30 mins.	14	149	163	6	9	15	**257**	5	**262**
+45 mins.	12	**155**	**167**	**7**	17	24	236	5	241
Total Volume	54	590	644	21	73	94	953	20	973
% App. Total	8.4	91.6		22.3	77.7		97.9	2.1	
PHF	.844	.952	.964	.750	.608	.691	.927	.625	.928

INTERSECTION TURNING MOVEMENT COUNTS

T218

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

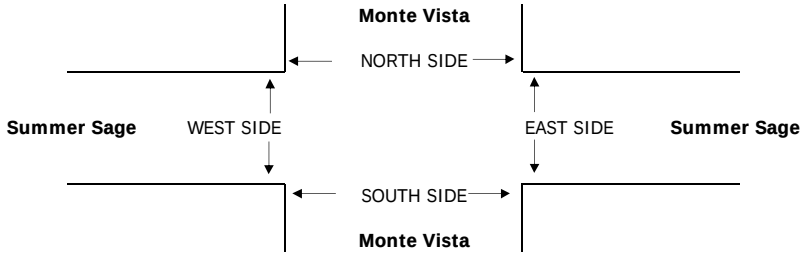
DATE:	LOCATION:	Wildomar	PROJECT #:	SC2790
Tue, Jan 26, 21	NORTH & SOUTH:	Monte Vista	LOCATION #:	2
	EAST & WEST:	Summer Sage	CONTROL:	STOP W

NOTES:

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

☑ Add U-Turns to Left Turns

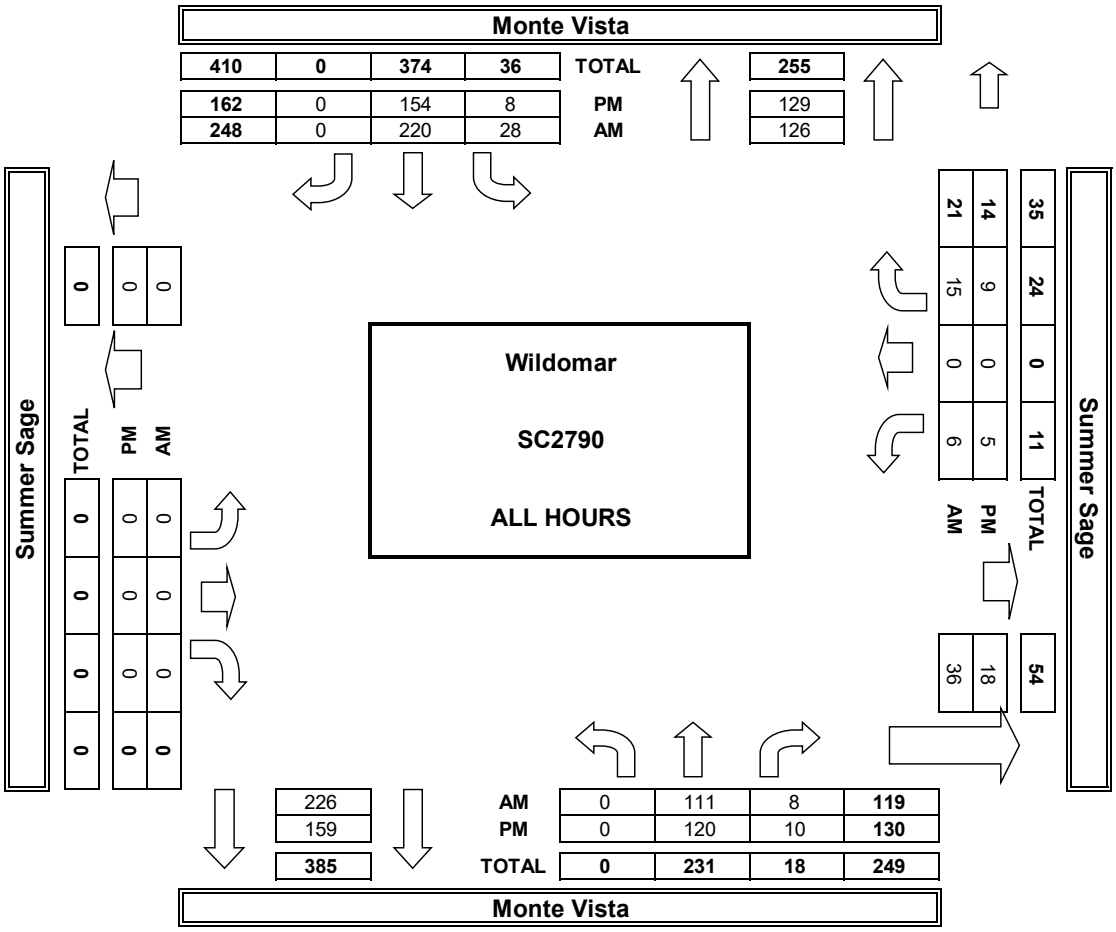
		NORTHBOUND Monte Vista			SOUTHBOUND Monte Vista			EASTBOUND Summer Sage			WESTBOUND Summer Sage				U-TURNS				
	LANES:	NL X	NT 1	NR 0	SL 0	ST 1	SR X	EL X	ET X	ER X	WL 0	WT X	WR 0	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
AM	7:00 AM	0	4	0	4	13	0	0	0	0	0	0	1	22	0	0	0	0	0
	7:15 AM	0	2	0	4	20	0	0	0	0	0	0	0	26	0	0	0	0	0
	7:30 AM	0	12	0	5	29	0	0	0	0	0	0	3	49	0	0	0	0	0
	7:45 AM	0	22	2	3	58	0	0	0	0	0	0	0	85	0	0	0	0	0
	8:00 AM	0	19	2	1	36	0	0	0	0	3	0	1	62	0	0	0	0	0
	8:15 AM	0	18	1	6	20	0	0	0	0	0	0	1	46	0	0	0	0	0
	8:30 AM	0	22	1	4	20	0	0	0	0	2	0	5	54	0	0	0	0	0
	8:45 AM	0	12	2	1	24	0	0	0	0	1	0	4	44	0	0	0	0	0
	VOLUMES	0	111	8	28	220	0	0	0	0	6	0	15	388	0	0	0	0	0
	APPROACH %	0%	93%	7%	11%	89%	0%	0%	0%	0%	29%	0%	71%						
	APP/DEPART	119	/	126	248	/	226	0	/	36	21	/	0	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	81	6	14	134	0	0	0	0	5	0	7	247					
	APPROACH %	0%	93%	7%	9%	91%	0%	0%	0%	0%	42%	0%	58%						
	PEAK HR FACTOR		0.906			0.607			0.000			0.429		0.726					
	APP/DEPART	87	/	88	148	/	139	0	/	20	12	/	0	0					
PM	4:00 PM	0	19	0	1	18	0	0	0	0	1	0	3	42	0	0	0	0	0
	4:15 PM	0	12	3	2	30	0	0	0	0	0	0	1	48	0	0	0	0	0
	4:30 PM	0	17	0	0	17	0	0	0	0	1	0	0	35	0	0	0	0	0
	4:45 PM	0	21	0	0	20	0	0	0	0	1	0	0	42	0	0	0	0	0
	5:00 PM	0	14	2	2	19	0	0	0	0	2	0	3	42	0	0	0	0	0
	5:15 PM	0	13	2	2	18	0	0	0	0	0	0	2	37	0	0	0	0	0
	5:30 PM	0	14	2	0	17	0	0	0	0	0	0	0	33	0	0	0	0	0
	5:45 PM	0	10	1	1	15	0	0	0	0	0	0	0	27	0	0	0	0	0
	VOLUMES	0	120	10	8	154	0	0	0	0	5	0	9	306	0	0	0	0	0
	APPROACH %	0%	92%	8%	5%	95%	0%	0%	0%	0%	36%	0%	64%						
	APP/DEPART	130	/	129	162	/	159	0	/	18	14	/	0	0					
	BEGIN PEAK HR		4:15 PM																
	VOLUMES	0	64	5	4	86	0	0	0	0	4	0	4	167					
	APPROACH %	0%	93%	7%	4%	96%	0%	0%	0%	0%	50%	0%	50%						
	PEAK HR FACTOR		0.821			0.703			0.000			0.400		0.870					
	APP/DEPART	69	/	68	90	/	90	0	/	9	8	/	0	0					

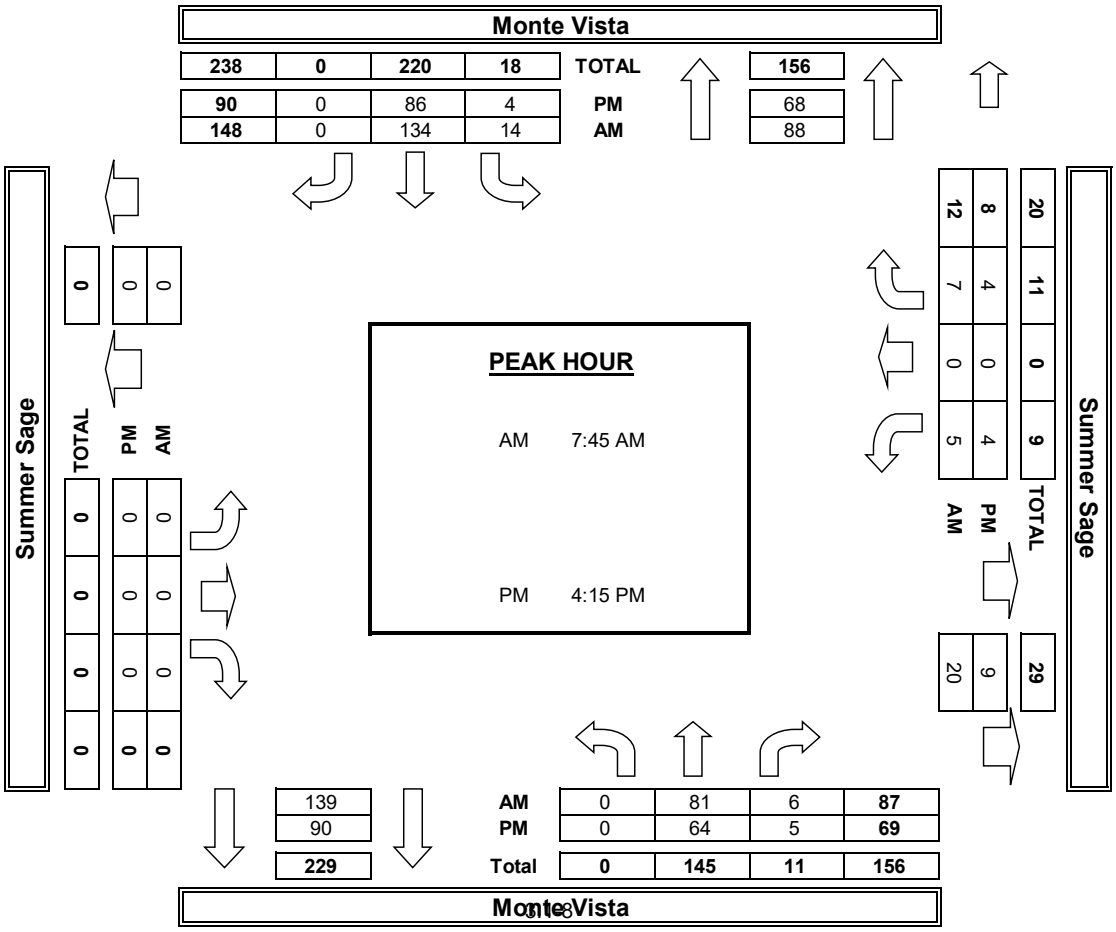


		PEDESTRIAN + BIKE CROSSINGS					PEDESTRIAN CROSSINGS					BICYCLE CROSSINGS				
		N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	N SIDE	S SIDE	E SIDE	W SIDE	TOTAL	NS	SS	ES	WS	TOTAL
AM	7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	AM BEGIN PEAK HR	7:45 AM					0	0	0	0	0					
PM	4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	PM BEGIN PEAK HR	4:15 PM					0	0	0	0	0					

AimTD LLC

TURNING MOVEMENT COUNTS





APPENDIX 3.2:

EXISTING (2021) CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	0.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	7	81	6	14	134
Future Vol, veh/h	5	7	81	6	14	134
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	10	111	8	19	184

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	337	115	0	0	119	0
Stage 1	115	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	658	937	-	-	1469	-
Stage 1	910	-	-	-	-	-
Stage 2	815	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	649	937	-	-	1469	-
Mov Cap-2 Maneuver	649	-	-	-	-	-
Stage 1	910	-	-	-	-	-
Stage 2	804	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	0.7
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	791	1469	-
HCM Lane V/C Ratio	-	-	0.021	0.013	-
HCM Control Delay (s)	-	-	9.6	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	4	64	5	4	86
Future Vol, veh/h	4	4	64	5	4	86
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	5	74	6	5	99

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	186	77	0	0	80	0
Stage 1	77	-	-	-	-	-
Stage 2	109	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	803	984	-	-	1518	-
Stage 1	946	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	801	984	-	-	1518	-
Mov Cap-2 Maneuver	801	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	913	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.1	0	0.3
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	883	1518	-
HCM Lane V/C Ratio	-	-	0.01	0.003	-
HCM Control Delay (s)	-	-	9.1	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0	0	-

APPENDIX 3.3:

EXISTING (2021) CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

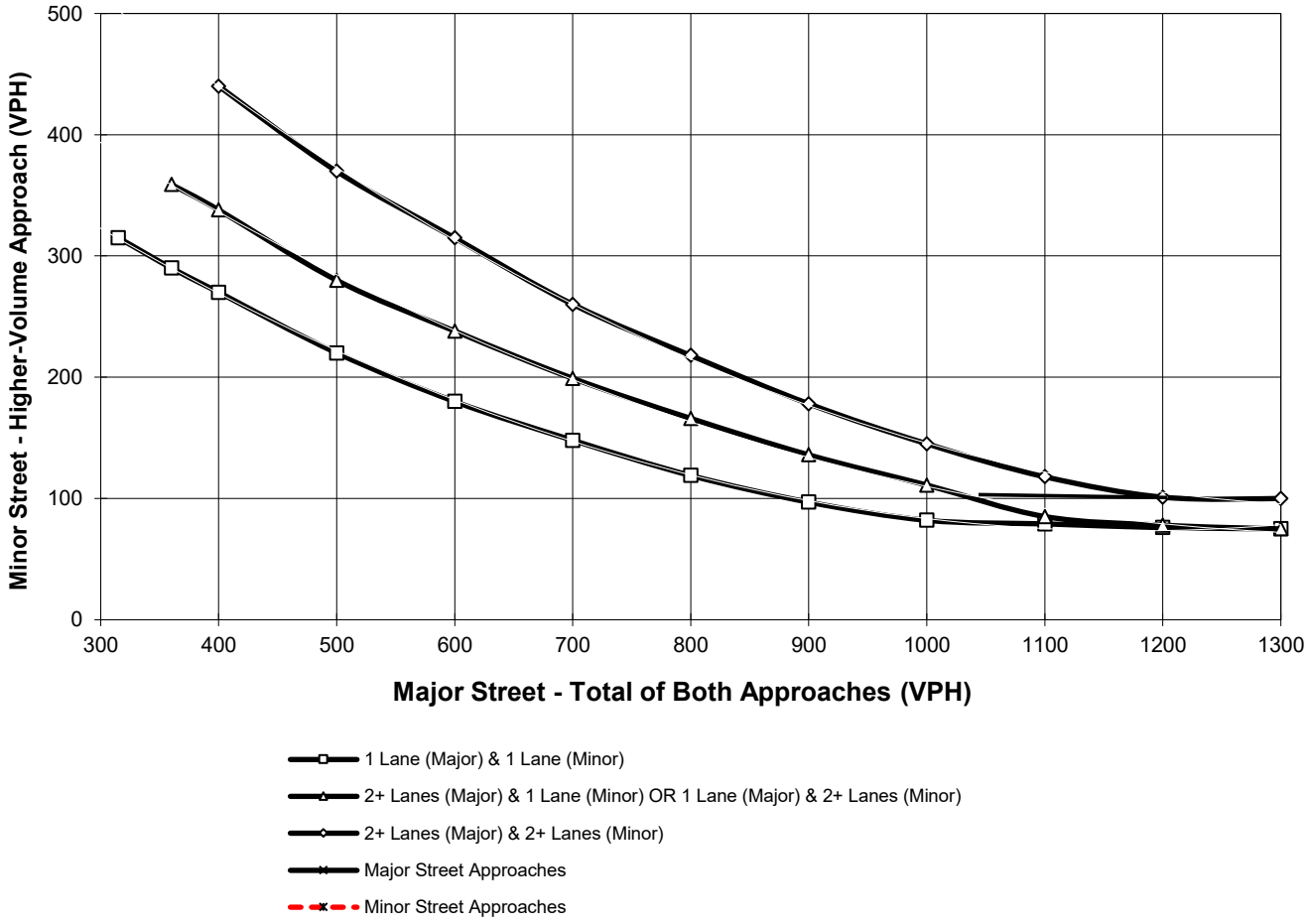
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **Existing (2021) Conditions - Weekday AM Peak Hour**

Major Street Name = **Monte Vista Dr.** Total of Both Approaches (VPH) = **235**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Summer Sage Dr.** High Volume Approach (VPH) = **12**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.1:

OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	19	17	199	10	34	368
Future Vol, veh/h	19	17	199	10	34	368
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	23	273	14	47	504

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	878	280	0	0	287	0
Stage 1	280	-	-	-	-	-
Stage 2	598	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	318	759	-	-	1275	-
Stage 1	767	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	302	759	-	-	1275	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	767	-	-	-	-	-
Stage 2	521	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	0.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	422	1275	-
HCM Lane V/C Ratio	-	-	0.117	0.037	-
HCM Control Delay (s)	-	-	14.7	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	9	172	13	12	208
Future Vol, veh/h	9	9	172	13	12	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	10	198	15	14	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	473	206	0	0	213	0
Stage 1	206	-	-	-	-	-
Stage 2	267	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	550	835	-	-	1357	-
Stage 1	829	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	543	835	-	-	1357	-
Mov Cap-2 Maneuver	543	-	-	-	-	-
Stage 1	829	-	-	-	-	-
Stage 2	769	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.6	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	658	1357	-
HCM Lane V/C Ratio	-	-	0.031	0.01	-
HCM Control Delay (s)	-	-	10.6	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

APPENDIX 5.2:

OPENING YEAR CUMULATIVE (2023) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	1.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	29	199	14	38	368
Future Vol, veh/h	31	29	199	14	38	368
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	40	273	19	52	504

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	891	283	0	0	292	0
Stage 1	283	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	313	756	-	-	1270	-
Stage 1	765	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	295	756	-	-	1270	-
Mov Cap-2 Maneuver	295	-	-	-	-	-
Stage 1	765	-	-	-	-	-
Stage 2	512	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	0.7
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	418	1270	-
HCM Lane V/C Ratio	-	-	0.197	0.041	-
HCM Control Delay (s)	-	-	15.7	8	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	44	36	0	0	23
Future Vol, veh/h	7	44	36	0	0	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	48	39	0	0	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	39	0	-	0	103	39
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1571	-	-	-	895	1033
Stage 1	-	-	-	-	983	-
Stage 2	-	-	-	-	959	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1571	-	-	-	891	1033
Mov Cap-2 Maneuver	-	-	-	-	891	-
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	959	-

Approach	EB	WB	SB
HCM Control Delay, s	1	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1571	-	-	-	1033
HCM Lane V/C Ratio	0.005	-	-	-	0.024
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	16	16	172	25	24	208
Future Vol, veh/h	16	16	172	25	24	208
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	18	198	29	28	239

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	508	213	0	0	227	0
Stage 1	213	-	-	-	-	-
Stage 2	295	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	525	827	-	-	1341	-
Stage 1	823	-	-	-	-	-
Stage 2	755	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	512	827	-	-	1341	-
Mov Cap-2 Maneuver	512	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	737	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	0.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	632	1341	-
HCM Lane V/C Ratio	-	-	0.058	0.021	-
HCM Control Delay (s)	-	-	11	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	25	18	0	0	13
Future Vol, veh/h	23	25	18	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	27	20	0	0	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	20	0	-	0	97	20
Stage 1	-	-	-	-	20	-
Stage 2	-	-	-	-	77	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1596	-	-	-	902	1058
Stage 1	-	-	-	-	1003	-
Stage 2	-	-	-	-	946	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1596	-	-	-	888	1058
Mov Cap-2 Maneuver	-	-	-	-	888	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	946	-

Approach	EB	WB	SB
HCM Control Delay, s	3.5	0	8.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1596	-	-	-	1058
HCM Lane V/C Ratio	0.016	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.4
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

APPENDIX 5.3:

OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

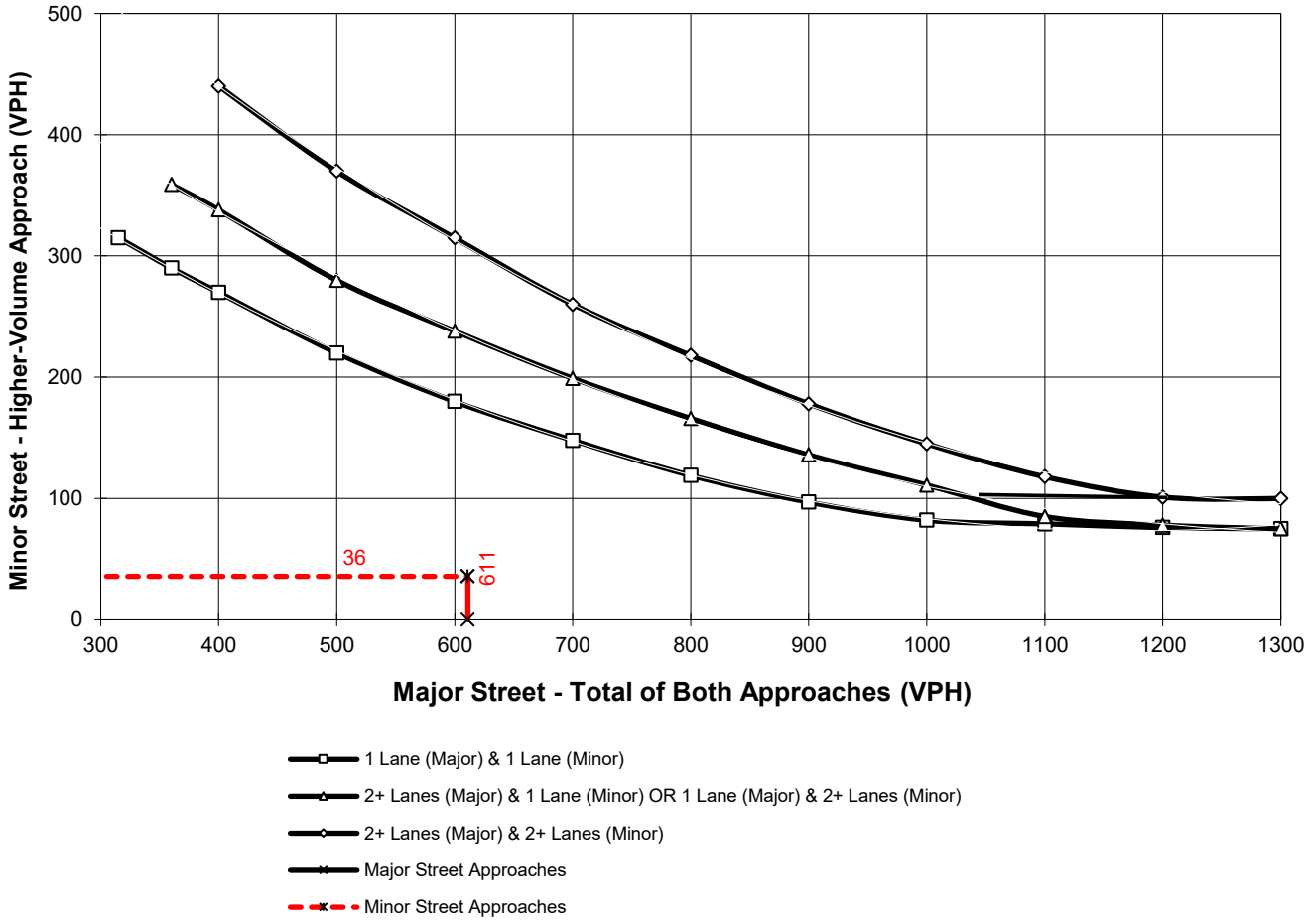
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **2023 Without Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Monte Vista Dr.** Total of Both Approaches (VPH) = **611**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Summer Sage Dr.** High Volume Approach (VPH) = **36**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 5.4:

OPENING YEAR CUMULATIVE (2023) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

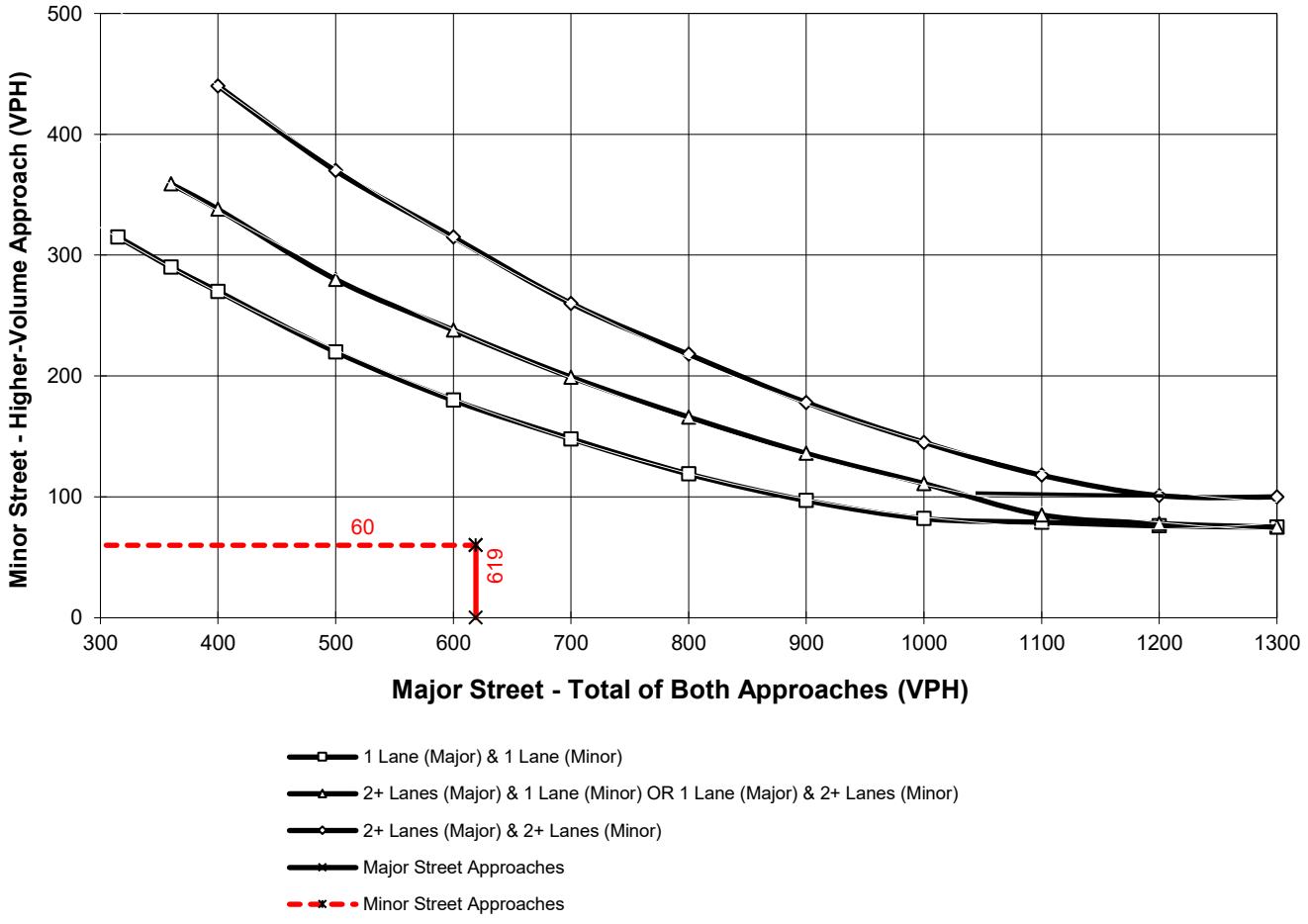
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **2023 With Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Monte Vista Dr.** Total of Both Approaches (VPH) = **619**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Summer Sage Dr.** High Volume Approach (VPH) = **60**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

___ DIST	___ CO	___ RTE	___ PM	TRAFFIC CONDITIONS		**2023 WP**
				CALC CS	DATE	02/05/21
Jurisdiction: **City of Wildomar**				CHK CS	DATE	02/05/21
Major Street: **Summer Sage Dr.**				Critical Approach Speed (Major)		25 mph
Minor Street: **Driveway 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **768** vpd Minor Street Future ADT = **238** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
XX	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
CONDITION A - Minimum Vehicular Volume	Urban	Rural	Urban	Rural
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **768** / *1* **238**	8,000	5,600	2,400	1,680
2 + / *1*	9,600	6,720	2,400	1,680
2 + / *2* +	9,600	6,720	3,200	2,240
1 / *2* +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX				
Number of lanes for moving traffic on each approach				
Major Street / Minor Street	Urban	Rural	Urban	Rural
1 **768** / *1* **238**	12,000	8,400	1,200	850
2 + / *1*	14,400	10,080	1,200	850
2 + / *2* +	14,400	10,080	1,600	1,120
1 / *2* +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. **A** 10% **B** 6%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

APPENDIX 6.1:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	1.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	21	19	304	11	37	538
Future Vol, veh/h	21	19	304	11	37	538
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	26	416	15	51	737

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1263	424	0	0	431	0
Stage 1	424	-	-	-	-	-
Stage 2	839	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	187	630	-	-	1129	-
Stage 1	660	-	-	-	-	-
Stage 2	424	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	173	630	-	-	1129	-
Mov Cap-2 Maneuver	173	-	-	-	-	-
Stage 1	660	-	-	-	-	-
Stage 2	392	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.2	0	0.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	264	1129	-
HCM Lane V/C Ratio	-	-	0.208	0.045	-
HCM Control Delay (s)	-	-	22.2	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	10	289	14	13	319
Future Vol, veh/h	10	10	289	14	13	319
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	11	332	16	15	367

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	737	340	0	0	348	0
Stage 1	340	-	-	-	-	-
Stage 2	397	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	386	702	-	-	1211	-
Stage 1	721	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	380	702	-	-	1211	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	721	-	-	-	-	-
Stage 2	668	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.7	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	493	1211	-
HCM Lane V/C Ratio	-	-	0.047	0.012	-
HCM Control Delay (s)	-	-	12.7	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

APPENDIX 6.2:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS INTERSECTION OPERATIONS ANALYSIS WORKSHEETS

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Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	31	304	15	41	538
Future Vol, veh/h	33	31	304	15	41	538
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	73	73	73	73	73	73
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	42	416	21	56	737

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1276	427	0	0	437	0
Stage 1	427	-	-	-	-	-
Stage 2	849	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	184	628	-	-	1123	-
Stage 1	658	-	-	-	-	-
Stage 2	419	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	169	628	-	-	1123	-
Mov Cap-2 Maneuver	169	-	-	-	-	-
Stage 1	658	-	-	-	-	-
Stage 2	384	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	25.5	0	0.6
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	262	1123	-
HCM Lane V/C Ratio	-	-	0.335	0.05	-
HCM Control Delay (s)	-	-	25.5	8.4	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.2	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	48	40	0	0	23
Future Vol, veh/h	7	48	40	0	0	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	52	43	0	0	25

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	43	0	-	0	111	43
Stage 1	-	-	-	-	43	-
Stage 2	-	-	-	-	68	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1566	-	-	-	886	1027
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	955	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1566	-	-	-	882	1027
Mov Cap-2 Maneuver	-	-	-	-	882	-
Stage 1	-	-	-	-	974	-
Stage 2	-	-	-	-	955	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	8.6
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1566	-	-	-	1027
HCM Lane V/C Ratio	0.005	-	-	-	0.024
HCM Control Delay (s)	7.3	0	-	-	8.6
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	17	289	26	25	319
Future Vol, veh/h	17	17	289	26	25	319
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	20	20	332	30	29	367

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	772	347	0	0	362	0
Stage 1	347	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	368	696	-	-	1197	-
Stage 1	716	-	-	-	-	-
Stage 2	659	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	357	696	-	-	1197	-
Mov Cap-2 Maneuver	357	-	-	-	-	-
Stage 1	716	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.3	0	0.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	1197	-
HCM Lane V/C Ratio	-	-	0.083	0.024	-
HCM Control Delay (s)	-	-	13.3	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	27	20	0	0	13
Future Vol, veh/h	23	27	20	0	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	29	22	0	0	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	101	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	79	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1593	-	-	-	898	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	944	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	884	1055
Mov Cap-2 Maneuver	-	-	-	-	884	-
Stage 1	-	-	-	-	985	-
Stage 2	-	-	-	-	944	-

Approach	EB	WB	SB
HCM Control Delay, s	3.4	0	8.5
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1593	-	-	-	1055
HCM Lane V/C Ratio	0.016	-	-	-	0.013
HCM Control Delay (s)	7.3	0	-	-	8.5
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0

APPENDIX 6.3:

HORIZON YEAR (2040) WITHOUT PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

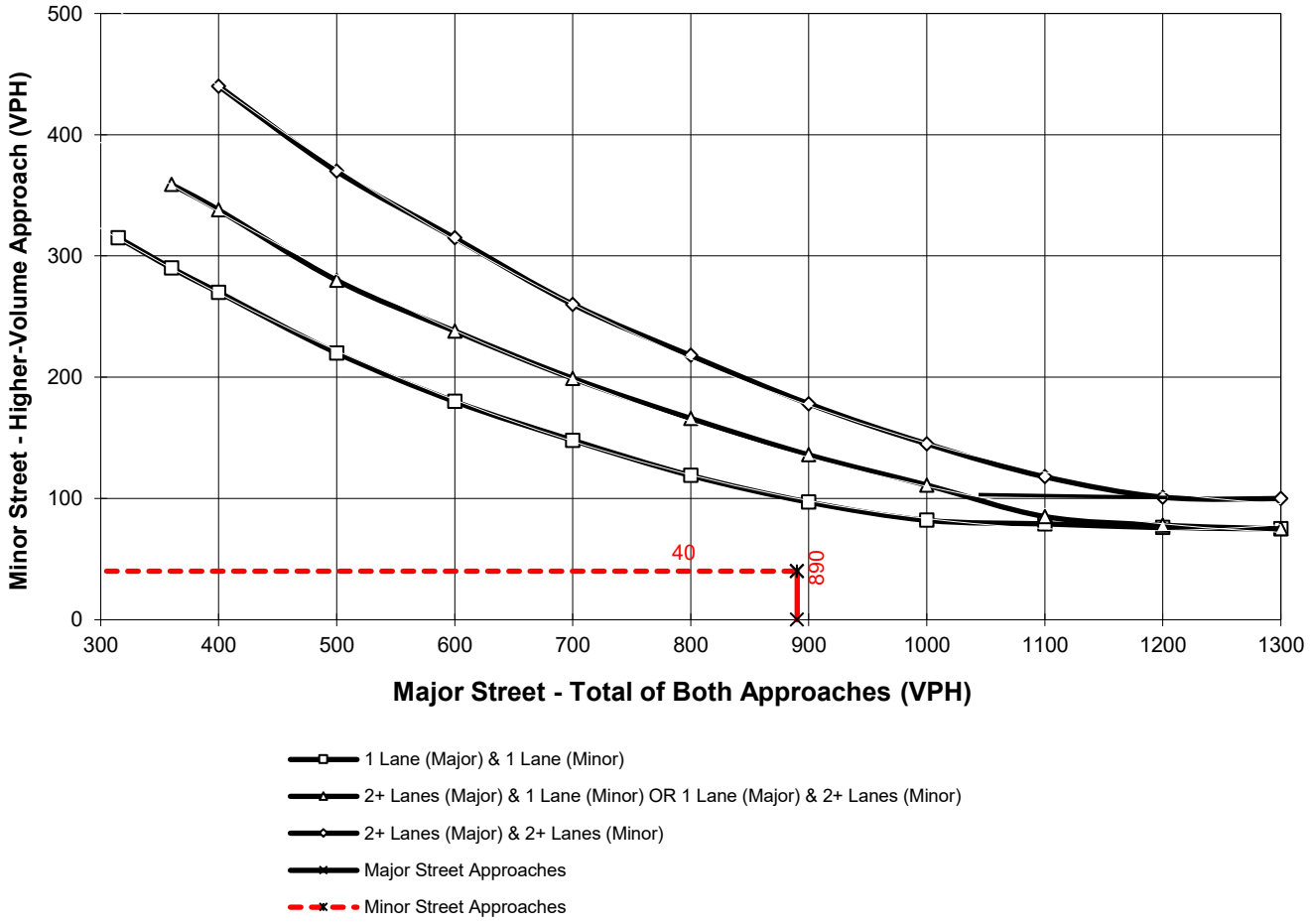
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **2040 Without Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Monte Vista Dr.** Total of Both Approaches (VPH) = **890**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Summer Sage Dr.** High Volume Approach (VPH) = **40**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

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APPENDIX 6.4:

HORIZON YEAR (2040) WITH PROJECT CONDITIONS TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

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Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

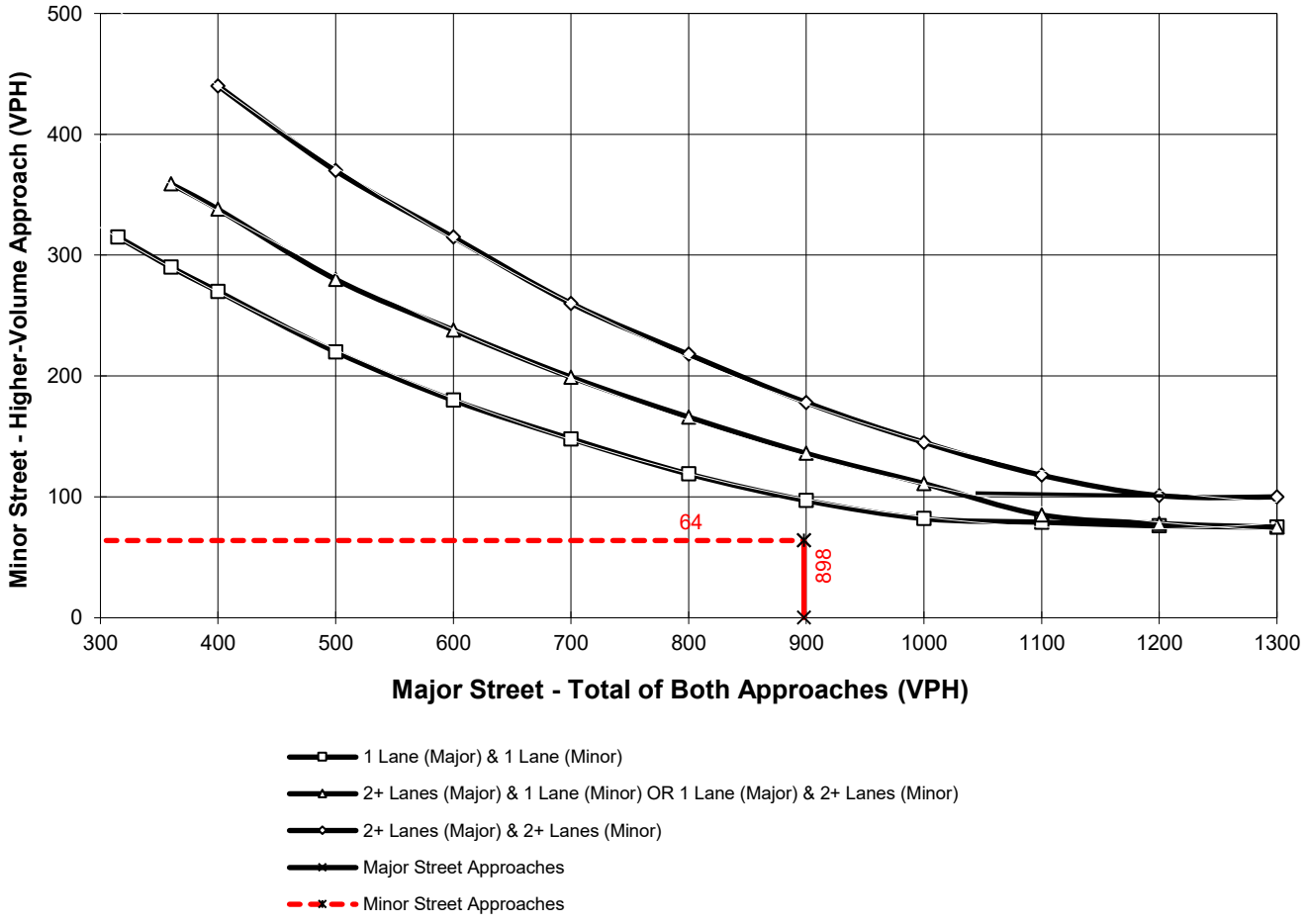
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 64 km/h OR ABOVE 40 mph ON MAJOR STREET)

Traffic Conditions = **2040 With Project Conditions - Weekday AM Peak Hour**

Major Street Name = **Monte Vista Dr.** Total of Both Approaches (VPH) = **898**
Number of Approach Lanes Major Street = **1**

Minor Street Name = **Summer Sage Dr.** High Volume Approach (VPH) = **64**
Number of Approach Lanes Minor Street = **1**

SIGNAL WARRANT NOT SATISFIED



*Note: 100 vph applies as the lower threshold for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold for a minor-street approach with one lane

Figure 4C-103 (CA). Traffic Signal Warrants Worksheet (Average Traffic Estimate Form)

___ DIST	___ CO	___ RTE	___ PM	TRAFFIC CONDITIONS		**2040 WP**
				CALC CS	DATE	02/05/21
Jurisdiction: **City of Wildomar**				CHK CS	DATE	02/05/21
Major Street: **Summer Sage Dr.**				Critical Approach Speed (Major)		25 mph
Minor Street: **Driveway 1**				Critical Approach Speed (Minor)		25 mph

Major Street Approach Lanes = **1** lane Minor Street Approach Lanes **1** lane

Major Street Future ADT = **821** vpd Minor Street Future ADT = **238** vpd

Speed limit or critical speed on major street traffic > 64 km/h (40 mph); …….. [ ]

or **URBAN (U)**

In built up area of isolated community of < 10,000 population …….. [ ]

(Based on Estimated Average Daily Traffic - See Note)

URBAN / RURAL	Minimum Requirements EADT			
CONDITION A - Minimum Vehicular Volume	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied: XX / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **821** / 1 **238**	8,000	5,600	2,400	1,680
2 + / 1	9,600	6,720	2,400	1,680
2 + / 2 +	9,600	6,720	3,200	2,240
1 / 2 +	8,000	5,600	3,200	2,240
CONDITION B - Interruption of Continuous Traffic	Vehicles Per Day on Major Street (Total of Both Approaches)		Vehicles Per Day on Higher-Volume Minor Street Approach (One Direction Only)	
Satisfied / Not Satisfied: XX	Urban	Rural	Urban	Rural
Number of lanes for moving traffic on each approach				
Major Street / Minor Street				
1 **821** / 1 **238**	12,000	8,400	1,200	850
2 + / 1	14,400	10,080	1,200	850
2 + / 2 +	14,400	10,080	1,600	1,120
1 / 2 +	12,000	8,400	1,600	1,120
Combination of CONDITIONS A + B				
Satisfied / Not Satisfied: XX	2 CONDITIONS 80%		2 CONDITIONS 80%	
No one condition satisfied, but following conditions fulfilled 80% of more ….. A: 10% B: 7%				

Note: To be used only for NEW INTERSECTIONS or other locations where it is not reasonable to count actual traffic volumes.

The satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal.

Appendix 14

Monte Vista Ranch Village Vehicle Miles Traveled (VMT)

February 9, 2021

Mr. Erik Lunde
Monte Vista Ranch II, LLC
1200 Quail Street, Suite 220
Newport Beach, CA 92660

SUBJECT: MONTE VISTA VILLAGE VEHICLE MILES TRAVELED (VMT) ANALYSIS

Dear Mr. Erik Lunde:

The following vehicle miles traveled (VMT) analysis has been prepared for the proposed Monte Vista Village (**Project**), which is located on the northeast corner of Summer Sage Way and Monte Vista Drive in the City of Wildomar. The Project is to consist of 65 multifamily housing (low-rise) dwelling units.

BACKGROUND

Changes to California Environmental Quality Act (CEQA) Guidelines were adopted in December 2018, which require all lead agencies to adopt VMT as a replacement for automobile delay-based level of service (LOS) as the new measure for identifying transportation impacts for land use projects. This statewide mandate went into effect July 1, 2020. To aid in this transition, the Governor's Office of Planning and Research (OPR) released a Technical Advisory on Evaluating Transportation Impacts in CEQA (December of 2018) (**Technical Advisory**). (1) Based on OPR's Technical Advisory, the Western Riverside Council of Governments (WRCOG) prepared a WRCOG SB 743 Implementation Pathway Document Package (March 2019) to assist its member agencies with implementation tools necessary to adopt analysis methodology, impact thresholds and mitigation approaches for VMT. To add to the previous work effort, WRCOG in February 2020 released its Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment (**WRCOG Guidelines**), which provides specific procedures for complying with the new CEQA requirements for VMT analysis. (2) Utilizing the Technical Advisory and WRCOG Guidelines, the City of Wildomar adopted VMT CEQA Threshold Policy Guidelines in June of 2020 (**City Guidelines**). (3) The adopted City Guidelines have been utilized to prepare this VMT analysis.

PROJECT SCREENING

The City Guidelines provide details on criteria that can be used to identify when a proposed land development project is anticipated to result in a less than significant impact without the need to conduct a more detailed VMT analysis. The following types of land development projects are anticipated to have a less than significant project VMT impact:

- Any project that generates or attracts 110 or fewer trips per day. This generally corresponds to the following "typical" development potentials:
    - 11 single family housing units
    - 16 multi-family, condominiums, or townhouse housing units
    - 10,000 sq. ft. of office
    - 15,000 sq. ft. of light industrial
    - 63,000 sq. ft. of warehousing
    - 79,000 sq. ft. of high cube transload and short-term storage warehouse
- Projects statutorily or categorically exempt from CEQA.
- Locally serving retail 50,000 square feet or less.
- Mixed use projects with at least 30 percent residential.

The proposed Project would exceed 110 trips per day (see Attachment A), is not exempt from CEQA, and does not contain a mixed of land uses where at least 30 percent are residential. As the Project does not screen out based on the City's adopted VMT thresholds, a project level VMT analysis has been prepared.

PROJECT VMT ASSESSMENT

The Riverside Transportation Analysis Model (RIVTAM) is a useful tool to estimate VMT as it considers interaction between different land uses based on socio-economic data such as population, households and employment. The City Guidelines identifies RIVTAM as the appropriate tool for conducting VMT analysis for land use projects in the City of Wildomar.

Project VMT has been calculated using the most current version of RIVTAM. Adjustments in socio-economic data (SED) (i.e., population and housing) have been made to the traffic analysis zone (TAZ) 3,739 within the RIVTAM model to reflect the Project's proposed land uses (i.e., residential). Since the park/open space land uses are exempt from VMT analysis, TAZ 3,739 was utilized to model the residential component of the Project only. Table 1 summarizes the population estimates for the Project.

TABLE 1: POPULATION ESTIMATES

Land Use	Dwelling Units	Population per household	Estimated Population[1]
Residential	65	3.10	202

Adjustments to population factors for the Project's TAZ were made to the RIVTAM base year model (2012). The model was then run with the updated SED factors included for the Project TAZ.

[1] Average household size provided by City staff.

Consistent with the thresholds contained in the City Guidelines, calculation of VMT for the residential use proposed by the Project are evaluated using total trips[2]. The total VMT can be determined with the RIVTAM model by using the origin-destination (OD) trip matrix. Project generated total VMT was calculated for the base year model (2012). The total VMT is then normalized by dividing by the number of Project service population (SP). Since the Project does not have an employment component, the service population consists entirely of population. As shown in Table 2, the Project baseline VMT per SP is 23.88.

TABLE 2: PROJECT VMT PER SERVICE POPULATION

	Project
Total VMT	4,824
Service Population (SP)	202
VMT per SP[3]	23.88

The City Guidelines state that the City's adopted VMT impact threshold is 3.0 percent below existing VMT as calculated by WRCOG. WRCOG publishes VMT data for each of its member agencies as derived from the RIVTAM model for the base year (2012) model (as described in the Methodology section of the City Guidelines).

Table 3 illustrates a comparison between the baseline project generated total VMT per SP to the existing City of Wildomar VMT per SP. As shown, project generated VMT per SP would be 27.4 percent below the existing City of Wildomar VMT per SP. As such, the Project's impact based on project generated VMT is less than significant.

TABLE 3: PROJECT VMT PER SP COMPARISON

	Existing Citywide	Baseline Project
Total VMT per SP	32.87	23.88
Percent Change		-27.4%
Potential Impact		No

CUMULATIVE VMT ASSESSMENT

The Technical Advisory states that "a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact. Accordingly, a finding of less than significant project impact would imply a less than

[2] City Guidelines; Page 6.
[3] Total VMT/SP is a measure of all vehicle trips and trip purposes, which is consistent with City Guidelines.

significant cumulative impact, and vice versa."[4] The Project's less than significant finding at the project level would indicate that there is also not adverse cumulative impact to VMT resulting from the development of the Project.

CONCLUSION

The proposed Project did not meet any of the City's applicable VMT screening thresholds. A project level VMT analysis was prepared based on City Guidelines. The Project was found to generate VMT at a level 27.4% below the City's adopted VMT impact threshold of 3.0% below existing VMT as calculated by WRCOG, resulting in a finding of less than significant. The Project's potential impact to cumulative conditions is also considered less than significant.

If you have any questions, please contact me directly at aevatt@urbanxroads.com.

Respectfully submitted,

URBAN CROSSROADS, INC.

Aric Evatt, PTP
President

Robert Vu, PE
Transportation Engineer

[4] Technical Advisory; Page 6.

REFERENCES

1. **Office of Planning and Research.** *Technical Advisory on Evaluating Transportation Impacts in CEQA.* State of California : s.n., December 2018.
2. **Western Riverside Council of Governments (WRCOG).** *Recommended Traffic Impact Analysis Guidelines for Vehicle Miles Traveled and Level of Service Assessment.* February 13, 2020.
3. **City of Wildomar.** *Vehicle Miles Travelled (VMT) CEQA Threshold Policy Guidelines.* City of Wildomar : s.n., June 2020.

ATTACHMENT A
PROJECT TRIP GENERATION

Land Use[1]	ITE LU Code	Units[2]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Trip Generation Rates:									
Multifamily Housing (Low-Rise)	220	DU	0.11	0.35	0.46	0.35	0.21	0.56	7.32

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Tenth Edition (2017).

[2] DU = Dwelling Units

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
Project Trip Generation Summary:									
Multifamily Housing (Low-Rise)	65	DU	7	23	30	23	13	36	476

[1] DU = Dwelling Units