Rancho Mirage Affordable Housing Family Apartments

Initial Study/ Mitigated Negative Declaration

Lead Agency:

City of Rancho Mirage

69-825 Highway 111

Rancho Mirage, California 92270

Prepared by:

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May 2025

ENVIRONMENTAL INITIAL STUDY
Rancho Mirage Affordable Housing Family Apartments

Project Title:	Rancho Mirage Affordable Housing Family Apartments
City Project No:	Environmental Assessment Case No. EA25-0002 and Preliminary Development Plan Case No. PDP25-0002
Lead Agency Name and Address:	City of Rancho Mirage 69-825 Highway 111 Rancho Mirage, California 92270 Phone: (760) 328-2266
Applicant:	National Community Renaissance of California
Contact Person:	Pilar Fløtterud– Senior Planner
Phone Number:	(760) 328-2266 EXT 208
Project Location:	South of Via Vail and east of Key Largo Avenue
Accessor Parcel Number:	685-090-016
General Plan Designation:	High Density-Residential (R-H), Affordable Housing Overlay (AHO)
Zoning Designation:	High Density Residential (R-H), Affordable Housing Overlay (AHO)

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CHAPTER 1: PROJECT DESCRIPTION

Project Location

The Rancho Mirage Affordable Housing Family Apartment Project (Project) is a multi-family apartment complex proposed on 5±-acres of City-owned land located southeast of Key Largo Avenue and Via Vail in the City of Rancho Mirage, Riverside County. Formally, the site is located within the northeastern quarter of Section 30, Township 4 South, Range 6 East, San Bernardino Base and Meridian.

Existing Site Conditions

Currently, the proposed site is an undeveloped infill parcel, part of a larger vacant lot, covered with loose sand and desert vegetation. The property is bound by undeveloped desert lands to the north, south, east, and west. Surrounding development includes the Monterey Marketplace Shopping Center to the north and northeast, Rancho Mirage Dog Park to the northwest, single-family residential units to the south and west, and Monterey Avenue to the east. Although no development has yet occurred, the Rosette Apartments complex is a City-approved apartment housing project on the northern property abutting the site. Construction of that project is expected to begin in the next several months.

Surrounding Land Uses

In compliance with the property's subdivision as part of the Monterey and Dinah Shore land holding, owned by the City of Rancho Mirage and intended for future affordable housing development, the Project proposes a multi-family housing development in which 149 units out of 150 will be reserved for affordable housing. Development planned by the Project is consistent with the parcel's land use/zoning designation as High Density-Residential (R-H), within an Affordable Housing Overlay (AHO).

A R-H land use allows residential development to consist of smaller, single-family and multi-family attached dwelling units at a density range between 5 to 9 dwelling units per acre (du/ac). An AHO zone provides incentives and density bonus to allow for the creative and effective development of affordable residential development. Under the AHO zone, an affordable housing project can propose a density of up to 28 du/ac. Modified standards will be subject to review by the City Council.

Table 1 provides a summary of permitted and proposed developments which the Project is subject to or exempt from as a high-density residential affordable housing development.

Table 1
Rancho Mirage Affordable Housing Family Apartments Permitted and Proposed Development

Category	Section	Municipal Code	Proposed Design	Concession/Waiver Compliance
APN		685-090-016	685-090-016	
Land Use/Zoning	RMMC 17.08.010	General Plan Designation: HDR Zoning Code: R-H Overlay District: AHO	General Plan Designation: HDR Zoning Code: R-H Overlay District: AHO	
Lot Area	RMMC 17.08.020	8,000 sf minimum	±217,800 sf (5 acres)	
Lot Coverage	RMMC 17.08.020	35% maximum	±66,060 sf, 30%	
Main Building Height/ Number of Stories	RMMC 17.08.020	20'0"/1-story	±39' 4"/3-story	Density Bonus Incentive/ Concession Request
Residential Density	RMMC 17.08.020	5.9 du/ac (gross) 28 du/ac (per AHO)	30 du/ac State Density Bonus: 50.4 du/ac	Complies with allowable density bonus increase of 80% under State law
Setbacks	RMMC 17.08.020	Front: 20'0" Side (each): 10'0" Side (street): 15'0" Rear: 20'0"	Front: 8'-8' ¾" minimum (varies) Side (each): 51'0" minimum (varies) Side (street): N/A Rear: 20' 9" minimum	
Additional Height Restrictions & Setbacks	RMMC 17.20.100	Setbacks shall increase at a minimum rate of two feet for each one foot of additional building height above 20'0"	Proposed development complies with additional setback requirement except for the building on the western property line	Density Bonus Incentive/ Concession Request
Private Outdoor Living Space	RMMC 17.08.020	300 sf per unit	97 sf per unit	Density Bonus Incentive/ Concession Request
Off-Street Parking	RMMC 17.26.040	1BR: 1 space/unit (covered), 1 guest space/2 du 2BR: 2 spaces/unit (2 covered), 1 guest space/2 du 3BR: 2 spaces/unit (2 covered), 1 guest space/2 du Total for 150 units: 335 spaces	1BR: 1 space/du 2BR: 1.5 spaces/du 3BR: 1.5 spaces/du Total parking allowed per state density bonus for 150 units: 206 spaces Proposed: 219 spaces	Complies with minimum parking requirements under State density bonus law

Table 1 Rancho Mirage Affordable Housing Family Apartments Permitted and Proposed Development				
Category	**Section**	**Municipal Code**	**Proposed Design**	**Concession/Waiver Compliance**
Parking Design	RMMC 17.26.070	Driveway (2-way) width: 24 ft Stall: 9'x18' Parallel Stall: 9'x26' (4' every 2 stalls)	Driveway (2-way) width: 24 ft Stall: 9'x18' Parallel Stall: None	
Minimum Area for Apartments in R-H	RMMC 17.06.010	1BR: 850 sf minimum 2BR: 900 sf minimum 3BR: 1000 sf minimum	1BR: 520 sf & ±541 sf (net) 2BR: 745 sf & ±756 sf (net) 3BR: ±1016 sf & ±1029 sf (net) Minimum area for apartment for tax credit 1BR: 450 sf 2BR: 700 sf 3BR: 900 sf	Density Bonus Incentive/ Concession Request; Unit sizes exceed minimum sizes required under tax credit guidelines
Bicycle Parking	RMMC 17.26.100	Short-Term Bicycle Parking: 5% of motorized vehicle Long-Term Bicycle Parking: 5% of motorized vehicle	Short-Term: 12 bikes minimum Long-Term: 12 bikes minimum	
Laundry Facility	Section 15-TCAC Specific Design Requirements	Washer and dryer ratio for family projects is 1:10	Common laundry facilities consist of 15 washers and 15 dryers	
Parking Lot Landscape	RMMC 17.26.70	Interior parking spaces shall have a continuous six-foot wide planter strip at the front of parking space	Landscape planter strip provided at the front of each parking space with a width that varies from 6'-0' and under with a minimum width of ±3'0"	Density bonus incentive/concession request
Landscape	RMMC 17.24.040	10% coverage minimum	Approximately 42,802± sf of landscape is proposed, providing 20% coverage	
Source: Rancho Mirage Affordable Housing Family Apartments Project Data, May 2025.				

The proposed Project would include seven multi-family residential buildings, totaling 150 dwelling units, as well as amenity space, recreational facilities, and parking areas. Buildout also requires the extension of Via Vail along the property's eastern boundary. The following provides a detailed report of the proposed residential development and road improvements. Exhibit 3 through 5 provide a visual representation of the information provided below.

- *Rancho Mirage Affordable Housing Family Apartments*: The 5± acre parcel will be developed to include seven permanent three-story residential buildings, totaling to 66,060± square feet. Each residential building is configured as a three-story walk-up with no elevator. The property's residential development is divided by a north-south driveway, which separates the development into an east and west portion. The east portion includes Building 1, 2 and 5 through 7. The west portion includes Building 3 and 4. The two portions are connected by a pedestrian walkway. Driveways are also provided on the north and south boundaries of the Project.

    - *Residential Units*: Of the 150 units available for leasing, approximately 42 units are 1-bedroom (28%), 69 units are 2-bedroom (46%), and 39 units are 3-bedroom units (26%). Each unit includes a living room, kitchen, bathroom, closet/storage space, and a private patio/balcony. A total of 149 dwelling units are designated for affordable housing and 1 dwelling unit is designated for management.

- *On-site Amenities*: A variety of complementary amenities are provided and accessible within communal spaces located between residential buildings.

    - *Community Center*: The Community Center is a one-story building, totaling 3,353± square feet. The facility provides a shared room, kitchen and patio space, as well as a laundry room, bike room, leasing office, mail room, and two office spaces.

    - *Playground*: Located immediately west of the Community Center, the play area is suitable for young children.

    - *Swimming Pool*: The 948 square foot swimming pool includes lounge chairs with desert landscape enclosing the area. The swimming pool is located west of the playground and east of the pool house. The pool house is a one-story building used to store pool equipment and provides restrooms and shower stalls.

    - *Game Court*: A green open space turf area is located to the west of the pool house and may be used to play a variety of field sports.

    - *Butterfly Garden*: A desert landscape garden is located on the west half of the residential development and provides passive open space for residents.

    - *Grilling Station*: There is an outdoor grilling station located west of the butterfly garden and beneath a tree canopy with outdoor seating.

- *Landscape*: A total landscape area of 42,802± square feet is proposed along the site's perimeter, as well as within open spaces between residential buildings. All vegetation used for landscaping will be drought tolerant and noninvasive.

- *On-site Parking*: A total of 219 parking stalls are proposed, including 141 covered carport spaces and 78 uncovered spaces. Of the 219 parking units, 23 stalls are EV charging stations, and 90 stalls are EV charging compatible. Parking is located along the property's north and south boundary with additional parking along the perimeter of the development's east and west residential portions.

- *Circulation and Roadway Access*: The site provides two points of access along the future extension of Via Vail, located immediately adjacent to the site's eastern boundary. The north access point functions as a gated entry point with a resident and guest queuing lane, intercom, keypad system, and a turnaround. The second access point functions as the site's exit route and is located at the southeast corner of the Project.

- *Road Improvements*: The extension of Via Vail bounds the property's eastern frontage for 0.066 miles. Buildout of Via Vail to the dimensions of a Local Collector (60 feet of right-of-way width and 40 feet of curb-to-curb pavement width) is proposed so as to accommodate two travel lanes, as well as a bike path, and pedestrian sidewalk on the west side only.

Utilities

The Project is located in an area of Rancho Mirage where the following utility providers currently service residential and commercial users.

Domestic Water: Coachella Valley Water District

Wastewater: Coachella Valley Water District

Solid Waste: Burrtec Waste Industries

Electrical: Imperial Irrigation District

Natural Gas: Southern California Gas

Telecommunication: Frontier, Spectrum, others

Cable: Spectrum

Environmental Setting and Surrounding Land Uses

The Project site is part of a large infill parcel, owned by the City of Rancho Mirage. Surrounding development consists of single-family residential development and commercial/retail facilities. The following delineates the property's surrounding urbanized setting.

West: Vacant desert land, single family homes

North: Vacant desert land, approved apartment project—Rosette Apartments, Monterey Marketplace Shopping Center, Rancho Mirage Dog Park

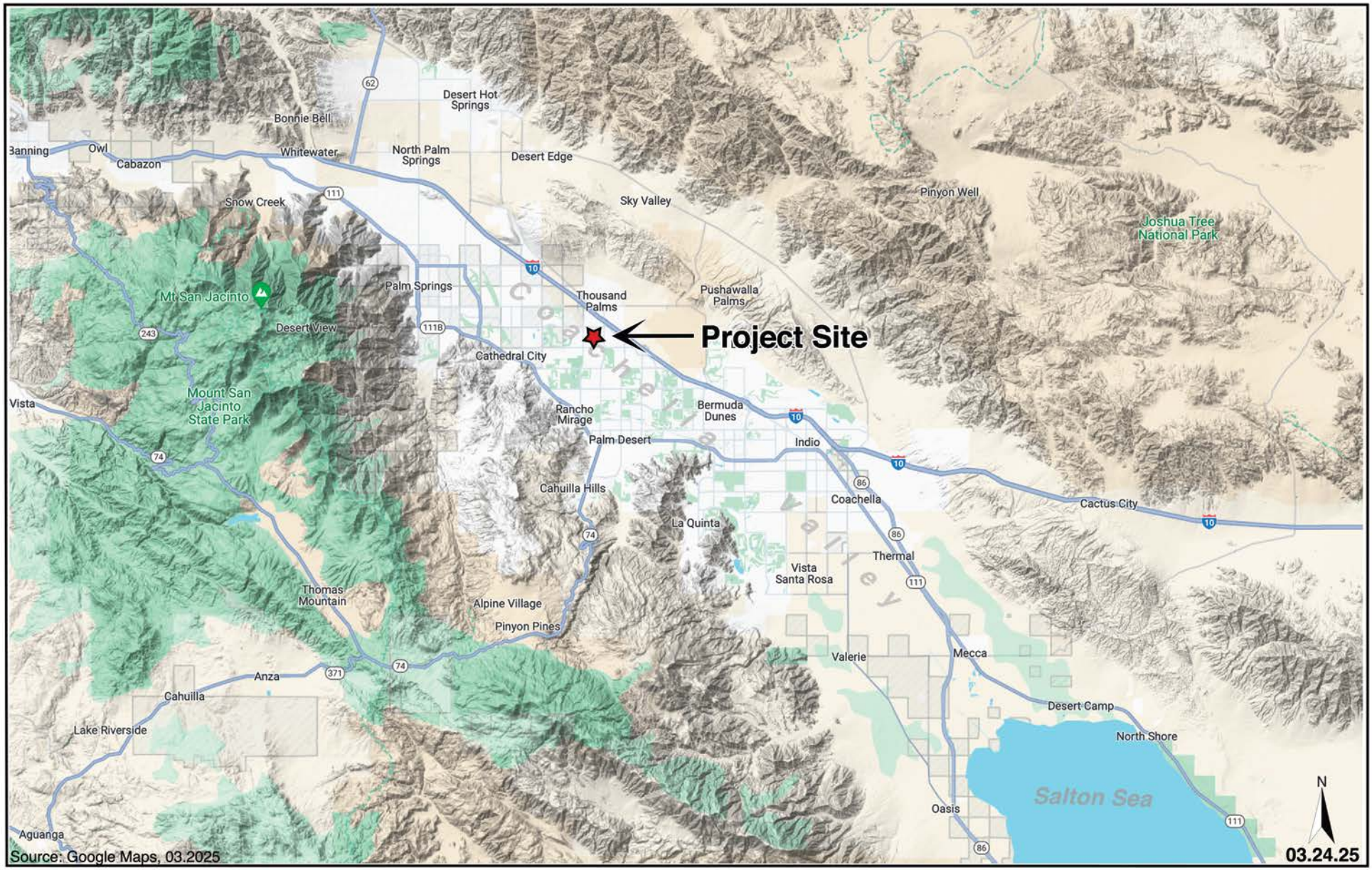
South: Vacant desert land, Low Density Single-Family Residential

East: Vacant desert land, Desert Gateway Plaza beyond Monterey Avenue

Other public agencies whose approval is required

Coachella Valley Water District

Regional Water Quality Control Board



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Regional Location Map
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
1

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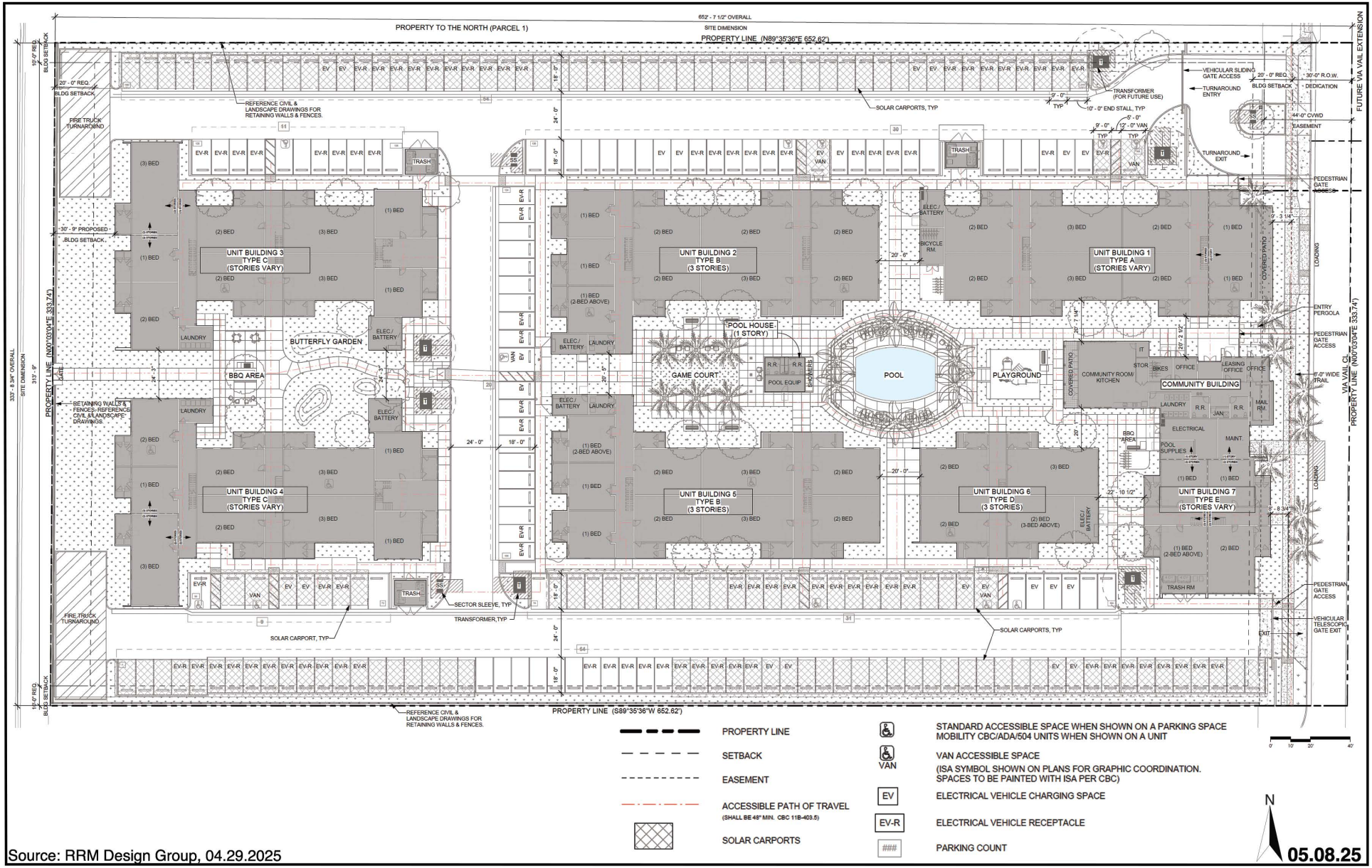
Regional Location Map
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
2



Source: RRM Design Group, 04.29.2025

05.08.25

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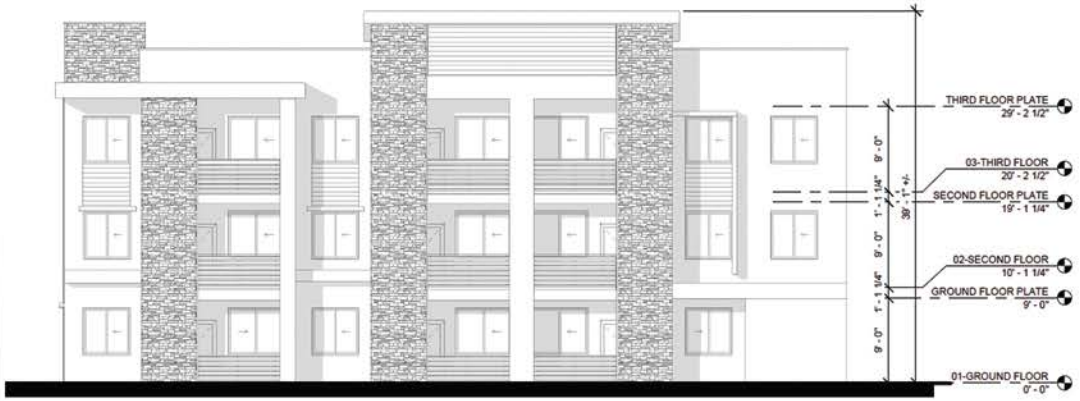
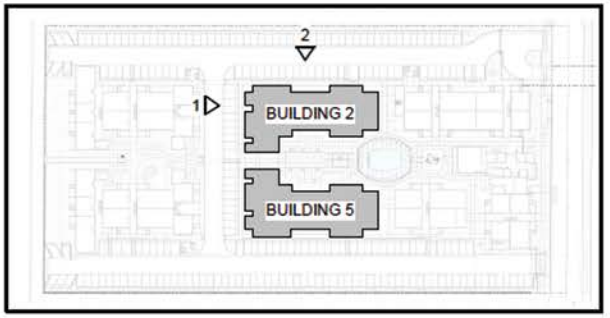
Project Site Plan
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
3





WEST ELEVATION
(SAME BLDG 5. SIM BLDG'S 1 & 6)

1 SCALE: 1/8" = 1'-0"

NORTH ELEVATION
(SAME BLDG 5. SIM BLDG 1)

2 SCALE: 1/8" = 1'-0"

Source: RRM Design Group, 03.07.2025

05.08.25

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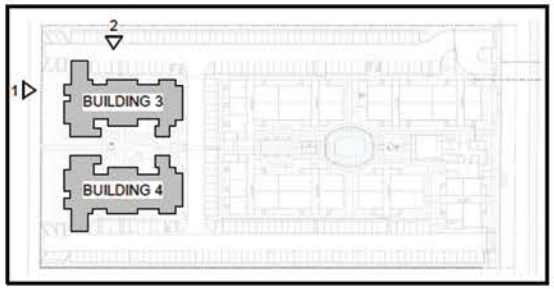
Draft Elevations for Buildings 2 and 5
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
4a



1 WEST ELEVATION (SAME BLDG 4)

SCALE: 1/8" = 1'-0"

2 NORTH ELEVATION (SAME BLDG 4)

SCALE: 1/8" = 1'-0"

Source: RRM Design Group, 03.07.2025

05.08.25

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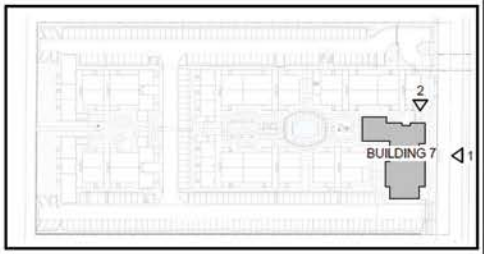
Draft Elevations for Buildings 3 and 4
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
4b

1 **EAST ELEVATION**
SCALE: 1/8" = 1'-0"



2 **NORTH ELEVATION**
SCALE: 1/8" = 1'-0"

Source: RRM Design Group, 05.08.2025

05.08.25

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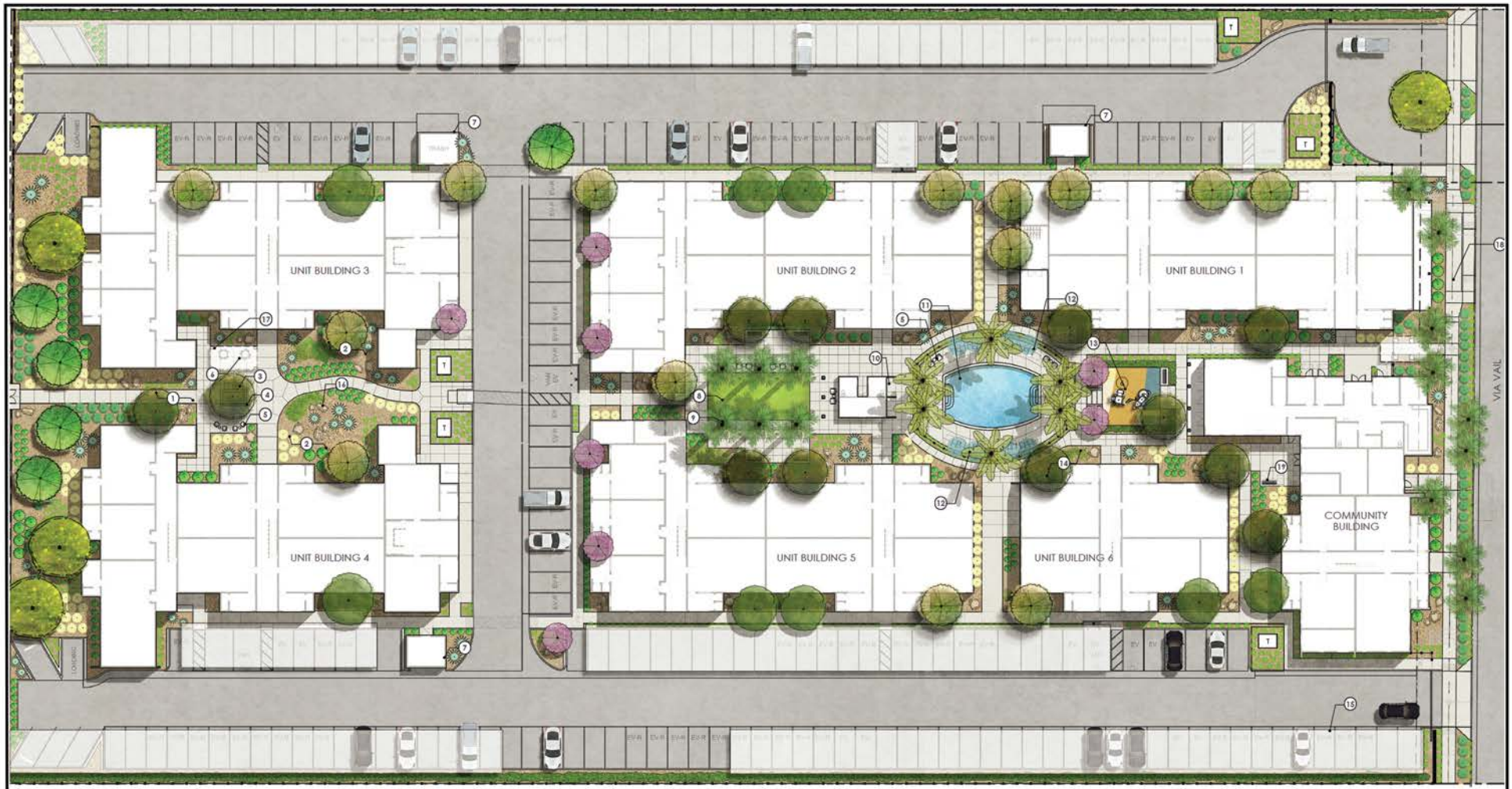
Draft Elevations for Building 7 and Community Center
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit
4c



TREE LEGEND

- BISMARCKIA NOBLILIS
- CHILOPSIS LINEARIS
- GEIJERA PARVIFLORA
- LAGERSTROEMIA INDICA X FAURIEI 'MUSKOGEE'
- PARKINSONIA ACULEATA
- PHOENIX DACTYLIFERA
- PROSOPIS ALBA 'COLORADO'
- WASHINGTONIA FILIBUSTA

Source: RRM Design Group, 03.06.2025

05.08.25

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Draft Preliminary Landscape Plan
Rancho Mirage Affordable Housing Family Apartments
Palm Desert, California

Exhibit 5

CHAPTER 2: ENVIRONMENTAL ANALYSIS AND DETERMINATION

Environmental Factors Potentially Affected:

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

Evaluation of Environmental Impacts:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

a) Earlier Analysis Used. Identify and state where they are available for review.

b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify: a) the significance criteria or threshold, if any, used to evaluate each question; and b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Determination: (To be completed by the Lead Agency) On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

5/19/2025

Pilar Fløtterud, Senior Planner
City of Rancho Mirage

Date:

Environmental Checklist and Discussion:

The following checklist evaluates the proposed Project's potential adverse impacts. For those environmental topics for which a potential adverse impact may exist, a discussion of the existing site environment related to the topic is presented followed by an analysis of the Project's potential adverse impacts. When the Project does not have any potential for adverse impacts for an environmental topic, the reasons why there are no potential adverse impacts are described.

1 - Aesthetics

AESTHETICS -- Would the project**:**	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Sources: Rancho Mirage General Plan, 2017; Project Material; Google Earth Pro.

1.1 Setting

The City of Rancho Mirage is in the Coachella Valley, a relatively flat desert valley located in the northwestern region of the Colorado Desert Province. Like the Valley, Rancho Mirage is an arid desert environment consisting of wind disturbed alluvial sediment, desert scrub, hills and mountain ranges. The City is situated near the base of the Santa Rosa Mountains at an elevation of 252 feet above sea level, on average.

According to the Rancho Mirage 2017 General Plan, the mountain ranges encompassing the Coachella Valley, including the San Jacinto and Santa Rosa Mountains, are recognized as a national resource by the Bureau of Land Management and U.S. Forest Service. Locally, the City classifies the Santa Rosa Mountains as a scenic vista and resource. Thus, specific regulatory codes aim to protect scenic viewsheds to the Santa Rosa Mountains so as to ensure new development does not limit or distract the natural landscape. Other scenic resources consisting of trees, rock outcrops, historical buildings and the like are not prevalent in Rancho Mirage.

The Project site, located at the east side of Key Largo Avenue, west of Monterey Avenue, and west of future Vai Vail extension, is currently an undeveloped parcel 5± acres in size. The parcel consists of sandy soil, desert shrubs, and gentle slopes towards the northeast at an elevation between 285 and 305 feet above mean sea level. Directly to the north, south, east, and west there are undeveloped, vacant lots, similar to the property. Within the Project area, development consists of residential communities, commercial/retail facilities, and street infrastructure. Although no prior development has occurred on-site, there are signs of disturbance including tire tracks, dog prints, trash and human footprints. However, the site's existing condition can be generally characterized as being in its natural state.

1.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT. The Project includes the construction of seven residential buildings, reaching a maximum height of 39’ 4” or three stories tall. The development is designed with a desert modern aesthetic with buildings consisting of three dimensional cut-outs varying in textures between natural wood, off-white plaster, and stone veneer. Landscape is included throughout the property and along the site’s frontage on Vai Vail. Specific development designs are listed in Table 1 and are in accordance with the City development standard codified in the Rancho Mirage Municipal Code or permitted in accordance with the State density bonus law for affordable housing development. Nonetheless, the Project’s design will be reviewed by the City Planning Department for its consistency with the City’s visual design standards and compatibility with existing residential development as required under General Plan Policy LU 3.1.

The visual character of the surrounding area consists of natural desert landscape as described in detail in the following section:

- *North*: At the forefront, there is expansive desert terrain with the Rancho Mirage Dog Park and the Monterey Marketplace Shopping Center visible at a distance. The slopes of the Indio Hill are visible at this vantage point, as well as the San Bernardino and Little San Bernardino Mountains beyond to the northwest and northeast, respectively.

- *South*: Expansive desert terrain covers the viewshed’s low to mid-point with the Santa Rosa Mountains visible at a distance.

- *West*: Expansive desert terrain covers the low to mid-point of the viewshed with residential development visible at a distance, and background views including the San Jacinto and San Bernardino Mountains.

- *East*: At the forefront, there is expansive desert terrain with commercial development located to the northeast and beyond Monterey Avenue. At this vantage point, the Little San Bernardino Mountains are visible at a distance.

The dominant scenic vistas from the Project site include distant views from the Santa Rosa Mountains to the south, San Jacinto Mountains to the west, San Bernardino Mountains to the northwest, and Little San Bernardino Mountains to the north and east. Development of the proposed residential buildings would cause the natural desert landscape on-site to be removed. However, the land is vacant and highly disturbed by ongoing human activities and nearby urban uses; thereby, reducing its value as a seismic resource. Construction of the parcel in accordance with City development standards for setback, landscape, and building design assures the Project would not cause significant damage to surrounding scenic vistas. Furthermore, the nearest receptors to these changes are residential units located west of Via Josefina. However, the nearest unit is approximately 1,200 feet, at which point the proposed building's height would not significantly obstruct scenic views of the Little San Bernardino Mountains to the northeast. The primary vistas of the San Jacinto and Santa Rosa Mountains to the west and southwest will not be affected for these residences, because the Project occurs to their east. Therefore, development of the Project is not anticipated to limit scenic vistas currently visible within existing developed areas.

In accordance with City mandates, the Project will include a total of 42,802± square feet of landscape spread across the 5± acre parcel and along the property's perimeter. Landscape along the site's frontage with Via Vail is also proposed. The plants used are desert native and/or noninvasive and would allow for the Project to minimize its contrast with the surrounding natural landscape and resemble the visual character of the City. As such, the Project is not expected to substantially limit or cause an incompatibility with the surrounding area or the City as a whole. Potential impacts to scenic vistas are therefore limited and considered less than significant.

b) NO IMPACT. According to the California Department of Transportation's (Caltrans) State Scenic Highway System map, the segment of Highway-111 that traverses the City's southern boundary along the foothills of the Santa Rosa Mountains, about 3.3 miles southwest of the Project, is categorized as a highway for potential classification.[1] Nonetheless, there is no official classified state scenic highway within the City planning area. The Project's development would therefore not visually impact any scenic resources within a state scenic highway.

Additionally, there are no scenic resources such as trees, rock outcroppings, historical buildings, or any other features potentially categorized as scenic resources within or in proximity to the Project area. Adverse effects to scenic resources are therefore expected to be negligible.

c) NO IMPACT. The City General Plan designates the parcel for High Density Residential with an Affordable Housing Overlay. The Project's compliance with development standards under this land use is demonstrated in Table 1. As shown, the Project will not conflict with any development standards that protect the City's scenic quality and resources. As such, potential impacts to scenic resources will be avoided by design. No impacts are anticipated.

[1] California Department of Transportation, California State Scenic Highway System Map, https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa, accessed March 2025.

d) LESS THAN SIGNIFICANT IMPACT. Project lighting will consist of parking lot lighting, building and landscaping lighting, typical of residential development. The Project is required to comply with the City's Municipal Code Section 17.18.050 which mandates exterior light fixtures to be shielded so as to direct lighting downward and prevent spillage onto adjacent property. Consistent with City standards, the Project would not create a source of substantial light or glare which would adversely affect day and nighttime views in the area. Therefore, no significant impacts from the use of exterior lighting would occur in connection to the Project's operation.

1.3 Mitigation Measures

None required.

2 - Agriculture and Forestry Resources

AGRICULTURE AND FORESTRY RESOURCES – In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of forest land, timberland, or timberland zoned Timberland Production?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Sources: The City of Rancho Mirage General Plan, 2017; California Department of Conservation, State Important Farmland Finder, Accessed May 2024; Project Material.

2.1 Setting

The City of Rancho Mirage is classified as "urban and built-up land" by the California Department of Conservation, Farmland Conservancy Program.[2] No portion of the City's planning area has been identified as prime farmland or farmland of statewide importance. The City's 2017 General

[2] California Department of Conservation, Important Farmland Finder, https://maps.conservation.ca.gov/DLRP/CIFF/, Accessed May 2024.

Plan does not include designations for agricultural, farmland or forestry use. Additionally, there are no forest lands or timberland production within the City, likely due to the Coachella Valley's arid desert environment that reaches extreme summer temperatures above 108 degrees Fahrenheit (°F).

2.2 Discussion of Impacts:

a-e) NO IMPACT:

Farmland: According to the California Department of Conservation, there are no prime farmlands or farmland of statewide importance at or near the Project site. As such, the risk of converting prime or unique farmland to non-agricultural use will not occur. In addition, the property is zoned for residential use and thus, the Project would not conflict with any land use designation for agriculture production. No farmland would be impacted by the Project's construction or operation.

Williamson Act: Based on the California Department of Conservation Division of Land Resources Protection, there is no land within the Project area under a Williamson Act contract. Therefore, no violation of the Williamson Act would occur by the Project's implementation.

Forestry: Neither forest land resources nor the production of timberland occur within the City or on the Project site. The Project will not cause the loss or conversion of forest lands to non-forest use. Given the lack of resources and timberland production, no impacts to forest land uses are anticipated.

In all, the Project would not involve the loss or conversion of agricultural or forestry land. The parcel is designated for residential use and implementation of the Project would comply with permitted land uses in accordance with the property's designation. As such, no impacts to agricultural and forestry lands would result from the Project.

2.3 Mitigation Measures

None required.

3 - Air Quality

AIR QUALITY – Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

Sources: SCAQMD 2022 Air Quality Management Plan, South Coast Air Quality Management District, December 2022; SCAQMD Rule Book, accessed March 2025; CalEEMod Version 2022.1, accessed April 2025; Air Quality Report, April 2025 (Appendix A); Core Rancho Mirage Traffic Analysis Report, Urban Crossroads, December 2024 (Appendix I); Project Material; Google Earth Pro.

3.1 Setting

The Coachella Valley, including the City Rancho Mirage, is located in the Salton Sea Air Basin (SSAB) portion of Riverside County in which South Coast Air Quality Management District (SCAQMD) is the lead agency for matters dealing with air emissions. Currently, SCAQMD operates and manages three ambient air monitoring stations in the Coachella Valley, including Palm Springs, Indio, and Mecca.

Enabled by the federal Clean Air Act (CAA), SCAQMD is a regional air pollution control agency responsible for the development of an air quality management plan to set a framework from which regional jurisdictions can adequately limit and/or regulate sources of criteria air pollutants in compliance with federal and state Ambient Air Quality Standards (AAQS). The 2022 Air Quality Management Plan (AQMP) is the latest plan adopted by SCAQMD which expands on previous regulation strategies, technology, best management practices, programs, and incentives to reduce emissions below acceptable thresholds.

Particulate Matter

Particulate Matter (PM) is composed of microscopic solid particles with a diameter of 10 or 2.5 micrometers (PM10 or PM2.5) present in the air. High levels of PM10 and 2.5 have been related to health problems including asthma, chronic obstructive pulmonary disease exacerbation, respiratory disease, and even death. Common sources of PM10 and 2.5 include construction sites, unpaved roads, fields, smoke stacks, and fire. Currently, federal NAAQS PM10 and PM2.5 standards are higher than California's Ambient Air Quality Standards (CAAQS). CAAQS annual standards for PM10 and PM2.5 are 12 micrograms per cubic meter ($\mu g/m^3$) and 20 $\mu g/m^3$, respectively. In comparison to CAAQS, SSAB currently exceeds the statewide threshold for PM10 by releasing a high of 39 $\mu g/m^3$ for 2018 to 2020.[3] The Coachella Valley's PM10 emissions exceed the CAAQS by 195%. As such, the Environmental Protection Agency (EPA) declared the Coachella Valley as "Serious" nonattainment for PM10[4] and required a state implementation plan to be drafted in response to the region's nonattainment status which sets methods, strategies, and programs in place to achieve attainment.

The 2003 Coachella Valley PM10 State Implementation Plan (CVSIP) is the latest plan addressing the Valley's nonattainment. The 2003 CVSIP outlines dust control strategies in addition to new control measures to achieve and demonstrate attainment. Proposed actions and regulatory measures to reduce PM10 emitting sources include the following:

- Additional stabilizing or paving of unpaved surfaces, including parking lots
- A prohibition on building new unpaved roads
- Requiring more detailed dust control plans for builders in the Valley that specify the use of more aggressive and frequent watering, soil stabilization, wind screens, and phased development to minimize fugitive dust
- Designating a worker to monitor dust control at construction sites
- Testing requirements for soil and road surfaces

Additionally, Rancho Mirage Municipal Code Section 7.01.041 outlines PM10 fugitive dust control requirements during construction and demolition activities to ensure PM10 emissions are reduced to the greatest extent possible.

Ozone and Ozone Precursors

Ozone is not emitted but rather created in the atmosphere when nitrous oxide (NO_x) and volatile organic compounds (VOC) react under sunlight. While both NO_x and VOC contribute to ozone, ozone regulation standards reduce NO_x. Federal and state ozone standards are the same for 8-hour ozone levels at 0.070 parts per million (ppm). The Coachella Valley exceeds the 8-hour ozone standard with a high emission of 0.095 ppm (136% above the state ozone standard).[5] Therefore, the Coachella Valley is classified a "Severe-15" non-attainment area for ozone.[6] Yet the Coachella Valley has a limited impact on ozone levels in comparison to high levels of ozone formed in the South Coast Air Basin (SCAB) to the west that travel downwind to the Valley. Nonetheless, the Valley must substantially reduce NO_x to attain the standard by August 2038 as

[3] South Coast Air Quality Management District, Air Quality Management Plan, Table 2-13.
[4] Environmental Protection Agency, Current Nonattainment Counties for All Criteria Pollutants, https://www3.epa.gov/airquality/greenbook/ancl.html, access March 2025.
[5] South Coast Air Quality Management District, Air Quality Management Plan, Table 2-7.
[6] Environmental Protection Agency, Current Nonattainment Counties for All Criteria Pollutants, https://www3.epa.gov/airquality/greenbook/ancl.html, access March 2025.

required by the EPA. The SCAQMD is taking action to reduce emissions by implementing planned regulations and programs, and thus improve ozone air quality in the Coachella Valley to reach attainment.

Regional Significant Threshold Criteria

Criteria air pollutants monitored by SCAQMD include carbon monoxide (CO), nitrous oxide (NO_x), sulfur monoxide (SO_x), PM of 10 and 2.5, and volatile organic compounds (VOC). Each air pollutant is assigned a daily maximum emission threshold which identifies the highest emission level a single source is allowed to release during construction and operation. Table 2 lists SCAQMD's construction and operation thresholds.

Table 2
South Coast Air Quality Management District Criteria Air Pollutant Thresholds

Pollutant	CO	NO_x	SO_x	PM10	PM2.5	VOC
Construction (lbs/day)	550	100	150	150	55	75
Operation (lbs/day)	550	55	150	150	55	55

Source: South Coast AQMD CEQA Handbook, https://www.aqmd.gov/docs/default-source/ceqa/handbook/south-coast-aqmd-air-quality-significance-thresholds.pdf?sfvrsn=25, revised March 2023.

A Project-specific California Emission Estimator Model (CalEEMod) model run was prepared in April 2025 (Appendix A). The following analysis of potential impacts to air quality associated with the Project construction and operation are based on results from CalEEMod.

3.2 Discussion of Impacts:

a) NO IMPACT: The Project site is located within the Salton Sea Air Basin and is subject to SCAQMD's 2022 AQMP and the 2003 CVSIP. These plans strictly regulate and limit the source of emissions in the Coachella Valley and implement comprehensive strategies to reduce pollutants and, in turn, improve air quality to appropriate levels for federal and state attainment. The AQMP is based, in part, on the land use plans for the jurisdictions in the region. As such, conformity with future growth forecasts can assure the Project's consistency with air quality plans and standards. The Southern California Association of Governments (SCAG) projects a population size of 25,200 by 2045 for the City of Rancho Mirage.

The Project proposes the development of a multi-family residential apartment complex on 5±-acres designated/zoned R-H/AHO. In conformance with the parcel's permitted land use and development standards, the Project includes 150 residential units. The construction and operation of a residential development within a previously undeveloped parcel would generate population growth. The Project is estimated to increase the local population size by 485, based on Project-specific inputs for land use (Apartment Mid Rise) and project size (150 units) in CalEEMod Version 2022.1. The population growth in connection to the Project has been accounted for by the City's 2017 General Plan through its residential land use designation, in addition to the property's allowed density bonus of up to 28 du/ac as an affordable housing development. As such, the Project would be part of the City's anticipated population growth and residential land use as predicted in the City General Plan and SCAG's 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

Furthermore, the Project must also adhere to all plans, policies, and rules implemented by the SCAQMD, the most notable being the SCAQMD Rule Book.[7] The Project would be required to comply with Rule 201 which is a permit to construct, mandating a written authorization from the Executive Office to use and operate equipment related to the construction, erection, or alteration of a building. Additionally, the Project would also need to comply with Rule 403 which implements fugitive dust control measures during ground disturbance from construction activities. Compliance with Rule 403 would minimize the potential for the Project to emit excessive PM_{10} and $PM_{2.5}$ from extensive disturbance of the 5±-acre parcel. Compliance with these rules and other applicable mandates would ensure the Project does not conflict or obstruct emission reduction standards enforced by SCAQMD to comply with NAAQS and CAAQS.

As discussed above, the Project will comply with all applicable plans, policies, and rules and thus, would not limit the implementation of SCAQMD's 2022 AQMP or 2003 CVSIP for achieving attainment in the future. No impacts are therefore anticipated.

b) LESS THAN SIGNIFICANT IMPACT: As previously discussed, the SSAB portion of the Coachella Valley is classified as nonattainment for PM10 and ozone. As a result, the Project is required to strictly regulate and limit PM10 and ozone emitting sources at every stage of construction and operation, in addition to CO, NOx, PM2.5, and VOC to ensure emissions do not exceed SCAQMD thresholds (See Table 2).

The subject site consists of an undeveloped, unoccupied parcel designated for high density residential use and located within an urbanized portion of Rancho Mirage. The Project includes the development of permanent multi-family residential apartment buildings with amenity spaces and on-site parking. Construction of Via Vail is also included as part of the site's buildout. CalEEMod does not provide an exact land use type for each proposed development feature and thus, modifications to the model were made to accurately represent the proposed Project. As such, the following land uses were used to model the development: apartment mid-rise, parking lot, and road construction. The apartment mid-rise land use includes the site's total residential building square footage, plus that of the Community Center and the recreational swimming pool; road construction represents the proposed road improvements along the 0.066 mile stretch of Via Vail located immediately adjacent to the site's eastern frontage.

No structures exist on-site; therefore, no demolition is required prior to construction. A two-year construction period is assumed starting in February 2027 with buildout by 2029.

Criteria air pollutants will be released during both construction and operational phases of the Project. The following sections identify point sources of emissions at each phase and draw a comparison to SCAQMD's thresholds to determine whether the Project would result in a cumulative net increase for PM10 or ozone, or exceed permitted levels of emission for CO, NOx, PM2.5, and VOC.

[7] South Coast Air Quality Management District, SCAQMD Rule Book, https://www.aqmd.gov/home/rules-compliance/rules/scaqmd-rule-book, accessed March 2025.

Construction Emissions

For analysis purposes, it is assumed that the Project's grading would result in a net export of 45,000 cubic yards of dirt/soil from the site. Construction on-site includes multiple phases of development including site preparation, grading, building construction, paving, and architectural coating. However, prior to any on-site improvements, construction of Via Vail is required to provide adequate access to the site. As such, buildout of Via Vail is also modeled and would include four development phases: 1) linear, grubbing & land clearing, 2) linear, grading & excavation, 3) linear, drainage, utilities & sub-grade, and 4) linear, paving. The construction of off-site and on-site improvements would emit air pollutants from heavy construction equipment, off-road equipment, construction materials, land disturbance, delivery trucks, and commuting construction workers. As shown in Table 3, the Project will not exceed SCAQMD thresholds for any regulated criteria pollutant.

Table 3
Maximum Daily Construction-Related Emissions (pounds per day)

Pollutant	CO	NO_x	SO_x	PM10	PM2.5	VOC
Daily Maximum[1]	47.4	41.3	0.12	21.8	10.8	4.84
SCAQMD Threshold	550	100	150	150	55	75
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

[1] Highest emission occur during the summer and thus are reflected here to analyze worst-case-scenario.
Source: CalEEMod Version 2022.1 (Appendix A)

The data reflects the maximum daily unmitigated emission over a 24-month construction period. Highest pollutant emissions typically occur during the summer and thus, are represented in Table 3 to analyze the worst-case scenario. As shown, the Project's maximum daily construction emissions will fall well below SCAQMD significance thresholds and thus, emissions are not expected to exceed permitted levels at any point in the construction's duration. Additionally, the Project will implement architectural coating standards and fugitive dust control measures required by SCAQMD under Rule 403 and Rule 1113, and best management practices (BMPs) to further reduce emissions. Under these conditions, the Project's emissions from construction are expected to have less than significant impact.

Operational Emissions

At buildout, the Project will operate seven multi-family residential apartment buildings, totaling 150 units. Complementary amenities including a Community Center and a swimming pool will be provided. For analysis purposes, a population size of 485 residents is assumed. Additionally, the Project is anticipated to generate 722 trip-ends per day according to the traffic report prepared by Urban Crossroads (Appendix I). Operational emissions stem from five categories including mobile (vehicle), area (architectural coating), and energy (natural gas, electricity). Default settings in CalEEMod were used to estimate operational emissions given that each land use corresponds to a specific average demand factor. Table 4 indicates the Project will not exceed SCAQMD threshold for any criteria pollutant.

Table 4 Maximum Daily Operational-Related Emissions (pounds per day)						
Pollutant	**CO**	**NO_x**	**SO_x**	**PM10**	**PM2.5**	**VOC**
Daily Emissions[1]	39.8	3.46	0.09	7.27	1.91	4.89
SCAQMD Thresholds	550	55	150	150	55	55
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**

[1] Highest emission occur during the summer and thus, are reflected here to analyze worst-case-scenario.
Source: CalEEMod Version 2022.1 (Appendix A)

The data reflects the combined maximum daily emission levels projected to occur over the Project's lifespan. Therefore, the Project is not anticipated to exceed SCAQMD thresholds at any point in its long-term operation. Nonetheless, the Project currently plans to provide 27 electrical vehicle charging stations on-site as an alternative to fueled vehicles to off-set a percentage of mobile emissions. Additionally, the site will include a photovoltaic system as mandated in the Energy Code, part of the Title 24, California Building Code. Implementation of these features is projected to reduce source emissions and thus lessen daily emissions during the Project's operation. Impacts related to operational emissions are therefore anticipated to be less than significant.

Cumulative Impacts

SCAQMD has not developed a systemic approach in determining the potential for cumulative impact. Nonetheless, the emission thresholds for construction and operation are established so as to minimize individual impacts, and thus, collectively avoid the potential for cumulative impact for regulated criteria pollutants, especially PM10 and ozone. As shown in Table 3 and Table 4, the Project would not exceed emission thresholds for any pollutant during construction or operation. So, although the Project would result in an incremental change to regional emissions, it would not contribute to a cumulatively considerable impact to the region's nonattainment designation. As such, the potential for the Project to result in cumulative impacts is less than significant.

c) LESS THAN SIGNIFICANT IMPACT: The subject site is an undeveloped, vacant parcel. In proximity, there is a residential community along the west side of Key Largo Avenue, with the nearest unit being just east of the corridor and located approximately 1,200 feet west from the Project site. The residential unit is a sensitive receptor, considering that sensitive receptors are vulnerable groups of the community that are prone to health impacts related to extended exposure to pollutants at high concentrations. Sensitive receptors typically occur in various urban land uses including hospitals, schools, rest homes, and residences. In response to the potential threat to sensitive receptors, SCAQMD established localized significance thresholds (LSTs).

LSTs represent the maximum emissions from a project that would not cause substantial impact to the ambient air quality standard near sensitive receptors. These thresholds control the level of emissions permitted by various air pollutants including NO_x, CO, PM_{10}, and $PM_{2.5}$ for projects up to 5 acres in size.

The Project proposes the development/disturbance of 5-acres and would become a source of emissions. SCAQMD's LSTs are applicable to the Project and thus, the Project must adhere to these thresholds so as to ensure impacts to sensitive receptors are minimized. The Project

is located at a distance greater than 500 meters from the nearest receptor; nonetheless, the Project is evaluated under LSTs at said distance to determine whether the Project exceeds the most stringent emissions thresholds for a project closer to a sensitive receptor. As shown in Table 5, on-site emissions would not exceed permitted levels and thus, the development would not cause significant impacts to nearby receptors located at or greater than 500 meters.

Table 5
Localized Significance Thresholds Comparison with Daily Maximum Construction Emissions (pounds per day)

Pollutants	NO_x	CO	PM_{10}	$PM_{2.5}$
Maximum Emissions	41.3	47.4	21.8	10.8
LST Thresholds	875	31,115	248	128
Exceeds?	**No**	**No**	**No**	**No**

Source: CalEEMod Version 2022.1 (Appendix A); SCAQMD Localized Significance Thresholds Methodology, revised June 2008.

The Project will include residential buildings and complementary amenity spaces. No major stationary pollutants including landfills, refineries, chemical plants, and oil fields would operate within the subject site. Therefore, LST operational emissions are not applicable to the Project and, as such, an LST analysis is not required for this Project. Less than significant impacts would occur.

Health Impact

As shown in Table 3 and Table 4, the Project would not exceed SCAQMD emission thresholds for construction or operation. As such, the Project would not violate the 2022 AQMP, 2003 CVSIP, or contribute substantially to existing and future air quality emissions.

Although the Project will emit below the thresholds for air pollutants, it is not possible to calculate the degree to which exposure to various levels of criteria pollutant emissions will impact an individual's health. There are several variables that make accurate predictions of a Project-specific health impact difficult:

- Not all individuals will be affected equally due to medical history. Some may have medical pre-dispositions, and diet and exercise levels tend to vary across a population.
- Due to the dispersing nature of pollutants via wind, it is difficult to locate and identify which group of individuals will be impacted, either directly or indirectly.
- There are currently no approved methodologies or studies to base assumptions on, such as baseline health level or emission level-to-health risk ratios.

Due to these limitations, the extent to which the Project poses a health risks is uncertain. However, because the Project will not exceed SCAQMD thresholds, it is anticipated that the Project's emissions of criteria pollutants will cause less than significant health impacts.

d) NO IMPACT: The detection of odors is subjective and largely depends on the individual's sensitivity to smells. However, objectionable odors are typically associated with the operation of industrial facilities, agricultural uses (livestock and farming), and waste management sites.

None of these operations will occur on-site by the Project's development and thus, no impacts from odor are anticipated.

3.3 Mitigation Measures

None required.

4 - Biological Resources

BIOLOGICAL RESOURCES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; Biological Resources Assessment and Coachella Valley Multiple Species Habitat Conservation Plan Compliance Report prepared by WSA USA Environment and Infrastructure Inc., May 2024 (Appendix B); Project Material; Google Earth Pro.

4.1 Setting

The Coachella Valley, part of the Colorado Desert Province, is an arid desert environment comprised of sand dunes, flood channels, alkaline sediment within a relatively flat valley depression, east of the Salton Sea and enclosed by steep mountain ranges including the San Bernardino and Little San Bernardino Mountains to the north and northwest, San Jacinto Mountains to the northwest, and Santa Rosa Mountains to the south and southwest. The natural landscape of the Valley encompasses a variety of ecosystems including plants and wildlife that have adapted to the desert environment. To minimize potential harm to native wildlife and local biological resources, all development located in the Coachella Valley is subject to regulatory plans and policies including the U.S. Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), California Endangered Species Act (CESA), and the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP).

The federal Endangered Species Act is a biological conservation policy that identifies “threatened” and “endangered” species that require federal protection from adverse effects including fragmentation, habitat loss, predation, or disease. The ESA is enforced by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service. The Migratory Bird Treaty Act is an international policy prohibiting the unlawful purchase, capture, kill, and/or possession or attempt to possess any migratory bird, nest, egg, or parts.

Similar to the federal ESA, the California Endangered Species Act is a wildlife conservation policy which identifies state-listed “endangered”, “threatened” and “candidate” species for classification, protected by the California Department of Fish and Wildlife (CDFW). CESA prohibits the take of state-listed species.

On a regional scale, the CVMSHCP is a comprehensive regional plan that addresses the conservation needs of native wildlife and plant species to ensure proper measures are in effect to balance environmental protection and city economic development. The CVMSHCP accomplishes this by conserving unfragmented habitats for viable population of species within the planning area.

Rancho Mirage is a Level 2 conservation classification in the CVMSHCP’s plan area profile. The classification indicates that the City has natural value worth conserving but given the existing land uses and level of disturbance, impacts to the natural quality have extensively diminished potential biological resources. As such, the City’s developed area is not identified as a CVMSHCP conservation area. No regional or local biological conservation areas occur within the developed portion of Rancho Mirage. South of the City is the Rancho Mirage Mountain Reserve, a conservation management area that houses most of the City’s biological resources in the Santa Rosa Mountains. The Project is approximately 3.70 miles northeast of the Santa Rosa Mountains foothill.

A site-specific biological assessment report was prepared by WSP USA Environmental and Infrastructure Inc in May 2024 (Appendix B). The report consists of a literature review and an onsite field survey conducted on April 18, 2024, which analyzes the site’s habitat viability and determines the probability for species including those of federal, state, and local concern to occur within the Project’s boundaries. The following discussion is based on the evidence and result from the biological assessment report.

4.2 Discussion of Impacts:

a-b) LESS THAN SIGNIFICANT IMPACT WITH MITIGATION: The Project site is a ±5 acres parcel, currently undeveloped and consisting of native vegetation, very sandy surface, and relatively flat with small undulating hills. Similar conditions exist to the north, south, east, and west of the site where no prior development has occurred. Development near the Project site consists of commercial/retail shops to the north and east, and residential communities to the south and west. Given the parcel's proximity to development, including the Rancho Mirage Dog Park, the site shows signs of disturbance as observed during the field assessment.

The field survey was conducted on April 18, 2024, by a WSP Senior Wildlife Biologist to assess the current conditions of the Project site and evaluate the potential for suitable habitat to sustain biological resources and special status species. A variety of native vegetation and wildlife were observed during the field survey. No special status species or active nests/nesting birds were detected. The following is a detailed summary of the field assessment findings.

Vegetation: The Project site consists of sparse and disturbed shrubs including creosote bush, four-wing saltbush, and dyebush. Annual species observed include desert dicoria, Spanish needles, narrow leaved forget me not, fanleaf cricklemat, Sahara mustard, and old han schismus. Of these plant species, none are classified as endangered or threatened, or protected by the USFWS or CDFW.

Wildlife: Vertebrate species and species common to the desert scrub and/or Coachella Valley area were observed on-site within the Project area, such as the American crow, house finch, verdin, and Say's phoebe. None of the wildlife observed are classified as species of concern or federally and/or state listed species. Evidence of rodent burrows was not detected, likely due to the sandy nature of the site that does not provide a suitable burrowing substrate. No actively nesting birds were detected on or adjacent to the Project site at the time of the field survey. No species listed as threatened or endangered were observed on the site. No riparian species or habitat was observed onsite.

Special Status Species: Based on the literature review, a total of 36 special status biological species consisting of 11 plant species, 2 vegetation communities, 5 invertebrate species, 4 amphibians and reptiles, 8 bird species, and 6 mammal species, have a likelihood of occurring on-site or within a 5 mile radius. The probability of any of these species occurring on-site ranges from low to very low or absent.

Six out of nineteen species are protected by CVMSHCP, including the Coachella Valley milk-vetch, Coachella giant sand treader cricket, Coachella Valley Jerusalem cricket, burrowing owl, Palm Springs pocket mouse, and Coachella Valley (Palm Springs) round-tailed ground squirrel. These species are expected to have a low to very low probability of occurrence on-site.

The burrowing owl is not listed as threatened or endangered by the USFWS or CDFW. However, the species falls into classification as a Bird of Conservation Concern (BCC) by the USFWS and a Species of Special Concern (SSC) by the CDFW, which was recently proposed for listing in California. Additionally, the burrowing owl is protected under the MBTA, which prohibits the take of the species. No burrows suitable for burrowing owls were observed on or

adjacent to the Project site. However, if a burrowing owl is found on-site, it must be avoided or relocated prior to any ground disturbance.

A USFWS IPAC report was generated for the site where the results yielded 5 sensitive wildlife, and 1 plant species with a potential to be impacted by the Project's development. Potential impacts are anticipated to be minimal considering the site's limited suitable habitat and lack of prior occurrences. For instance, the Monarch butterfly requires milkweeds for larval development which were not observed within the property's boundaries. There is no quality habitat present for desert tortoise due to the sandy nature of the soil and high level of disturbance. Suitable habitat for the Coachella Valley fringe-toed lizard is present but the site is isolated from other open space and highly disturbed, and the species is protected under the CVMSHCP. Least Bell's vireo is absent from the site due to the lack of riparian habitat.

In regard to nesting birds, they are protected by the MBTA and the state Fish and Game Code. To avoid potential impacts to nesting birds during the nesting season, a nesting bird survey must be conducted by a qualified ornithologist or biologist, prior to on-site disturbance as mandated under Mitigation Measure BIO-1. Implementation would ensure any potential impacts to nest birds and/or nests are avoided in accordance with the MBTA. The pre-construction survey would also function to survey the site for burrowing owls and thus ensure the species' protection from on-site construction activities.

No special status species were observed on-site. No nesting sites or migratory bird species were detected during the field survey. The probability of any protected species by the USFWS, CDFW or CVMSHCP in being present on-site now or in the future is low to very low. Therefore, the probability of the Project to impact any species of special concern is limited. A nesting bird survey will be performed prior to construction activities to ensure no harm to nests, mitigatory birds, or burrowing owls is inflicted as a result of the development. The Project will comply with all regulatory requirements regarding the conservation and protection of biological resources. With the implementation of Mitigation Measure BIO-1, the Project is expected to cause less than significant impacts.

c) NO IMPACT: There are no federally protected wetlands located on the Project site or within proximity to the site. For this reason, the Project is not expected to impact jurisdictional waters in any capacity. No impact will occur.

d) LESS THAN SIGNIFICANT IMPACT: No active nesting sites, nesting birds, or migratory birds were observing on-site or in adjacent lands. The parcel is not located within a wildlife corridor, or a biological conservation area as shown in the City's General Plan Exhibit 16. The City manages the Rancho Mirage Mountain Reserve area, part of the Santa Rosa Mountains, that encompass approximately 5,000 acres including small canyons, washes, and extensive rocky and rough terrain supporting a wide variety of plants and wildlife. The area is also designated as the Coachella Valley Mountain Conservancy (CVMC) Area of Interest. The foothill of the Santa Rosa Mountains is approximately 3.70 miles southwest of the Project site. Given the large distance between the Project site and the Santa Rosa Mountains, the Project is unlikely to substantially interfere with the movement of native wildlife or impact native nursery sites. To reduce any impacts to potential nesting sites and migratory bird species, the Project will be required to implement Mitigation Measure BIO-1. As such, impacts to the local wildlife corridor and biological conservation areas in relation to the Project are expected to be less than significant.

e,f) NO IMPACT: All development including the Project is subject to the CVMSHCP as the City has incorporated the local conservation plan as part of its biological conservation requirements. For this reason, the Project will be required to adhere to CVMSHCP's regulations and standards and will pay the mitigation fee required under the Plan. Additionally, the Project will be required to comply with federal and state environmental policies relating to endangered or threatened species and migratory birds. By law, the Project and any activities relating to its construction and operation will follow all relevant federal, state, and local policies, regulations, and/or standards. The Project is not anticipated to violate any regulatory framework. No impacts are anticipated.

4.3 Mitigation Measures:

BIO-1: Migratory Bird Treaty Act

A site-specific nesting bird survey shall be performed by a qualified ornithologist or biologist no more than 3 days prior to vegetation removal or ground disturbance activities if construction is proposed during the nesting season (January 15 through August 31). If active nests are found during the pre-construction nesting bird survey, the biologist shall assess the conditions and establish an appropriate nest buffer to be marked on the ground. Nest buffers are species specific and shall be 100 to 300 feet for unlisted songbirds and at least 500 feet for birds-of-prey and species listed as threatened or endangered. The nesting area shall not be disturbed until the biologist has determined the young have fledged or the nest is no longer active. The biologist has the authority to stop work if the nesting area exhibits signs of disturbance.

5 - Cultural Resources

CULTURAL RESOURCES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Sources: City of Rancho Mirage General Plan, 2017; Historical/Archeological Resources Survey Report for Assessor's Parcel Number 685-090-016 in the City of Rancho Mirage, prepared by CRM TECH in July 2024 (Appendix C).

5.1 Setting

Prehistoric Period

Historical research suggests a cultural chronology for the desert region occurring over four periods which include the (1) Paleoindian Period (8,000 to 10,000-12,000 years ago), (2) Early Archaic Period (8,000 to 4,000 years ago), (3) Late Archaic Period (4,000 to 1,5000 years ago), and (4) Late Prehistoric Period (1,500 years ago to the Spanish missions).

The Paleoindian Period is characterized by small, mobile bands of hunters and gathers, who relied on small and large game animals and wild plants for subsistence and generally used simple stone tools.

The Early and Late Archaic Periods experienced a decrease in population density with indigenous groups depending largely on foraging rather than hunting. Very few archeological tools, sites, and other remains have been identified in connection to this time period. A continuation of the same trend occurred during the Late Archaic Period with mobile groups settled near available seasonal food resources and relied on opportunistic hunting of game animals. Groundstone artifacts for food processing were prominent during this time period.

The Late Prehistoric Period saw seasonal settlement patterns, with people relying heavily on available seasonal animals and wild plants. An introduction of ceramic and bow/arrows occurred during this time period.

The Holocene Lake Cahuilla was a prehistoric freshwater lake that attracted much settlement and resource procurement activities. The lake gradually desiccated over many cultural periods, resulting in indigenous groups moving away from its receding shores towards rivers, streams, and

mountains. Numerous historical sites have been identified along the former shoreline. Culturally significant resources within these areas have included brown and buff ware ceramics, a variety of groundstone, and projectile point types, ornaments, and cremation remains.

Historical Period

Due to its harsh environment, few non-Indians ventured into the desert valley during the Mexican and early American periods, except for those who traveled along the established trails. The most notable was the Cocomaricopa Trail, an ancient Indian trading route that was "discovered" in 1862 and known as the Indian trading route after that. The wagon trail traverses a similar route to that of present-day State Route 111. The trail served as the main thoroughfare between coastal southern California and the Colorado River, until the completion of the Southern Pacific Railroad in 1876 to 1877, at which point non-Indian settlement in the Coachella Valley appeared with the establishment of railroad stations and spread further with claims of public land through the Homestead Act, the Desert Land Act, and other federal land laws. Farming was the dominant economic activity in the Valley prior to the late 1920s, when new industries were introduced including equestrian camps, resorts, hotels, and eventually country clubs.

In Rancho Mirage, the first sign of settlement occurred in the 1910s and 1920s when several date ranches were established within the present-day City boundary. Small residential communities gradually appeared with development after the end of World War II (WWII) rapidly attributing to the City's growth. With the development of the Thunderbird Country Club and the Tamarisk Country Club, along with five other cove communities along Highway-111 setting the framework for development trends within the City of Rancho Mirage.

A Project-specific historical and archeological resource survey report was prepared by CRM TECH in July 2024 (Appendix C). The report evaluates and determines whether the proposed Project would cause substantial adverse changes to any "historical resources", as defined by CEQA that may exist in and around the Project area. Assessment of potential historical resources within a 1-mile radius of the Project site includes a historical/archeological resource records search, historical background research, Native American participation, and a field survey conducted by a CRM Tech archeologist and two Native American monitors from the Agua Caliente Band of Cahuilla Indians (ACBCI) on May 14, 2024.

The following analysis is based on results from the historical/archeological report.

5.2 Discussion of Impacts:

a-b) LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED:

Record Search

According to the search of historical records, the Project area has not previously been studied for potential historical or archeological resources. However, records identify a total of 35 previously completed cultural resource studies, in addition to one conducted by CRM TECH on the adjacent northern parcel in April 2024 which is yet to be incorporated into EIC records. From the 35 surveys, 17 cultural resources within a one-mile radius have been recorded in the California Historical Resources Inventory, which include four prehistoric sites, seven historic-period sites, and six isolates (sites with fewer than three artifacts). Table 6 lists all 17 culturally significant sites located in a one-mile radius from the Project site.

Table 6 Previously Recorded Cultural Resources within the Project Vicinity			
Primary Number	**Trinomial**	**Description**	**Date Recorded**
33-003440	CA-RIV-3440H	Remains of Edom Station and Siding on Southern Pacific Railroad	1999
33-005625	N/A	Remains of Kubic Ranch	2004
33-009498	CA-RIV-6381H	Southern Pacific (now Union Pacific) Railroad	2005
33-009748	CA-RIV-6495H	Early alignment of Rio del Sol Road (now Bob Hope Drive), ca. 1941-1958	2000
33-010953	N/A	Two sanitary cans	2000
33-010954	N/A	Sanitary cans	2000
33-010955	N/A	Sanitary cans	2000
33-010956	N/A	Sanitary cans	2000
33-015933	N/A	Beer cans from a six-pack	2000
33-017005	CA-RIV-8852H	Refuse scatter	2007
33-017007	CA-RIV-8854	Scattered groundstone and flaked-stone artifacts	2007
33-017008	CA-RIV-8855H	Remains of collapsed wood-and-metal shed	2007
33-017009	CA-RIV-8856	Cremation remains	2007
33-017010	CA-RIV-8857	Cremation remains with associated lithic artifacts	2007
33-017011	CA-RIV-8858	Scattered groundstone and flaked-stone artifacts	2007
33-017012	N/A	Pottery sherd	2007
33-026824	CA-RIV-12609H	Refuse scatter	2017
Source: Historical/Archeological Resource Survey Report for Assessor's Parcel Number 685-090-016 prepared by CRM TECH, July 2024.			

The nearest historical site is Site 33-017008, located a half-mile northwest of the Project area and consisting of remains of a collapsed shed of unknown age. None of the 17 cultural resources are within proximity to the Project area and will not be subject to potential loss or damage by the Project's construction and operation.

Native American Participation

The CRM TECH inquiry to the NAHC yielded no Native American cultural resources in the Project vicinity. Nonetheless, the NAHC recommended that local Native Americans groups be consulted for further information on potential cultural resources in the area. On April 22, 2024, analysts with the ACBCI historical preservation office replied to CRM Tech's request for information by identifying the area as the tribe's Traditional Use Area and asking for the following actions to be taken in connection to the Project's implementation: 1) all cultural resources documentation generated for this Project to be shared for review and 2) qualified archaeologists perform a cultural resources inventory prior to development and an approved ACBCI monitor be present.

Historical Background Research
Historical records research yielded no evidence of any settlement or development activities within the Project area throughout the historic period. Gradual development has appeared with greater real estate development occurring since the 1990s, notably in the surrounding area with the construction of the Monterey Marketplace Shopping Center and residential units on the west side of Key Largo Avenue.

Field Survey
Findings from the field survey resulted in no cultural resources being uncovered or identified in the Project area pursuant to the California Public Resource Code definition of "historical resources." The report does note that buried resources could occur, and that impacts to those resources could be significant if not mitigated. In order to reduce impacts to less than significant levels, Mitigation Measure CUL-1 is provided below.

The Native American Sacred Lands File identified no properties of traditional cultural value in the vicinity, and no notable cultural features were known to be present in the Project area throughout the historical period. Therefore, the site is regarded as having no historical resource present within the site boundary.

Conclusion
Based on the results from the assessment prepared in determining whether historical resources are likely to be present in the Project area, the report concludes with no substantial adverse change to any known historical resources. However, to avoid potential adverse effects from ground disturbance, implementation of Mitigation Measure CUL-1 would be required to reduce impacts to less than significant levels.

c) LESS THAN SIGNIFICANT IMPACT: The Project site is not known to have been used for human burials or previously utilized as a cemetery. As such, the property is unlikely to harbor human remains. However, in accordance with State law, if human remains are discovered during ground-disturbance, all construction activities must cease immediately, and the County Coroner must be notified of the findings. The Coroner will evaluate and make a final determination on the significance of the remains and whether local Native American tribes need to be contacted. With compliance with State mandates, the Project would result in less than significant impact to potentially occurring human remains.

5.3 Mitigation Measures:

CUL-1: If buried materials are discovered during any earth-moving operations associated with the project, all work in the immediate area should be halted or diverted until a qualified archeologist can evaluate the nature and significance of the find.

6 - Energy

ENERGY – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; California Cities, Southern California Edison, accessed June 2024; About IID Energy, Imperial Irrigation District, accessed June 2024; Company Profile, Southern California Gas, accessed June 2024, Air Quality Report, April 2025 (Appendix A).

6.1 Setting

Electricity

The Project site is serviced by Imperial Irrigation District (IID). IID is a local service provider for the eastern portion of the Coachella Valley including portions of Rancho Mirage and all Imperial County, to cover approximately 6,471 square miles and more than 165,000 people. IID manages and operates its electricity system in Riverside and Imperial county to provide its customers energy from a variety of sources including renewables.[8]

Natural Gas

Southern California Gas (SCG) is one of the largest natural gas providers, encompassing approximately 24,000 square miles and servicing nearly 21.1 million customers.[9] SCE operates transmission lines crossing the Coachella Valley, along Interstate-10 to the north and a system of high pressure distribution lines to its service areas in Rancho Mirage. SCG will provide natural gas energy to the Project site.

6.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: The Project proposes the development of 5± acres of vacant land to include seven permanent residential apartment buildings, a Community Center, and multiple recreational amenities. Construction and operation of the Project would consume energy in the form of electricity, natural gas, and gasoline. The following section analyzes the

[8] Imperial Irrigation District, About IID Energy, https://www.iid.com/energy/about-iid-energy, accessed June 2024.

[9] Southern California Gas, Company Profile, https://www.socalgas.com/about-us/company-profile, accessed June 2024.

energy consumption at each phase of development and determines whether energy use would result in environmental impact due to wasteful, inefficient, or unnecessary consumption.

Construction Energy Use

The Project's construction phase will include site preparation, grading, building construction, paving and architectural coating. Additionally, buildout of Via Vail would include linear, grubbing & land clearing, drainage & excavation, and utilities & sub-grade construction phases. The construction phases for both on-site and off-site improvements are estimated to occur over a 24-month construction period. During this time, energy use would primarily stem from the use of construction equipment and construction workers' vehicles commuting to and from work.

Table 7 provides a thorough overview of the type of construction equipment that may be found at the site during the specific construction phase and calculates the equipment's fuel consumption based on the construction duration, construction equipment power rating, and load factors programmed in CalEEMod (Appendix A). The aggregate fuel consumption rate for all equipment is estimated at 18.5 horsepower hours per gallon, per the California Air Resources Board's (CARB's) Carl Moyer Program Guidelines (2017), Table D-12 Fuel Consumption Rate Factor. CalEEMod assumed all construction equipment is diesel powered. The Project's construction equipment is estimated to consume approximately 62,757 gallons of diesel fuel within the 24-month construction period.

Table 7
Construction Equipment Fuel Consumption Estimates

Construction Phase	Duration (days)	Equipment	HR Rating	Qty	Usage Hours	Load Factor	HP-hrs/day	Fuel Consumption
Site Preparation	20	Rubber Tired Dozers	367	3	7	0.40	3083	3333
		Tractors/Loaders/ Backhoes	84	4	5	0.37	622	672
		Other Construction Equipment	150	1	7	0.42	189	204
Grading	50	Excavators	36	1	7	0.38	96	259
		Graders	148	1	7	0.41	425	1149
		Rubber Tired Dozers	367	1	7	0.40	1028	2778
		Tractors/Loaders/ Backhoes	84	3	5	0.37	466	1259
		Other Construction Equipment	150	1	3	0.42	189	511
Building Construction	415	Cranes	367	1	7	0.29	745	16712
		Forklifts	82	3	5	0.20	246	5518
		Generator Sets	14	1	7	0.74	73	1638
		Tractors/Loaders/ Backhoes	84	3	5	0.37	466	10454
		Welders	46	1	7	0.45	145	3253

Table 7
Construction Equipment Fuel Consumption Estimates

Construction Phase	Duration (days)	Equipment	HR Rating	Qty	Usage Hours	Load Factor	HP-hrs/day	Fuel Consumption
Paving	35	Pavers	81	2	7	0.42	476	901
		Paving Equipment	89	2	5	0.36	320	605
		Rollers	36	2	7	0.38	192	363
Architectural Coating	50	Air Compressors	37	1	6	0.48	107	289
Linear, Grubbing & Land Clearing	10	Crawler Tractors	87	1	7	0.43	262	142
		Excavators	36	1	7	0.38	96	52
		Signal Boards	6	1	7	0.82	34	19
Linear, Grading & Excavation	20	Crawler Tractors	87	1	7	0.43	262	283
		Excavators	36	3	7	0.38	287	311
		Graders	148	1	7	0.41	425	459
		Rollers	36	2	7	0.38	192	207
		Rubber Tired Loaders	150	2	5	0.36	540	584
		Scrapers	423	2	7	0.48	2843	3073
		Signal Boards	6	1	7	0.82	34	37
		Tractors/Loaders/ Backhoes	84	2	5	0.37	311	336
Linear, Drainage & Sub-Grade	25	Air Compressors	37	1	7	0.48	124	168
		Generator Sets	14	1	7	0.74	73	98
		Graders	148	1	1	0.41	61	82
		Plate Compactors	8	1	7	0.43	24	32
		Pumps	11	1	7	0.74	57	77
		Rough Terrain Forklifts	96	1	7	0.40	269	364
		Scrapers	423	2	7	0.48	2843	3842
		Signal Boards	6	1	7	0.82	34	46
		Tractors/Loaders/ Backhoes	84	2	5	0.37	311	420
Linear, Paving	40	Pavers	81	1	7	0.42	238	515
		Paving Equipment	89	1	5	0.36	160	346
		Rollers	36	3	7	0.38	287	621
		Signal Boards	6	1	7	0.82	34	74
		Tractors/Loaders/ Backhoes	84	2	5	0.37	311	672
Total Construction Equipment Fuel Demand (Gallons Diesel Fuel)								**62,757**

Source: CalEEMod Version 2022.1 (Appendix A)

Table 8 provides an overview of fuel consumption as it relates to construction workers' commute to and from the construction site. Estimates are based on trip type (worker, hauling, vendor), construction duration, rate of daily worker trips, and trip length as modeled by CalEEMod. For purposes of this analysis, it may be assumed that worker trips are by car, hauling trips are by Class 8 truck, and vendor trips are by delivery truck. The average vehicle

fuel economy estimate for each trip type was derived from the U.S. Department of Energy Alternative Fueled Data Center.

Table 8
Construction Worker Fuel Consumption Estimates

Construction Phase	Duration (days)	Trip Type	Worker Trips/Day	Trip Length (miles)	VMT	Avg. Fuel Economy (mpg)	Fuel Consumption (gallons)
Site Preparation	20	Worker	20	18.5	7400	24.4	303
Grading	50	Worker	17.5	18.5	16187.5	24.4	663
		Hauling	113	20	113000	6.4	17656
Building Construction	415	Worker	108	18.5	829170	24.4	33982
		Vendor	16.2	10.2	68574.6	7.7	8906
Paving	35	Worker	15	18.5	9712.5	24.4	398
		Hauling	0.77	20	539	6.4	84
Architectural Coating	50	Worker	21.7	18.5	20072.5	24.4	823
Linear, Grubbing & Land Clearing	10	Worker	7.5	18.5	1387.5	24.4	57
Linear, Grading & Excavation	20	Worker	32.5	18.5	12025	24.4	493
		Vendor	1	10.2	204	7.7	26
Linear, Drainage, Utilities & Sub-Grade	25	Worker	27.5	18.5	12718.75	24.4	521
Linear, Paving	40	Worker	20	18.5	14800	24.4	607
		Hauling	0.77	20	616	6.4	96
Total Construction Worker Fuel Demand (Gallons Diesel Fuel)							**64,616**

Source: CalEEMod Version 2022.1. (Appendix A)

In total, the construction phase would generate a fuel demand of 127,373 gallons of fuel. This fuel consumption will occur only once, and all related construction diesel fuel demands will end immediately after the 24-month construction period.

Although energy demand from construction is temporary, the Project would be required to adhere to the state Low Carbon Fuel Standards which are regulatory standards designed to improve transportation fuel efficiency and achieve environmental benefits, such as lowering carbon fuel emissions and improving air quality. Compliance with these standards would ensure the Project's fuel consumption during construction does not adversely affect the surrounding environment. Any potential impacts will be limited and cease after the construction period has been completed.

Operation Energy Use

At buildout, the Project site would consume electricity to power kitchen appliances (refrigerators, ovens, toasters), electronics (televisions, Wi-Fi boxes, computers), HVAC, EV charging stations, and indoor/outdoor lighting. CalEEMod generates default electricity and

natural gas consumption based on land use inputs. For the Project, the following land uses were included: apartments mid-rise, parking lot, and road construction. One thing to note is the energy use by the swimming pool (i.e., heat pump) and Community Center (i.e., light fixtures, appliances, HVAC) are accounted under the residential land use. Table 9 summarizes each land use estimated energy demand.

Table 9
Operational Energy Demand

Land Use	Electricity (kWh/yr)	Natural Gas (kBTU/yr)
Apartment Mid-Rise	848,874	1,933,922
Parking Lot	76,317	0
Total Operational Energy Demand	**925,191**	**1,933,922**
Source: CalEEMod Version 2022.1. (Appendix A)		

As shown in Table 9, the Project's operation would generate an annual energy demand of 925,191 kWh of electricity and 1,933,922 kBTU of natural gas. To manage the use of electricity on-site, the Project's design, construction, installation, and operation must adhere to the latest standards for energy efficiency established in Title 24 of the California Building Code. Part of these provisions include solar power for multifamily residential buildings with a solar zone located on the roof or overhang of the building to provide at least 15 percent of roof coverage per building. The use of renewable energy would off-set electricity use supplied by nonrenewable resources such as fossil fuel, coal, and natural gas. Consequently, the Project would minimize energy consumption from nonrenewable resources to the greatest extent possible. Adherence to these and other energy efficiency standards as outlined in the City General Plan, Municipal Code, and the City 2013 Energy Action Plan, would ensure the proposed multifamily residential development does not become a source of wasteful, inefficient, and unnecessary energy consumption. As such, less than significant impacts from energy consumption during the Project's long-term operation are anticipated.

Summary

The proposed Project would generate an energy demand during construction and operation. Energy use during construction would be temporary and thus cause no permanent impacts to the Project's energy use. However, energy consumption during operation would be on-going and last the entire duration of the property's lifespan. Operational usage would be managed by the property's compliance with stringent energy codes established in the State Building Code for multifamily residential development. These provisions specifically aim to reduce energy consumption; thereby, improving the usage and efficiency of energy. In accordance with all applicable mandates, the Project's operational energy use would not significantly impact the environment from wasteful, inefficient, and unnecessary energy consumption. For these reasons, potential impacts are anticipated as being less than significant.

b) NO IMPACT: Energy efficiency is mandatory under the State's Energy Code, a part of the California Building Code, Title 24, which requires all residential development to fulfill minimum standards for energy conservation. Part of these mandates includes solar power for multifamily residential buildings, as previously discussed. Additionally, the Project would be required to comply with applicable standards for energy efficiency under the City 2013 Energy Action Plan and the City Municipal Code. Adherence is required by law and, as such, the

Project would not conflict or violate any state or local standard regarding renewable energy or energy efficiency. No impacts would occur.

6.3 Mitigation Measures:

None required.

7 - Geology and Soils

GEOLOGY AND SOILS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risk to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; Rancho Mirage General Plan Environmental Impact Report, 2005; Southern California Earthquake Data Center, accessed June 2024; Design-Phase Geotechnical Investigation Report for the Proposed Rancho Mirage Apartments, prepared by Petra Geoscience, July 2024 (Appendix D).

7.1 Setting

Rancho Mirage is located in an area with numerous active faults, including the Banning fault and the Garnet Hill fault. Both faults are located outside the City limits north of Interstate-10 (I-10), along the foothills of the San Bernardino Mountains. These local faults, as well as regional faults including the San Andreas, San Jacinto, and San Gorgonio Pass faults, have the potential to cause strong ground shaking in Rancho Mirage. The City is also susceptible to soil settlement, landslide, collapsible soil, ground subsidence, and soil erosion.

Ground shaking

The Banning and Garnet Hill faults are located approximately 3.40 miles to the north. Both faults are part of the San Andreas fault system. The Banning fault is a right-lateral strike-slip fault, capable of inducing a <7.0 magnitude earthquake.[10] The Garnet Hill fault is a right-lateral strike-slip fault with an earthquake capacity of <7.0 magnitude.[11]

Secondary active faults capable of causing damage to Rancho Mirage include the San Jacinto fault, located within the San Jacinto Mountains, southwest of the City; and the San Gorgonio Pass fault, located in the San Gorgonio Pass to the west of the City. The San Andreas fault is a strike-slip fault where the North American and Pacific tectonic plates meet. The San Andreas fault crosses the Coachella Valley from the Salton Sea, north of Rancho Mirage and through Desert Hot Springs. The fault can induce a magnitude <8.0 earthquake, likely to impact Rancho Mirage. The risk of seismically induced ground shaking is high given Rancho Mirage's proximity to the Banning and Garnet Hill fault, as well as the influence of regional faults such as the San Andreas.

Liquefaction

Seismically induced liquefaction occurs when loose, unconsolidated, sandy soil is in proximity to groundwater less than 50 feet from the ground surface. When the soil particles become saturated, the effect is a loss of bearing strength, which causes the surface to become unstable and jeopardize the structural integrity of buildings built on top. In Rancho Mirage, seismically induced liquefaction hazards are considered low given the local groundwater level is at depth greater than 50 feet.

Soil Settlement

Settlement of the ground surface occurs when fine, unconsolidated alluvial soil becomes compacted during a seismic event. According to Rancho Mirage's General Plan Exhibit 23, most of the City's developed area, including the Project site, is located within an area classified as highly susceptible to seismically induced settlement.

Landslide

Those portions of Rancho Mirage located adjacent to the San Jacinto and Santa Rosa Mountains are highly susceptible to landslides given their proximity to steep mountains which may result in rock falls and landslides in the event of a seismic event. As shown in the City's General Plan Exhibit 24, the Project site is located in the City's northeastern corner within an area with low susceptibility for seismically induced rockfall and/or landslide.

[10] Southern California Earthquake Data Center, Banning Fault, accessed June 2024.
[11] Southern California Earthquake Data Center, Garnet Hill Fault, accessed June 2024.

Collapsible Soil
Collapsible soil is soil sediment recently laid down by wind or water. Typically, the soil loses its strength and becomes rearranged when saturated, causing a substantial and rapid soil settlement. Rancho Mirage's developed area is comprised of alluvial and aeolian sediment that are prone to collapse.

Ground Subsidence
Ground subsidence is the gradual settlement of the ground surface, generally attributed to the rapid decline of regional groundwater basins. With the projected population growth in the Coachella Valley, withdrawal of the groundwater basin will become more prevalent, thus presenting an increasing risk for ground subsidence in Rancho Mirage and all regional cities. The local water districts have implemented groundwater replenishment programs to offset the withdrawal of groundwater.

Soil Erosion
Soil erosion occurs when loose sediment is transported by wind, water, and/or agricultural activities. The loss of mass results in atmospheric dust which impacts road visibility and impacts the regional air quality. The majority of Rancho Mirage's developed area is classified as a Very Severe Wind Erosion Hazard Zone (VSWEHZ). The Project site is located within a VSWEHZ.

Flooding
Flooding during a seismic event may be a result of failures of water tanks, reservoirs, retention basins, recharge basins, and other water storage facilities. Rancho Mirage has a low probability of seismically induced flooding.

Paleontological Resources
Paleontological resources are the remains or traces of prehistoric life that once occupied the area. The City is generally regarded as an area with low sensitivity to paleontological resources, according to the City's 2005 General Plan EIR.
To evaluate the property's susceptibility to geological hazards, a Project-specific Geotechnical Investigation Report was prepared by Petra Geoscience in July 2024 (Appendix D). The investigation includes a subsurface exploration survey, laboratory test, and percolation test. The basis of the following analysis stems from the report.

7.2 Discussion of Impacts:

a.i NO IMPACT: The subject site is not located on or near an active fault line as defined by the California Department of Conservation, Alquist Priolo Site Investigation Map.[12] No signs of faulting were observed within the property during the field survey. Therefore, the probability for impact due to fault rupture on-site is considered negligible. No impacts are anticipated.

a.ii LESS THAN SIGNIFICANT IMPACT: The Project site is located within a relatively flat region of Rancho Mirage's northeast planning area. The site is comprised of unconsolidated, windblown sand and covered by sparse desert vegetation. The likelihood for the site to be adversely affected by strong ground shaking is analyzed below.

[12] California Department of Conservation, Alquist-Priolo Site Investigation Reports, https://maps.conservation.ca.gov/cgs/informationwarehouse/apreports/, accessed March 2025.

The site is located more than 3 miles (3.36 miles exactly) from the nearest active fault line, being the San Andreas Fault, traversing along the foothills of the Indio Hills and located outside the City boundary.

The Coachella Valley segment of the San Andreas fault can generate the greatest level of ground shaking in the region, at an estimated magnitude of 8.0. On the Modified Mercalli Intensity (MMI) scale, which categorizes the potential for damage on a scale of 1 (none) to 12 (severe), the Coachella Valley segment of the San Andreas fault is associated with an 8 to 7 damage level. In the worst case (Level 8), strong ground shaking from the San Andreas fault can cause structural damage, overturn heavy furniture and cause columns, chimneys, and walls to fall. The potential for damage is moderate to heavy and perceived shaking is severe.

To ensure structural integrity during strong ground shaking, the Project is required to conform with the latest California Seismic Code and applicable development standards as established in the City General Plan and Rancho Mirage Municipal Code. In accordance with these safety standards, the Project's design and construction will incorporate collapse-resistance measures so as to reduce the potential for structural damage or collapse in the event of seismically induced ground shaking. Therefore, although the Project site has a moderate chance for damage caused by seismically induced ground shaking, implementation of building standards will minimize the potential for significant damage. As such, less than significant impacts are anticipated.

a.iii NO IMPACT: During the geotechnical field survey, the greatest depth explored reached 66 feet below the ground surface. Groundwater was not encountered at this depth. Furthermore, a monitoring well located approximately a half-a-mile to the north places groundwater at a depth of 160± feet below the surface. The site's groundwater is therefore located at a depth of or greater than 160 feet, which eliminates the probability for seismically induced liquefaction to occur on-site and cause structural damage to the proposed residential buildings. The property's susceptibility for liquefaction is negligible and thus, no impacts are anticipated.

a.iv NO IMPACT: The property is located on the Valley floor and within a relatively flat region of Rancho Mirage. There are no slopes, hillsides, or mountains at or within proximity to the site. The nearest susceptible landslide area is the Indio Hills, located approximately 3.40 miles from the property. At this distance, the risk for a seismically induced landslide is limited. The potential for landslides to cause adverse effects to the property and proposed development is negligible. No impacts will occur.

b) LESS THAN SIGNIFICANT IMPACT: Disturbance of the topsoil during construction is generally regarded as increasing the probability of soil erosion by wind and water. However, in accordance with SCAQMD Rule 403, irrigation of the site is required prior to and during any ground disturbance so as to manage fugitive dust from soil erosion. Additionally, the Rancho Mirage Municipal Code requires all new development to implement a Stormwater Pollution Prevention Plan (SWPPP) and Water Quality Management Plan (WQMP) to specify actions taken to manage and avoid storm runoff during construction and in the long term. In accordance with these standards, development of the Project is not anticipated to increase the site's susceptibility to soil erosion. Additionally, once fully built, the Project site will include impervious surfaces such as building foundations, sidewalks, parking areas, and landscape,

all of which stabilize the soil and prevent soil erosion. For these reasons, the probability for impact from soil erosion is low. Less than significant impacts are anticipated.

c) LESS THAN SIGNIFICANT IMPACT: The probability for soil failure within the property is analyzed in the following sections.

Landslides
Refer to Question a.iv in this Section for analysis on the probability for landslides. No impacts are anticipated.

Lateral Spreading
Lateral spreading is caused by liquefaction and seismically induced ground shaking that liquefies the topsoil resulting in the soil column's loss of strength.[13] Typically, lateral spreading occurs in fine grained materials on shallow slopes or flat terrain. The subject site is relatively flat and covered by unconsolidated sandy soil with a groundwater level estimated at a depth of 160± feet below the ground surface. At this distance, the probability for lateral spreading to occur at the Project site negligible.

Subsidence
Subsidence is a byproduct of excessive groundwater pumping which lowers the soil column, resulting in the gradual settling or sudden sinking of the surface. The Coachella Valley Water District, in compliance with the Sustainable Groundwater Management Act (SGMA), implements groundwater replenishment measures to maintain constant levels. These measures ensure groundwater levels do not substantially decrease to the extent of causing subsidence. Therefore, the probability for the Project site to be impacted by ground failure as it relates to subsidence is limited.

Liquefaction
Refer to Question a.iii in this Section for analysis on the likelihood for liquefaction. No impacts are anticipated.

Soil Collapse
Soils prone to collapse include wind deposited sands and silts, alluvial fans or debris flow sediments deposited by flash floods. These soils may be partially supported by clay, silt, or carbonate bonds which when saturated, collapse and undergo rearrangement, resulting in substantial and rapid settlement under relatively light loads. According to the soil survey, the soil material found on-site is very loose to very dense, poorly graded eolian sand. Soil found at a depth of at least 10 feet was determined as prone to settlement. However, the grading requirements which will be imposed on the Project by the City will include the over-excavation of these soils, the proper compaction of soils and other geotechnical standards to assure that soil collapse does not occur. These standard requirements will assure that impacts will be less than significant.

d) NO IMPACT: Expansive clay may occur in fine-grained soils. These soil types expand and contract with changes in moisture content. The soil material found on-site was characterized as very loose to very dense, poorly graded eolian sand with a moisture content less than 0.5%. To determine the potential for soil collapse by exposure to moisture, a percolation test

[13] US Geological Survey, Lateral Spread, https://www.usgs.gov/media/images/lateral-spread, July 2023.

was performed. Results from the test concluded with the soil on-site having a safety factor of 1, indicating the soil's stability in contact with water. Clay was not encountered in the soil column, and is not expected to occur. No impact is expected.

e) NO IMPACT: On-site wastewater collection and treatment services will be provided by the Coachella Valley Water District. No septic tank will be required to fulfill wastewater services. Therefore, no geological impacts related to soil collapse from an on-site septic tank would occur as part of the proposed development. As such, no impacts would occur.

f) NO IMPACT: The City of Rancho Mirage is located within an area with low sensitivity to paleontological resources. Additionally, there are no records of paleontological resources being uncovered during the development of surrounding land uses in the proximity of the Project site. Therefore, no paleontological resources are expected to occur within the property area and thus, no impacts will occur.

7.3 Mitigation Measures:

None required.

8 – Greenhouse Gas Emissions

GREENHOUSE EMISSIONS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Sources: South Coast Air Quality Management District, Greenhouse Gases, accessed June 2024; Rancho Mirage Sustainability Plan, March 2013; Air Quality Report, April 2025 (Appendix A); Project Material.

8.1 Setting

Greenhouse Gases (GHGs) are naturally occurring with the release of water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3) into the atmosphere which then capture heat radiated by the sun to create the greenhouse effect. With the introduction of human activities including the burning of fossil fuels and agricultural practices, the release of GHGs into the atmosphere has accelerated over the decades to the extent of causing changes to global weather patterns, noted as global climate change or global warming.

In response to global climate change, Assembly Bill 32 (AB 32) and Senate Bill 32 (SB 32) were passed to set GHG emission guidelines to achieve 1990 emissions levels by 2020 and a level of 40% below 1990 emission levels by 2030.

Pursuant to the State GHG reduction goals, the City of Rancho Mirage adopted a Sustainability Plan (SP) in March 2013. The 2013 SP is an implementation plan for Rancho Mirage to reach target emission reduction goals through goals, policies, and standards. A GHG emission inventory was provided and projected emissions are stated assuming current and future developments implement reduction standards. The City reduction goal is 19.8% below 1990 emission levels by 2020.[14]

In compliance with state legislation, SCAQMD adopted a tiered approach to determine GHG significance thresholds for stationary sources. Specific thresholds are dependent on land use. Residential projects have an annual GHG threshold of 3,000 metric tons of CO_2 equivalent (MTCO2e) per year. The following is the “tiered” system approach in determining if a project’s GHG emissions would be considered significant according to CEQA standards:

- Tier 1: Is there an applicable exception?

[14] Rancho Mirage Sustainability Plan, Table 1, March 2013.

- Tier 2: Is the project compliant with a greenhouse gas reduction plan that is, at a minimum, consistent with the goals of AB 32?
- Tier 3: Is the project below an absolute threshold (10,000 MTCO2e/yr for industrial projects; 3,000 MTCO2e/yr for residential and commercial projects)?
- Tier 4: Is the project below a (yet to be set) performance threshold?
- Tier 5: Would the project achieve a screening level with off-site mitigation?

SCAQMD's tier system approach is implemented in the following impact analysis regarding the Project's emission of GHG during construction and operation.

8.2 Discussion of Impacts:

a-b) LESS THAN SIGNIFICANT IMPACT: A Project-specific air quality report was prepared using CalEEMod, a modeling program used to calculate emissions based on land use and related operations for projecting emissions including GHG from stationary sources (Appendix A). Construction GHG emissions include the use of construction equipment and transportation of construction materials and personnel. Operational GHG emissions consist of a variety of sources including area sources, energy usage, mobile sources, waste, and water.

Construction Emissions

A construction duration of 2-years is projected starting in February 2027 with a full buildout by 2029. Construction activities resulting in short-term GHG emissions would stem from the operation of construction equipment, employee commutes, material hauling, and other ground disturbances. For 2027, emissions are estimated at 674 MTCO2e. For 2028, emissions are estimated at 486 MTCO2e, and for 2029, emissions are estimated at 27.5 MTCO2e. The Project's construction would emit a total of 1,187.50 MTCO2e/year over the 24-month construction period. To determine if construction-related GHG emissions will result in a cumulative impact, construction GHG emissions were amortized over a 30-year period and added to annual operational emissions to be compared to applicable GHG thresholds. Table 11 summaries construction emissions with annual operational emissions for this specific Project.

Operational Emissions

At buildout, the Project would consist of seven residential multifamily apartment buildings and complementary amenities including a Community Center facility and outdoor recreational amenities. During operation, the Project would consist of six sources of GHG emissions including mobile, area, energy usage, water, waste, and refrigerant. These sources would generate the Project's annual emissions, estimated at 1,659 MTCO2e/year. Table 10 shows each emission source in relation to the Project's annual GHG emissions.

Table 10
Total Operation GHG Emission per Source

Source of Emission	Annual Emissions (MTCO2e per year)
Area	1.86
Mobile	1,311
Energy	
Electricity	192
Natural Gas	103

Table 10 Total Operation GHG Emission per Source	
Source of Emission	**Annual Emissions (MTCO2e per year)**
Water	15.1
Waste	36.3
Refrigerant	0.08
TOTAL	**1,659**
Source: CalEEMod Version 2022.1. (Appendix A)	

Table 11 Projected Greenhouse Gas Emissions Summary	
Development Phases	**Annual Emissions (MTCO2e per year)**
Construction (2027-2029)	
Total Emissions	1,187.50
Operation	
Construction: 30-year amortized	39.58
Annual Operation	1,659
Total Operation	1,698.58
SCAQMD Threshold	3,000
Exceeds?	**No**
Source: CalEEMod Version 2022.1. (Appendix A)	

Table 11 displays the total construction and operational emissions for the Project with specified modifications. Annual GHG emissions are estimated to be 1,698.58 MTCO2e/year which falls below SCAQMD Tier 3 threshold at 3,000 MTCO2e/year. As mentioned above, the Project would be subject to the Rancho Mirage SP and the City's 2013 Energy Action Plan. In accordance with these plans, the Project would be required to adhere to reduction standards to assist in the City's reduction goal and overall, the State's SB 32 objective of achieving a GHG emission level of 40% below 1990 levels by 2030. The Project would also adhere to rules and standards under SCAQMD 2022 AQMP. These standards would ensure that the Project's GHG emissions do not substantially impact the environment. Therefore, less than significant impacts would occur as a result from the Project's construction and operation.

8.3 Mitigation Measures:

None required.

9 - Hazards and Hazardous Materials

HAZARDS AND HAZARDOUS MATERIALS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

Sources: City of Rancho Mirage General Plan, 2017; National Community Renaissance of California, Phase I Environmental Site Assessment, April 2024 (Appendix E); Project Material; Google Earth Pro.

9.1 Setting

Federal, state, and local standards impose restrictions/regulation on the transport, use, storage, and disposal of hazardous material, specific to facilities including new commercial, industrial, institutional, or accessory use, that are involve in the manufacturing, storage, or processing of hazardous substances in sufficient quantity to pose a hazardous risk.

Numerous commercial, quasi industrial, and medical operation are classified "small quantity generators" in Rancho Mirage, given their use of hazardous/toxic material and potential for accidental spills, air emissions, and other discharge into the environment. These hazardous waste sources include the Eisenhower Medical Center and the Desert Orthopedic Center, according to the City's 2017 General Plan. At this time, there are no active hazardous waste sites found in Rancho Mirage as reported in the Hazardous Waste and Substance Site List (Cortese List) by the California Department of Toxic Substances Control.

Apart from commercial, institutional, and industrial facilities, households may also pose a hazardous risk with the improper disposal of common household products. Hazardous waste typically found in homes includes household cleaners, paints, pesticides, solvents, used automobile fluids, and batteries. To limit the potential harm to human health and the environment with the mishandling and/or improper disposal of household hazardous waste, the City offers household hazardous waste pick-ups at no cost to residents.

A site-specific Phase I Environmental Site Assessment was prepared to evaluate the property's existing environmental condition and related susceptibility to hazardous impacts from the development of a multi-family residential project on the site's 5±acre parcel (Appendix E). The assessment includes a review of aerial photographs, environmental database review, and a site inspection performed on April 18, 2024.

<u>Investigation For Potential Hazardous Sites</u>
Aerial photographs were reviewed in order to assess the gradual change in land use over time and identify sources of potential hazardous material storage usage, and disposal, near the Project site. Observation yielded that in 1953 no manmade structures appeared in the Project area, until 1959 through 2020 when greater development gradually evolved to what is present today. Within this same period, no landfills, large aboveground tanks, oil wells, or pipelines were visible nor are currently present on-site or within adjoining properties. No previous use of the site for storage or disposal of hazardous material has occurred. And as such, the property was not identified as a potential hazardous material site as part of the environmental database review.
Nonetheless, seven properties within a one-mile distance from the site are identified as having the potential to release hazardous materials into the subsurface soil and/or groundwater. Yet, none of the properties are located adjacent to the site or up-gradient (west-northwest). Therefore, the site's location and distance from hazardous sites, the potential for hazardous material to impact the proposed development is considered negligible. Further investigation of the site or nearby vicinity through other resources were obtained to furthermore evaluate its environment condition. The following are the results from each investigation

- *Regional Water Quality Control Board (RWQCB)*: The properties listed in the RWQCB database are known to have released potentially hazardous materials into the underlying soil and/or groundwater. The site was not listed within the RWQCB database. Nor any property within a 0.25 mile from the property.

- *Department of Toxic Substances Control (DTSC)*: A search of the database revealed that the site was not located within the DTSC database, nor any property within 0.25 mile and up-gradient from the site.
- *California Geologic Energy Management Division (CalGEM)*: The CalGEM provides a map in which oil wells are identified. There were no oil wells shown to be present within the subject site or within 1 mile of the site. The closest reported oil well is Chevron, located approximately 5.6 miles north-northwest of the site.
- *South Coast Air Quality Management District (SCAQMD)*: No records of the property were encountered in SCAQMD's database. The closest reported property is The Home Depot property located approximately 700 feet northeast of the site. The Home Depot is reported due to its use of a diesel-powered electric generator. Release of diesel at this property was not reported by the AQMD. There were no AQMD-regulated properties located up-gradient and within 0.25 miles of the site.

Lastly, on April 18, 2024, a Terra Nova Planning & Research Inc. representative visited the site to assess its current use and visually search for indications of surface and subsurface contamination. Observations recorded during the site inspection include the following:

- The site appeared in an undeveloped and natural state. Manmade structures were not encountered within the site. Its surface was covered with wind-blown sand and desert vegetation.
- Very small quantities of nuisance debris were encountered locally within the site. This debris included plastic sheeting, cardboard, lumber, clothing, and empty food and beverage containers. Potentially hazardous nuisance debris was not encountered within the site.
- None of the following were observed within the site:
    - Fill ports or vent pipes to underground storage tanks
    - Aboveground storage tanks
    - Indications of septic systems
    - Pools of liquid or potentially hazardous substances
    - Groundwater wells
    - Clarifiers, pits, sumps, or other underground waste disposal areas
    - Stained soils
    - Unusual or noxious odors

The surrounding property was also observed for evidence for possible contaminant releases. In summary, the adjoining properties consist of undeveloped lands, residential development, commercial/retail shopping center, dog park, local transit corridors, and a construction yard. No potential source of hazardous material was observed in the visible portions of the properties located within proximity to the subject site.

Conclusions

Due to the absence of prior development on the site, sources of hazardous material were not encountered at any point in the multi-phase investigation. Based on the review of databases, there is a low potential for contaminants from off-site properties to affect the underlying soil and/or groundwater at the site. The findings indicate that the site's existing environmental conditions do not warrant regulatory involvement, including actions leading to environmental soil sampling, soil remediation, groundwater sampling, and groundwater remediation. As such, the property is regarded as having no prior exposure to hazardous material and thus, no cumulative impacts by the proposed Project's use of hazardous material during construction and operation would occur.

9.2 Discussion of Impacts:

a-b) LESS THAN SIGNIFICANT IMPACT: As previously mentioned, the Project would include the use of hazardous material during the 24-month construction period and long-term operation. These materials will be present in small quantities and will not pose an environmental risk. The following sections analyze sources of hazardous material and waste at each stage of development and evaluate their respective potential for impact.

Construction

For analysis purposes, it is assumed the Project's construction phase would occur over a 24-month period starting in February 2027 with buildout in 2029. During construction, heavy duty construction equipment will be present on-site. This construction equipment is powered by fuel, stored in sealed containers so as to avoid accidental spills. A fueling station consisting of a paved surface may be assigned within the construction area to focus refueling activities within a dedicated area and catch any potential spills to eliminate the potential for adverse effects to the soil quality. Additionally, the Project will be required to comply with all appropriate federal, state, and local legislation regarding the transport, use, storage, and disposal of hazardous material which establish best management practices when handling hazardous material. With compliance with regulatory policies and standards, the Project's construction is unlikely to pose a significant hazard to the public or the environment through the use of hazardous materials. Less than significant impacts are expected.

Operation

At buildout, the Project will include seven residential buildings, totaling 150 units, a community building, and outdoor recreational facilities such as a playground, grilling station, and swimming pool. As such, the Project is expected to routinely use chemicals and cleaners to properly maintain the swimming pool and other public areas. Additionally, each residential unit is likely to use, store, and dispose of household hazardous material/waste, including cleaners, paints, and batteries. None of these chemicals or substances will be concentrated at significant quantities to pose a hazardous risk. Additionally, Burrtec Inc., the City's waste hauler, offers residents in Rancho Mirage curb-side pickup of household hazardous waste at no extra cost. Given the small amounts of hazardous material, and option for proper disposal, the Project's operation is unlikely to cause an acute hazardous risk. No reasonably foreseeable upset is likely to occur involving the lease of hazardous material into the environment. The Project's long term operation is not expected to release hazardous materials in large quantities. Less than significant impacts are anticipated.

Summary

Hazardous material will be present onsite in limited quantities which reduces the likelihood for the Project to pose a significant hazardous risk. During construction, the Project will be subject to regulations regarding the transport, use, storage, and disposal of hazardous material. In compliance with these regulations, the Project will ensure less than significant impact will occur during the construction phase. Once operational, hazardous materials will consist of household products which will be found in low quantity, unlikely to cause a significant hazardous accident. Overall, the transport, use, storage, and disposal of hazardous material in relation to the Project's construction and operation are not expected to pose a significant hazardous risk. Less than significant impacts will occur.

c) NO IMPACT: Rancho Mirage contains two public schools: Rancho Mirage Elementary School and the Rancho Mirage High School. In relation to the Project site, the Rancho Mirage Elementary School is approximately 4.28 miles southwest, and Rancho Mirage High School is approximately 2.73 miles northwest. These schools are located at a distance greater than 0.25 miles from the Project site. The Project is therefore not expected to use or store hazardous material in significant quantities or emit hazardous emissions, materials, or substances which could otherwise pose a risk. Impacts to existing schools.

d) NO IMPACT: According to the Cortese List, there are no contaminated areas in Rancho Mirage. The Project site consists of a vacant 5±-acre parcel which has been left in its natural state since at least 1904.[15] Surrounding development consists of residential properties and commercial/retail shops. A site-specific environmental site assessment was conducted which included the review of environmental database results, and found 7 properties located within 1 mile of the site to be listed as potential sources of the release of hazardous material. However, due to their relative distance and location, the potential for hazardous material to be released on-site and impact the soil/groundwater was determined as negligible.

The Project is not located on or in proximity to an area that has been classified as a polluted or hazardous site. Additionally, no potentially emitting facilities are located within the Project's area. For this reason, the Project is not expected to contribute to a hazardous site. The Project will not pose a significant hazard to the public or environment. No impacts will occur.

e) NO IMPACT: There are no commercial or private airports in Rancho Mirage. The nearest airport is the Palm Springs International Airport, located approximately 6.08 miles west of the Project site. The Project is farther than 2 miles from the airport and located outside the airport's land use plan. Considering the Project's distance from the Palm Springs International Airport, the Project's development will not result in a safety hazard for people residing or working in the Project area. No impacts will occur.

f) LESS THAN SIGNIFICANT IMPACT: Prior to construction, the Fire Marshal's Office will review the Project site plan to ensure the Project is consistent with all appropriate safety standards and emergency operation plans including the City's Emergency Operational Plan (EOP) and the County's Multi-Jurisdictional Local Hazard Mitigation Plan (MJLHMP). As such, the Project will not violate any state or local safety codes or emergency plan in the event of a local or regional accident.

[15] National Community Renaissance of California, Phase I Environmental Site Assessment, April 2024.

The extension of Via Vail along the east boundary of the Project site will provide direct access to and from the site. Via Vail will be constructed in compliance with the City's circulation standards specific to a local roadway. As such, the Project will provide a direct evacuation route during an emergency. Overall, the Project will comply with all safety codes and as such, will not violate or interfere with an emergency response plan or emergency evacuation plan. Impacts are expected to be less than significant.

g) LESS THAN SIGNIFICANT IMPACT: According to California Department of Forestry and Fire Prevention (CalFire) Fire Hazard Severity Zones model, Rancho Mirage is not located within a Very High Fire Hazard Severity Zone (VHFHSZ). The Project site is not located on or in proximity to an area with a fire hazard severity classification. The nearest area is in the Santa Rosa Mountains, located approximately 4.80 miles southwest from the site. To reduce potential risks related to fire, the Project will be required to comply with all state and local fire codes regarding fire prevention to ensure the safety of residents and workers occupying the site. The Project is not expected to significantly expose people or structures to loss, injury, or death involving a wildland fire because the site is not located in proximity to an area susceptible to fires and the Project will minimize potential impacts by complying with state and local fire code. Impacts related to fire hazards are expected to be less than significant.

9.3 Mitigation Measures:

None required.

10 - Hydrology and Water Quality

HYDROLOGY AND WATER QUALITY – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would: i) Result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☒	☐
iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
iv) Impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

Sources: City of Rancho Mirage General Plan, 2017; Preliminary Drainage Study for Rancho Mirage Affordable Apartments in Rancho Mirage, California prepared by Atlas Civil Design, Inc., October 2024 (Appendix F); Water Quality Management Plan for Rancho Mirage Affordable Apartments in Rancho Mirage, CA prepared by Atlas Civil Design, Inc., October 2024 (Appendix G); 2020 Urban Water Management Plan, July 2021; Project Material; Google Earth Pro.

10.1 Setting

The City of Rancho Mirage, like the Coachella Valley, has a subtropical desert climate with annual rainfall ranging from 4 to 6 inches. However, during severe thunderstorms, the intensity of rainfall can saturate the desert surface and substantially reduce percolation, leading to floods. Increased urbanization which includes impervious surfaces (i.e., buildings, sidewalks, roadways, driveways) also raises the probability for runoff.

In Rancho Mirage, the areas with a flood hazard are located in proximity to the Whitewater River and its tributaries, mountain canyons, and their alluvial fans, as well as runoff from the Indio Hills drainage. Based on the City General Plan Exhibit 26 (Flood Map), the center to southern region of the City planning area between Gerald Ford Drive and Highway-111 have a Zone X flood zone designation, typically associated with lands with a 2% chance of flooding once every year. To the north, the land is outside flood Zone X due to its relative distance from regional mountain ranges and the Whitewater River.

The Project site is located to the northeast of the City planning area and outside a flood hazard zone.

A Preliminary Drainage Study (Appendix F) and a Water Quality Management Plan (Appendix G) were prepared for the Project by Atlas Civic Design, Inc. in October 2024. The following analysis is based on the findings of the two reports.

10.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: The Project proposes a multi-family housing development on 5-acres of vacant land, east of Key Largo Avenue and south of Via Vail. The property would include 66,060± square feet of residential building space. Additional facilities include 4,108± square feet of in/outdoor communal space, 108,938± square feet of hardscape, and 42,802± square feet of landscape. Off-site improvements include buildout of Via Vail along the site's eastern boundary. Pursuant to Chapter 15.64 (Grading) of the City Municipal Code, the Project is required to comply with standards regarding stormwater drainage so as to avoid the discharge of polluted runoff that may find its way into the regional groundwater supply.

Based on the Project-specific drainage study, the property's existing drainage pattern shows significant runoff from surrounding vacant parcels including the open space property to the west and portions of the vacant parcel to the south. The runoff, not infiltrated by the site's sandy soil, drains across the property and onto the vacant northern and eastern parcels, planned for the extension of Via Vail. To manage on- and off-site runoff, the Project proposes site improvements to include a drainage system comprised of swales, sidewalk and gutter, and two underground storage basins (BMP 1 and BMP 2). Basin 1 is designed to collect on site runoff as well as part of the Via Vail right-of-way runoff from the centerline to the property's frontage, as required by the City. Basin 2 is designed to collect and store off-site runoff from the southern property that is tributary to the site.

Evaluation of the proposed drainage system for its consistency with the City's requirement for 100-year storm retention under 1, 3, 6, and 24-hour storm durations, concluded that the proposed underground pipe system adequately manages on and off site storm runoff and

thus, no runoff would occur as a result of the Project's development. Additionally, the Project-specific Water Quality Management Plan lists non-structural and structural source control BMPs the Project would implement once operational. Some of these BMPs include irrigation system and landscape maintenance, common area litter control, street sweeping on private streets and parking lots, and compliance with all applicable ordinance codes regarding water use and stormwater drainage. As such, conformance with applicable standards as mandated by the City Municipal Code and implementation of BMPs would ensure the Project does not result in a decline in the local and regional water quality. Less than significant impacts are anticipated.

b) LESS THAN SIGNIFICANT IMPACT: Sources of water consumption by the Project would stem from construction activities through fugitive dust control and operational indoor and outdoor activities related to residential, landscape, and swimming pool uses.

Construction Water Use

The Project's construction will consist of multiple phases including site preparation, grading, building construction, paving, and architectural coating, lasting for 24-months with a projected operational date in 2029. Ground disturbance related to construction would occur during site preparation and grading, and would require on-site irrigation in accordance with SCAQMD Rule 403 for fugitive dust control. The site's irrigation is limited to only ground disturbance activities and would cease altogether after grading has ended. The temporary and infrequent use of water for irrigation purposes during the Project's construction would not substantially limit CVWD's water supply under current and future conditions.

Operational Water Use

Water use related to the Project's long-term operation will consist of residential use, amenity space (i.e., Community Center, swimming pool), and landscape irrigation. Table 12 and Table 13 summarize water consumption by proposed land use, and concludes with a total Project water consumption rate of 28.26 acres-feet per year (AFY).

Table 12
Project Indoor Water Consumption Demand

Land Use	Size	Water Demand Factor[1]	Water Demand (gpd)	Water Demand (AFY)
Multi-Family Residential	150 units	55	22,275	24.95
Community Center	3,353 sf	35	321.52	0.36
Total (Annual In-Door Water Demand)				**25.31**

[1] CA Indoor Water Use Performance Standard
Source: Project Material.

Table 13 Project Outdoor Water Consumption Demand				
Land Use	**Area (ft^2)**	**ETo[1] (in/yr)**	**Water Demand (gpd)**	**Water Demand (AFY)**
Landscape	42,802	76.46	2,501.55	2.80
Swimming Pool	948	76.46	135.44	0.15
Total (Annual Out-Door Water Use)				**2.95**

[1] Reference Evapotranspiration (ETo) for ETo Zone 4 from CVWD Landscape Ordinance 1302.5, Appendix C.
Source: Project Material.

As shown, the Project would generate a total water demand of 28.26 AFY which accounts for less than one percent (0.017% exactly) of the Coachella Valley Water District's (CVWD's) total gross water supply of 164,966 AFY by 2045.[16] Although water demand from landscape irrigation is projected at 2.8 AFY, usage is anticipated to be lower considering that landscape vegetation will comply with the City's development standard under Section 17.24.040(g) of the Municipal Code for water-efficient and drought-tolerant plants that require minimal irrigation..

The Project is not expected to substantially reduce groundwater supply serviced by CVWD because its annual water demand accounts for less than one percent of the Water District's annual water supply as projected by the Urban Water Management Plan. Additionally, consistent with the parcel's intended land use under the City General Plan, the Project would not result in an unexpected water demand outside the UWMP when determining whether CVWD current and project water supply would adequately, and reliability meet future water demands in accordance with projected City buildout, since the UMWP is based on land use designations. As such, the Project would not limit or decrease CVWD's potential to supply sufficient potable water to current and future users. Less than significant impacts to groundwater supply would occur.

c.i) LESS THAN SIGNIFICANT IMPACT: The proposed on site drainage system includes swales, sidewalk and gutter, and two underground storage basins as detailed in Question (a) of this Section. The property's drainage improvements are designed to follow the property's existing drainage pattern that drains southwest to northeast. A Project-specific drainage study was prepared to assess the design's compliance with City development standards for storm drainage. The report concluded that the Project adequately retains and manages a 100-year storm in 1-hour, 3, 6, and 24-hour durations. Therefore, no runoff would occur and, in turn, no soil erosion from water would result from the property's surface runoff. Additionally, the property will include impervious surfaces such as building foundations, paved sidewalks, asphalt parking area, as well as landscape, all of which stabilize the soil and reduce the probability for soil erosion to occur. The risk for soil erosion to significantly affect the site is minimized by stabilizing improvements. As such, less than significant impacts are anticipated.

[16] Table 4-10 in the 2020 Coachella Valley Regional Urban Water Management Plan, July 2021.

c.ii) LESS THAN SIGNIFICANT IMPACT: The site is currently undeveloped and unoccupied. There are no existing flood control improvements within the 5± acre parcel. Implementation of the proposed improvements would reduce off-site runoff crossing the site and adequately retain and manage on- and off-site storm runoff as determined by the Project-specific drainage study. For these reasons, the Project would not result in an increase in surface runoff and thus, would not increase the susceptibility for flooding on or within the vicinity of the Project site. Less than significant impacts would occur.

c.iii, iv) NO IMPACT: As discussed in Question c.i, the Project drainage system is designed to withstand a 100-year storm, meaning runoff on site would be adequately managed to prevent runoff from flooding the site and adjacent properties. The proposed drainage system will retain the mandated storm flow and thus, no stormwater flow will be exceeded. As such, no impacts are anticipated.

d) NO IMPACT: The site is not located near the ocean or a body of water where tsunamis or seiche zones are a concern. According to the Project-specific drainage study, the property is located within a FEMA Zone X and thus, designated as an area of minimal flood hazard with an annual 0.2% chance of flooding. Therefore, flood hazards due to a tsunami, seiche, or storm event have no probability of occurring at or near the site. No impacts would occur.

e) LESS THAN SIGNIFICANT IMPACT: As analyzed in Question (a) of this Section, implementation of the Project would not substantially interfere or prevent the CVWD from meeting its services area water demand now or in the foreseeable future. Nor would the Project prevent the CVWD from implementing a recycling system or groundwater basin recharge system. The Project's operation would control polluted stormwater runoff. At no point, would the Project limit the groundwater management plan from being implemented. As such, potential impacts to the effectiveness of the 2020 UWMP will be less than significant.

10.3 Mitigation Measures:

None required.

11 - Land Use and Planning

LAND USE AND URBAN PLANNING – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; Project Material; Google Earth Pro.

11.1 Setting

According to the City's 2017 General Plan Table 2, the citywide developed area constitutes predominantly of open space (47%), followed by residential properties (35%), commercial (9%), and institutional facilities (2%). The Project site's parcel is designated High Density Residential (R-H) with an Affordable Housing Overlay (AHO). The R-H designation allows for smaller, single-family and multi-family attached dwelling units with a density capacity between 5 to 9 du/ac. The AHO allows for the creative and efficient development of affordable housing projects, providing density bonuses of up to 28 units per acre and modified development standards, as identified in the City's certified Housing Element and implemented through Chapter 17.22 of the City's Municipal Code.

The development of affordable housing, as the Project proposes, is compatible with the urbanized surroundings that include commercial/retail shops, main corridors with access to public transportation, schools, and residential communities. Within the Project area, undeveloped, vacant parcels consisting of native vegetation and sandy soil are located to the north, south, east and west. These parcels are zoned for High Density Residential/Affordable Housing Overlay (north and south), Commercial/retail (east), and Open Space-Public Parks (west). Currently, on the north side of the site is the Monterey Marketplace Shopping Center and Rancho Mirage Dog Park, to the south and west are single-family residential development, and to the east is the Desert Gateway commercial center beyond Monterey Avenue.

The Project will be subject to the City's General Plan, Zoning Ordinance, and regulations applicable to a parcel with a R-H/AHO designation.

11.2 Discussion of Impacts:

a) NO IMPACT: The subject property is currently undeveloped, vacant desert land. No prior development has occurred, and no existing residential structures occupy the site. Surrounding the Project site are commercial/retail shopping centers to the north and east, and single family

residential properties to the south and west. Neighboring residential properties and communities are expected to continue operating independently from the Project. Therefore, the Project will not adversely impact an existing residential community given the relative distance and status of operation of each property. The Project will not physically divide an established community. No impacts to existing communities would occur.

b) NO IMPACT: Under the City's General Plan Land Use/Zoning Map, the site is designated High Density Residential with an Affordable Housing Overlay. The Project aligns with the City intended land use as it proposes a multi-family residential development in which all but one of the available units will be utilized by very low to low-income households for affordable housing. To maximize density capacity while maintaining appropriate living conditions, the AHO zone allows for modified development standards and density bonuses, up to 28 units per acre, as identified in the City's certified Housing Element. The Project's proposed standards are consistent with the AHO zone and will be subject to review and approval by the City Council.

In addition to development standards, the Project will be required to comply with the City's regulations including, but not limited to, safety standards and building codes. The Project will comply with all applicable federal, state, and local policies and ordinance. For this reason, no impacts to the environment due to a conflict in land use or policy would occur as it related to the Project's design, construction, and operation.

11.3 Mitigation Measures:

None required.

12 - Mineral Resources

MINERAL RESOURCES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

Sources: Rancho Mirage General Plan, 2017; Rancho Mirage General Plan Environmental Report Element, 2005.

12.1 Setting

Mineral resources in Rancho Mirage are limited within the City's Sphere of Influence (SOI) and consist of sand and gravel deposits, collectively known as aggregate. Aggregate is used extensively in the production of construction materials such as asphalt concrete.

The Surface of Mining and Reclamation Act of 1975 (SMARA) has developed mineral land classifications maps to protect and develop mineral resources. According to the SMARA, four land use classifications are used to identify an area's sensitivity for mineral resources:

> *Mineral Resource Zone 1 (MRZ-1)*: This land use classification refers to areas where enough geological information is available, or it may be inferred that there is a low likelihood for mineral resources to be present.
> *Mineral Resource Zone 2 (MRZ-2)*: This land use classification refers to areas where enough geological information is available, or it may be inferred that there is a high likelihood for mineral resources to be present.
> Mineral Resource Zone 3 (MRZ-3): This land use classification refers to areas where there is not enough geological information to determine its significance of mineral resources. Additional information about the quality of minerals in the area would upgrade the areas to an MRZ-2 or downgrade the areas to an MRZ-1.
>
> *Mineral Resource Zone 4 (MRZ-4)*: This land use classification refers to areas where there is not enough geological information to make a determination for either MRZ-1 or MRZ-2.

According to the City's 2005 General Plan EIR, the City is classified as MRZ-1. There are no active mineral extraction sites in operation within the City planning area.

12.2 Discussion of Impacts:

a-b) NO IMPACT: The majority of Rancho Mirage's developed areas, including the Project site, are classified as MRZ-1. As such, the probability of locally important mineral deposits occurring within the property or in proximity is considered very low. Additionally, the Project site is designated for residential use which does not allow for mining or mineral extraction. The development of the Project is not expected to result in the loss of mineral resources. Therefore, no impacts will occur.

12.3 Mitigation Measures:

None required.

13 - Noise

NOISE – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; Rancho Mirage General Plan Environmental Impact Report, 2005; Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

13.1 Setting

Noise

Noise is defined as sound that is undesirable and interferes with daily life. For Rancho Mirage, the main source of noise stems from traffic along Interstate-10 (I-10), as well as regional roadways including Highway-111 and arterials, and to a lesser extent, the Southern Pacific Railroad and the Palm Springs International Airport.

Traffic noise along I-10 generally depends on the volume of traffic, the percentage of trucks, average traffic speed, and conditions of the roadway. I-10 noise level is projected to measure 85 dBA CNEL[17] Within the City's northern region, nearest to I-10, traffic noise at a range between 60 and 65 dBA is projected.[18] Arterial roadways in Rancho Mirage including Monterey Avenue, Dinah Shore Drive, and Bob Hope Drive, currently range between 71 dBA to 79 dBA. To minimize the exposure to extensive noise, the City General Plan assigns land use according to the land use

[17] Rancho Mirage General Plan, Environmental Impact Report, 2005.
[18] Rancho Mirage General Plan, Future Noise Contours, Exhibit 18, 2017.

compatibility with the existing ambient noise. As such, sensitive land uses such as residential, schools, hospitals, and outdoor recreational spaces are generally within areas where existing noise levels are consistent with the City's noise standard of 65 dBA CNEL.

The Southern Pacific Railroad line located along I-10 and north of Rancho Mirage, contributes to the City's local ambient noise level but not extensively, given that trains pass only periodically and have a limited duration. The Palm Springs International Airport located northeast of Rancho Mirage also contributes a minimal portion to the City's ambient noise level considering that no portion of the City is located within the airport's noise corridor and the airport's Master Plan imposes limitations to the overflight in Rancho Mirage.

Vibration
Rancho Mirage does not have vibration thresholds established in the City General Plan or City Municipal Code. Therefore, the California Department of Transportation (Caltrans) construction related vibration thresholds are used to establish impacts on the Project.

A noise and vibration analysis report was prepared for the Project by Urban Crossroads in January 2025 (Appendix H). The report characterizes current ambient noise levels and evaluates the future exterior noise environment from construction and stationary sources during long-term operation, and vibration impacts during construction for their potential to cause adverse changes to the existing ambient environment. The following analysis is based on the report's findings.

13.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: To evaluate the potential impacts to the local ambient environment, existing noise levels within the Project area were measured by Urban Crossroad Inc. on May 23, 2024. The noise level is measured in the unit of energy average sound levels (L_{eq}) which describes noise over a specified period by simplifying the cumulative effect as if it were a constant sound during the same period. Table 14 list noise levels identified during daytime (7 am to 6 pm), evening (6 pm to 10 pm) and nighttime (10 pm to 7 am) at each measuring location near sensitive receptors located in proximity to the property, which consist of single-family residential units. A map of the monitoring locations is provided in Appendix H.

Table 14
Ambient Noise Level Measurements

Location	Description	Energy Average Noise Level (dBA L_{eq})		
		Daytime	Evening	Nighttime
L1	Located northwest of the Project site near a residence at 102 Clear Water Way	55.5	56.8	54.4
L2	Located west of the Project site near the Unitarian Universalist Church at 72425 Via Vail	51.9	54.4	51.5
L3	Located west of the Project site near the Rancho Mirage Dog Park at 34100 Key Largo Avenue	55.5	56.8	54.4

Table 14 Ambient Noise Level Measurements				
Location	**Description**	**Energy Average Noise Level (dBA L_{eq})**		
		Daytime	**Evening**	**Nighttime**
L4	Located northwest of the Project site near a residence at 34620 Via Josefina	53.1	58.0	54.1
L5	Located northwest of the Project site near a residence at 72740 Via Florencia	53.9	59.0	51.5
Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).				

To accurately project noise emissions related to the Project's development, project-specific inputs were provided in the modeling software so as to account for the development's off-site noise generation from traffic and on-site noise generation from residential land use.

Construction Noise

The Project's construction is assumed to occur over five phases including site preparation, grading, building construction, paving, and architectural coating. Construction related noise at each phase would occur as a result of on-site use of heavy construction machinery. However, the use of construction equipment on-site is expected to have a limited effect on the existing noise level considering the equipment is highly mobile, thus noise disturbance will not be focused on one area where sensitive land uses such as neighboring residential property can be substantially affected. Additionally, construction activities will be limited to less sensitive daytime hours and no activities will occur on Sundays or national holidays.

Table 15 summarizes the report's findings on construction noise related to the Project's development and Table 16 evaluates the Project's noise impact to sensitive receptors during construction. Construction related noise in addition to existing ambient noise levels will not cause adverse effects to receptors. As such, less than significant impact from construction noise is anticipated in connection to the property's development.

Table 15 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	49.6	52.6	50.6	52.6	46.6	52.6
R2	49.0	52.0	50.0	52.0	46.0	52.0
R3	54.4	57.4	55.4	57.4	51.4	57.4
R4	50.4	53.4	51.4	53.4	47.4	53.4
R5	52.0	55.0	53.0	55.0	49.0	55.0
[1] Noise receiver are shown in Exhibit 11-A of the Noise and Vibration Report [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. Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).						

Table 16 Construction Noise Level Compliance			
Receiver Location[1]	**Construction Noise Level (dBA L_{eq})**		
	Highest Construction Noise Levels[2]	**Threshold[3]**	**Threshold Exceeded?[4]**
R1	52.6	80	No
R2	52.0	80	No
R3	57.4	80	No
R4	53.4	80	No
R5	55.0	80	No

[1] Noise receiver are shown in Exhibit 11-A of the Noise and Vibration Report
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver location
[3] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, construction noise level thresholds
[4] Do the estimated Project construction noise level exceed the construction noise level threshold?
Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

Operational Noise

Operation related noise will be generated both on- and off-site. On-site noise will stem from the operation of machinery including HVAC systems, on-site traffic noise, and noise from residential activities. Off-site noise will largely stem from increased vehicle use to and from the site and along neighboring corridors. The following analysis evaluates noise sources related to the Project and determines the extent of potential impact to nearby sensitive receptors.

On-Site Noise

Traffic noise generated within the property line was modeled and compared to the City's Land Use compatibility threshold for unmitigated exterior noise levels at or below 70 dBA CNEL. Based on the results, the Project will not exceed the City's 70 CNEL threshold for exterior noise and thus, residential buildings proposed on-site would not be adversely impacted by excessive exterior noise levels.

Table 17 Exterior Noise Levels From Traffic					
Receiver Location	**Roadway**	**Unmitigated Noise Level (dBA CNEL)**	**Land Use Compatibility**	**Exterior Noise Level Threshold**	**Threshold Exceeded?**
BLDG 1	Via Vail	55.6	Normally Acceptable	70	No
BLDG 7	Via Vail	55.4	Normally Acceptable	70	No

Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

Interior noise levels are a reduction of exterior noise levels through building construction. Typical 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". The Project's interior noise levels were modeled under the assumption of "windows-open" to determine whether on-site traffic noise would exceed the City's interior noise standard of 45 dBA for residential land uses. As shown below, the 45 dBA interior noise threshold will not be exceeded by the Project's on-site traffic noise.

Table 18
Interior Noise Level per Residential Floor

Receiver Location	Noise Level at Facade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgrade Windows[4]	Recommended STC	Interior Noise Level[5]
First Floor						
BLDG 1	55.2	10.2	12.0	No	27	43.2
BLDG 7	55.0	10.0	12.0	No	27	43.0
Second Floor						
BLDG 1	54.6	9.6	12.0	No	27	42.6
BLDG 7	54.4	9.4	12.0	No	27	42.4
Third Floor						
BLDG 1	54.6	9.6	12.0	No	27	42.6
BLDG 7	54.4	9.4	12.0	No	27	42.4

[1] Exterior noise level at the façade 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 standard
[3] A minimum of 25 dBA noise reduction is assumed with standard building construction; 12 dBA assumed open windows
[4] Does the required interior noise reduction trigger upgraded with a minimum STC rating of greater than 27?
[5] Estimates interior noise level with minimum STC rating for all windows
Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

On-site noise impacts to nearby sensitive receptors was determined to include roof-top air conditioning units, trash enclosure activities, and parking lot activities. Noise levels from these sources were derived from noise measurements from similar types of activities, or taken from manufacturers' specification sheets, to represent the noise levels expected with the development of the Project. The Project's operational noise levels were then compared to the City's noise standards to determine if at any point during a 24-hour period the Project would exceed noise thresholds for daytime, evening, and nighttime hours. Table 19 summarizes the findings and shows that the Project will not exceed noise level thresholds at any nearby receiver location.

Table 19
Project Operational Compliance

Receiver Location[1]	Project Operational Noise Levels (dBA L_{eq})[2]			Noise Level Standards (dBA L_{eq})[3]			Threshold Exceeded?[4]		
	Day	Eve.	Night	Day	Eve.	Night	Day	Eve.	Night
R1	27.1	27.1	25.5	55	50	45	No	No	No
R2	26.3	26.3	24.8	55	50	45	No	No	No
R3	31.8	31.8	30.3	55	50	45	No	No	No
R4	27.0	27.0	25.2	55	50	45	No	No	No
R5	29.6	29.6	28.1	55	50	45	No	No	No

[1] See Exhibit 9-A in the Noise and Vibration Report for the receiver locations
[2] Proposed Project operational noise level calculations included in Appendix 10.1 of the Report

Table 19 Project Operational Compliance									
Receiver Location[1]	Project Operational Noise Levels (dBA L_{eq})[2]			Noise Level Standards (dBA L_{eq})[3]			Threshold Exceeded?[4]		
	Day	Eve.	Night	Day	Eve.	Night	Day	Eve.	Night

[3] City of Rancho Mirage exterior noise level standards by land use as shown in Table A-1 in the City Municipal Code
[4] Do the estimated Project operational noise source activities exceed the noise level standard? "Day" = 7 am to 6 pm"; "Evening" = 6 pm to 10 pm; "Night" = 10 pm to 7 am.
Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

Traffic Noise

Traffic noise levels were measured within fourteen different roadway segments located in proximity to the Project site. Additionally, modeling was performed to compare the noise levels with and without the Project at different stages including future 2026 ambient growth, and 2026 ambient growth plus cumulative effects. Table 20 summarizes exterior traffic noise levels for 2026 without the Project and Table 21 summarizes noise levels assuming Project buildout. The noise level is measured on a scale of community noise equivalent level (CNEL) which increases noise sensitivity up to 10 dBA to account for perception of noise as double the loudness during evening and nighttime hours.

Table 20 Estimate Nois Level Contours without the Project in 2026						
ID	Road	Segment	CNEL at Receiving Land Use (dBA)	Distance to Contour from Centerline (ft)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr	w/o Key Largo Ave	66.5	35	76	163
2	Dinah Shore Dr	e/o Key Largo Ave	66.9	37	80	173
3	Dinah Shore Dr	e/o George Montgomery	66.2	34	72	156
4	Dinah Shore Dr	e/o Shoppers Ln	66.6	35	76	164
5	Dinah Shore Dr	e/o Monterey Ave	67.4	40	86	186
6	Via Vail	w/o Key Largo Ave	53.0	2	5	10
7	Key Lago Ave	s/o Dinah Shore Dr	52.8	2	5	10
8	Key Largo Ave	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy	n/o Dinah Shore Dr	55.9	3	7	16
10	George Montgomery	s/o Dinah Shore Dr	50.3	1	3	7
11	Shoppers Ln	n/o Dinah Shore Dr	57.1	4	9	19
12	Shoppers Ln	s/o Dinah Shore Dr	52.2	2	4	9
13	Monterey Ave	n/o Dinah Shore Dr	71.4	74	159	343
14	Monterey Ave	s/o Dinah Shore Dr	70.8	68	147	316

Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).

Table 21 Estimate Nois Level Contours with the Project in 2026						
ID	Road	Segment	CNEL at Receiving Land Use (dBA)	Distance to Contour from Centerline (ft)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr	w/o Key Largo Ave	66.5	35	76	164
2	Dinah Shore Dr	e/o Key Largo Ave	66.9	38	82	177
3	Dinah Shore Dr	e/o George Montgomery	66.2	34	74	159
4	Dinah Shore Dr	e/o Shoppers Ln	66.6	36	78	168
5	Dinah Shore Dr	e/o Monterey Ave	67.4	40	86	186
6	Via Vail	w/o Key Largo Ave	53.0	2	5	10
7	Key Lago Ave	s/o Dinah Shore Dr	52.8	3	6	12
8	Key Largo Ave	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy	n/o Dinah Shore Dr	55.9	3	7	16
10	George Montgomery	s/o Dinah Shore Dr	50.3	1	3	7
11	Shoppers Ln	n/o Dinah Shore Dr	57.1	4	9	19
12	Shoppers Ln	s/o Dinah Shore Dr	52.2	2	4	9
13	Monterey Ave	n/o Dinah Shore Dr	71.4	74	160	345
14	Monterey Ave	s/o Dinah Shore Dr	70.8	68	147	317
Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).						

The data indicate that the Project would result in an increase of noise contours in certain roadway segments, but that noise levels perceived by surrounding land uses would remain the same as without Project development. According to the threshold of significance related to off-site noise generated by a project, a project will cause adverse effects near sensitive land uses if off-site noise increases by 3 dBA CNEL or more. Considering the proposed Project would not increase the noise perceived by sensitive land uses beyond the range expected with the City's ambient growth, sensitive receptors would experience a less than significant noise level increase due to unmitigated Project-related traffic noise levels.

In all, the proposed Project will not exceed significant noise thresholds during construction or operation. Noise levels generated on-site and off-site will adhere to applicable standards and thus minimize the potential for significant impact to nearby sensitive receptors, those being single-family residential units to the south, and west of the property. The Project's noise impacts are therefore expected to be less than significant.

b) LESS THAN SIGNIFICANT IMPACT: Groundborne vibration is generally caused by the use of heavy construction equipment. The duration and amplitude of vibration can vary widely depending on type of equipment and purpose for which it is used. Equipment typical for high rate impact vibration includes jackhammer, hoe rams, and certain types of pavement breakers.

Table 22 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
Vibratory Roller	0.210
Source: California Department of Transportation and Construction Vibration Guidance Manual, April 2020.	

The Project site is currently a vacant, undeveloped parcel. Construction phases for the Project's development will include site preparation, grading, building construction, paving, and architectural coating. Any construction equipment used on-site will be required to comply with the Caltrans vibration threshold of 0.3 inch-per-second PPV for structures and 0.2 inch-per-second PPV for human annoyance. Construction vibration velocity levels are estimated to range up to 0.01 PPV (in/sec) and thus fall below the thresholds at all noise-sensitive receiver locations. Residential projects in proximity to the Project would therefore experience less than significant impacts. Additionally, the vibration levels perceived by receptors is not expected to last the entire duration of the site's construction but rather occur only early in the grading process. Therefore, potential impacts would be temporary and short in duration, would be below established thresholds, and would result in less than significant impacts to sensitive receptors.

Table 23 Project Construction Vibration Levels									
Location[1]	**Distance to Construction Activity (ft)[2]**	**Typical Construction Vibration Levels PPV (in/sec)[3]**						**Thresholds PPV (in/sec)[4]**	**Threshold Exceeded?[5]**
		Small bulldozer	**Jack-hammer**	**Loaded Truck**	**Large bulldozer**	**Vibratory Roller**	**Highest Vibration Level**		
R1	1,275	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R2	1,353	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R3	648	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R4	1,181	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R5	1,025	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
[1] Receiver are shown in Exhibit 11-A of the Noise and Vibration Report [2] Distance from receiver building façade to Project construction boundary (Project site boundary) [3] Based on the Vibration Source Levels of Construction Equipment [4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38 [5] Does the peak vibration exceed the acceptable vibration thresholds? Source: Source: Core Rancho Mirage Noise and Vibration Analysis in the City of Rancho Mirage, Urban Crossroads, January 2025 (Appendix H).									

c) NO IMPACT: There are no commercial or private airports in operation within Rancho Mirage. The nearest airport is the Palm Springs International Airport, located approximately 6.08 miles northeast from the Project. The Project site is not located on or in proximity to the airport's noise contour. As such, noise impacts associated with the operation of the Palm Springs International Airport is considered negligible. No impacts will occur.

13.3 Mitigation Measures:

None required.

14 - Population and Housing

POPULATION AND HOUSING – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, Housing Element, updated 2022; California Department of Finance, Table 2: E-5 City/County Population and Housing Elements, dated January 2024; U.S. Census Bureau, American Community Survey Data, accessed May 2025; Southern California Association of Governments, Demographics and Growth Forecast Technical Report, September 2020; Project's material.

14.1 Setting

According to the Department of Finance, the City of Rancho Mirage is projected to have had a population size of 16,992 in 2024.[19] At the time of the Housing Element update (2022), the City's population was characterized by its predominant older population, over the age of 55, which comprised nearly 70% of the City's total population. Additionally, the typical household size is estimated at 1.83[20] with a medium household income of $109,943,.[21] The number of occupied dwellings is 9,406, with the majority being single-family detached owner-occupied homes, according to the City's General Plan 2021-2029 Housing Element. By 2045, the City is projected to have a population size of 25,200.[22]

According to the Housing Element of the City General Plan, the Regional Housing Needs Assessment (RHNA) generated by the Southern California Association of Governments (SCAG) for the City is presented in the table below for the 2022 to 2029 planning period.

19 California Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, dated January 2024.
20 California Department of Finance, Table 2: E-5 City/County Population and Housing Estimates, dated January 2024.
21 United States Census Bureau, American Community Survey Data: Rancho Mirage, Table S1901, https://data.census.gov/table/ACSST5Y2023.S1901?g=160XX00US0659500, accessed May 2025.
22 Southern California Association of Governments, Demographics and Growth Forecast Technical Report, September 2020.

Table 24 Regional Housing Need Allocation, 2022 to 2029	
Income Category	Number of Units
Extremely Low Income	215
Very Low Income	215
Low Income	318
Moderate Income	328
Above Moderate Income	670
TOTAL	**1,746**
Source: Consultation with the City of Rancho Mirage, Planning Department, April 2025	

14.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: The Project includes seven permanent multi-family residential buildings, as well as complementary outdoor amenities. The Project site is a subdivision of a larger City-owned parcel, 50± acres in size, planned for park and affordable housing development. The Project proposes to develop a total of 150 units, 149 of which will be used for affordable living. The Project aligns with the City's intended land use and strategy to meet affordable housing needs consistent with the City General Plan and thus is included in the City's projected build out and population growth.

The Project proposes the extension of Via Vail, currently classified as "local roadway", to provide direct access to the property. Once operational, Via Vail will be frequented by occupants, guests, and staff. Via Vail will provide direct access to the property and manage traffic to and from the property in accordance with the City's circulation standards. The likelihood of the Project indirectly inducing unplanned population growth because of the extension of Via Vail is minimal, since it is part of the General Plan's anticipated circulation system.

Overall, the Project is consistent with the City's intended land use to increase the availability of affordable housing in Rancho Mirage. The Project's proposal to develop multi-family residential buildings and extend Via Vail is therefore unlikely to cause a substantial, unplanned population growth in the local area or in the City. For these reasons, impacts are anticipated to be less than significant.

b) NO IMPACT: The subject property is vacant, unoccupied desert land. The site has been in its natural state since at least 1904. There are no structures or buildings within the property to suggest prior development of the site for residential use. The Project's development will not displace existing people or force the relocation of homes. The Project does not require the construction of replacement housing. Therefore, no impacts related to displacement or relocation are anticipated.

14.3 Mitigation Measures:

None required.

15 - Public Services

PUBLIC SERVICES – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

Sources: City of Rancho Mirage General Plan, 2017; Project Material; Google Earth Pro.

15.1 Setting

Fire Protection Services

Under contract with the County of Riverside, the City outsources fire protection, fire prevention, rescue and medical emergency service to the Riverside County Fire Department. A typical response time for the Fire Department is 5 minutes, which includes fire fighters and certified paramedics on scene. Two fire stations operated by the Riverside County Fire Department are located in Rancho Mirage: Station No. 50 and No. 69.

Rancho Mirage Station No. 50 is located at 70801 Highway 111 and is responsible for providing fire protection services to the City's southern portion. The Station is equipped with one medic engine including a fire truck and ambulance and staffed with two firefighters and one firefighter/paramedic at all times of the day.

Rancho Mirage Station No. 69 is located at 7175 General Ford Drive and is responsible for covering the northern portion of Rancho Mirage. Equipment at this station includes one medic engine and one medic unit. A total of three firefighters and two firefighters/paramedics are on duty 24 hours, 7 days a week.

In addition to the two fire stations located in Rancho Mirage, the Riverside County Fire Department operates five other fire stations in proximity to Rancho Mirage, in Thousand Palms, Palm Desert, Indian Wells, and North Bermuda Dunes, which would assist the City in the event of a major incident.

Police Protection Services

The Riverside County Sheriff's Department provides police protection to the City under a service contract. The County operates one police station at 73705 Gerald Ford Drive in Palm Desert. The Palm Desert police station services both the city of Palm Desert and Rancho Mirage. The station is staffed with 10 dedicated police personnel, 19 patrol deputies, and 4 non-dedicated deputies aided in patrol. Police response time can vary significantly, depending on the location of patrol cars at the time of the call. The average emergency response time for Priority 1 calls is 5.06 minutes.[23]

Schools

The Palm Springs Unified School District (PSUSD) and Desert Sands Unified School District (DSUSD) provide public school services to Rancho Mirage.

The PSUSD operates an elementary school and a high school in the City. Rancho Mirage Elementary School is located at 42985 Indian Trail and is an educational facility for class levels K to 6 with a student body of 420, as recorded in 2016. Rancho Mirage High School is located at 31001 Rattler Road and provides service to class levels 9 to 12 for a student population capacity of 2,300. Currently students living in the City are required to attend middle school in surrounding communities. There are no DSUSD schools in Rancho Mirage.

Parks

The Parks and Trails Commission maintains and operates the parks and trails for recreational needs in the City. Currently the City has 5 parks, 1 located towards the City's northeastern corner and the remaining 4 located towards the western portion, along the Santa Rosa Mountains. Additionally, 6 trails are located along the Whitewater Storm Channel and in the Santa Rosa Mountains.

Other Public Facilities

Rancho Mirage City Hall includes the Council chambers, administrative offices and support facilities, located at 69825 Highway-111, and the Rancho Mirage Library and Observatory, located at 71100 Highway-111. These facilities provide services and amenities for the residents of the City.

15.2 Discussion of Impacts:

a.i-v) LESS THAN SIGNIFICANT IMPACT:

Fire Protection Services

The Rancho Mirage Station No. 69 will provide fire protection services to the Project site given the Station proximity to the Project, approximately 1.14 mile to the southwest. The professional staff will be able to access the Project site from Via Vail. The Project site will be

[23] Consultation with the Riverside County Sheriff's Department's Lieutenant Christopher Ternes , April 2025.

designed according to the City's safety standards to ensure adequate access and mobility in the event of an emergency.

The Project would result in the build out of permanent residential buildings on a previously unoccupied and undeveloped parcel. The Project will increase the local population size and thus increase the demand for public services relating to fire protection. To reduce the probability for adverse effects to the Riverside County Fire Department, the Project will adhere to the state and regional fire regulation and safety code. The Fire Marshall will review the site plan to ensure Project compliance with all applicable standards. Additionally, the Project will be required to Developer Impact Fees to contribute its fair share to the financial cost of maintaining and equipping the Fire Station.

The implementation of state and regional codes and payment of mitigation fee assures the Project will cause less than significant impact to the availability, response rate, and effectiveness of the Riverside County Fire Department. As such, the Fire Department is expected to maintain its classification as an Insurance Service Office (ISO) Class 2.

Police Protection Services

The Palm Desert Sheriff Station, located approximately 1.13 miles southeast from the Project site, will provide police services to the property. The professional staff will be able to access the Project site from the proposed extension of Via Vail.

Given the Project will generate population growth, the need for police protection services is expected to increase as a result. To reduce potential impacts, the Project will be required to pay Developer Impact Fees to contribute to the financial cost of maintaining a well-staffed and equipped police department. With these measures in place, the Project's potential impacts are reduced to less than significant levels.

Schools

The Project is expected to house families which will include school-aged children. The nearest school facility to the Project site is approximately 2.82 miles to the northwest. The high school has a student population capacity of 2,300 has and currently has 1,491 enrolled students. Other schools will accommodate younger children in DSUSD's system. The Project would be required to pay a mitigation fee of $4.79 per square foot of the residential construction to offset impacts to schools.[24]

The development of the Project is not anticipated to exceed the capacity of local schools. The payment of the mitigation fee is expected to reduce potential impacts related to the Project's development. Therefore, less than significant impacts are anticipated.

Parks

There are a number of parks and trails throughout the City's planning area. The nearest to the Project site is the Rancho Mirage Dog Park located at the southeast corner of Via Vail and Key Largo Avenue 790 feet northwest from the site. The Project is not expected to cause the accelerated physical deterioration of the dog park or any local park since recreational amenities such as a swimming pool, playground, garden, and game court will be provided on-site. The local parks are likely to experience a marginal increase of weekly visitors as a result

[24] Palm Springs Unified School District, Developer Fee, https://www.psusd.us/Page/2400, accessed May 2024.

of the Project, but adverse effects related to the increase are expected to be minimal. As such, impacts from the proposed development in relation to the physical condition of local parks and trails are expected to be less than significant.

Other Public Facilities

The Rancho Mirage City Hall is located 3.57 miles southwest of the Project. The likelihood of the government facility requiring the construction of a new facility as a byproduct to the Project's development is nil. No impacts would result.

15.3 Mitigation Measures:

None required.

16 - Recreation

RECREATION – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	☐	☐	☒	☐

Source: City of Rancho Mirage General Plan, 2017; Project Material; Google Earth Pro.

16.1 Setting

Rancho Mirage consists of five public parks, one located towards the City's northeastern region and the other four located towards the south, along the foothills of the Santa Rosa Mountains. The Rancho Mirage Dog Park, located at the southeast corner of Via Vail and Key Largo Avenue is the nearest public park to the Project site, approximately 790 feet to the northwest. Additionally, the City has six hiking trails, two of which are located along the Whitewater Storm Channel and the remaining four located in the Santa Rosa Mountains. Other recreational facilities such as the Rancho Mirage Library and Observatory, is located along Highway-111 and approximately 3.70 miles southwest of the Project property.

16.2 Discussion of Impacts:

a-b) LESS THAN SIGNIFICANT IMPACT: On 5± acres of undeveloped desert land, the Project proposes the buildout of seven multi-family residential apartment buildings as well as outdoor recreational amenities including a playground, swimming pool, game field, and grilling station. The Project will increase the local population size and thus the use of regional parks and recreational facilities. However, the increase is expected to be minimal given the inclusion of recreational amenities on-site. Therefore, potential impacts such as the physical deterioration of local recreational spaces are anticipated to be minimal. The Project does not warrant the construction or expansion of recreational facilities. As such, impacts to recreational spaces as a result of the Project's development are expected to be less than significant.

*16.3 Mitigation Measures***:**

None required.

17 - Transportation

TRANSPORTATION – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

Source: City of Rancho Mirage General Plan, 2017; SunLine Transit Agency, Fixed Route Bus Network, accessed March 2025; Core Rancho Mirage Traffic Analysis Report, Urban Crossroads, December 2024 (Appendix I); Core Rancho Mirage Vehicle Miles Traveled (VMT) Screening Analysis Report, Urban Crossroads, November 2024 (Appendix I); Project Material.

17.1 Setting

Circulation Network

The circulation network in Rancho Mirage consists of two regional routes including Highway-111 and Interstate-10, and local corridors varying in street classification dependent on their respective connectivity to local areas. In accordance with the City Circulation Plan, there are five street classifications which include, but are not limited to major arterials, minor arterials, and major collectors.

Major arterials are six-lane divided roadways that are highly trafficked and are main thoroughfares. Monterey Avenue, Bob Hope Drive, and Highway-111 are example of major arterials. Minor arterials are four-lane divided roadways that typically carry traffic along the perimeter of major development. This classification includes Gerald Ford Drive and Frank Sinatra Drive. Lastly, major collectors are four lane divided roadways that distribute traffic between low to high trafficked corridors. Examples include parts of County Club Drive and Morningside Drive.

These and all corridors within the City planning area are required to operate at a level of service (LOS) D or better. +

Public Transportation
The SunLine Transit Agency (STA) provides public transportation services to the City including fixed route bus services (SunBus) and on-demand rideshare service (SunRide). STA operates eleven bus routes, three of which cross or operate within Rancho Mirage. These SunBus routes include Route 1 (West Valley), Route 4, and Route 10 (Commuter Link).[25]

Non-Motorized Circulation
The City maintains more than 50 miles of sidewalks, bicycle lanes, golf cart paths, and multi-use trails within existing roadways and rights-of-way.
The Project site, located within a highly urbanized portion of the City's northeastern region, is bound by Key Largo Avenue to the west and Monterey Avenue to the east. Future extension of Via Vail to the north and along the property's eastern boundary is proposed as part of the Project buildout. Off-site road improvements include the following:

- Via Vail is proposed as a 2-lane Local Collector extending from the northern property boundary to the southern boundary, with an on-street bike lane and sidewalk on the corridor's west side.

From Via Vail, the northern Project access point is proposed as a gated entry point, designed to accommodate separate visitors and resident entry lanes, with a minimum 50 foot stacking distance. A crosswalk is proposed for north-south crossing on the west of Via Vail and north Project access intersection. From Via Vail, the southern Project access point is proposed as a restricted gated outbound/exit only. A cross street stop sign is proposed within an outbound shared left-right lane. A crosswalk is proposed for north-south crossing on the west of Via Vail and south Project access intersection.

17.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: Implementation of a residential development within an unoccupied parcel would increase the local population size which, in turn, would increase the number of vehicles traveling within the City's circulation system. An increase in single-car vehicle use can directly reflect a drop in LOS below acceptable levels. In order to evaluate the Project's potential impacts to the City's LOS policy, a traffic analysis was prepared by Urban Crossroad for the Project in December 2024 (Appendix I). The analysis incorporates the City's Transportation Analysis Policy and Riverside County's Transportation Analysis Guidelines for Level of Service and Vehicle Miles Traveled.

Project Traffic Volume
The report estimates the volume of daily trips generated by the Project once operational. Trip rates are based upon trip-generation statistics published in the Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition (2021) for affordable housing. As shown in Table 26, the Project is anticipated to generate a total of 772 daily trips, 54 of which would occur in the morning peak hour and 70 in the evening peak hour.

[25] SunLine Transit Agency, Fixed Route Bus Network, https://infopoint.sunline.org/InfoPoint, accessed March 2025.

Table 25 Project Trip Generation Rates									
Land Use	**ITE LU Code**	**Quantity[1]**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Affordable Housing	223	150 DU	0.10	0.26	0.36	0.27	0.19	0.46	4.81

Table 26 Project Trip Generation Results									
Land Use	**ITE LU Code**	**Quantity[1]**	**AM Peak Hour**			**PM Peak Hour**			**Daily**
			In	**Out**	**Total**	**In**	**Out**	**Total**	
Affordable Housing	223	150 DU	15	39	54	41	29	70	722
[1] DU= Dwelling Unit Source: Core Rancho Mirage Traffic Scoping Letter and VMT Screening Scope prepared by Urban Crossroads, November 2024.									

Study Area

The Project study area includes any intersection of "Collector" or higher classification at which the proposed Project would add 50 or more peak hour trips. These intersections were evaluated for potential traffic inefficiency as a direct result from the Project's implementation. The street intersections are listed in the table below and visually represented in Exhibit 1-2 of the traffic report.

Table 27 Traffic Impact Report Study Area			
#	**Intersection**	**#**	**Intersection**
1	Key Largo Av/ Dinah Shore Dr	5	Monterey Av/ Dinah Shore Dr
2	Key Lago Av/ Via Vail	6	Via Vail/ N. Project Access
3	Miriam Wy-George Montogomery/ Dinah Shore Dr	7	Via Vail/ S. project Access
4	Shoppers Ln/ Dinah Shore Dr		

Existing 2024 Traffic Conditions

Based on the traffic volume observed during the peak hour conditions using traffic count data collected in April 2024, the results show that all interceptions currently operate at acceptable LOS during peak hours.

Table 28
Intersection Analysis for Existing Conditions

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2]												Delay[3] (secs)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Key Largo Av/ Dinah Shore Dr	TS	1	0	1	0	0	0	1	3	0	1	3	0	14.7	8.1	B	A
2	Key Lago Av/ Via Vail	CSS	0.5	0.5	d	0.5	0.5	d	0	1!	0	0	1!	0	9.0	9.5	A	A
3	Miriam Wy-George Montogomery/ Dinah Shore Dr	TS	1	1	0	1	1	0	2	3	0	1	3	1	4.1	18.8	A	B
4	Shoppers Ln/ Dinah Shore Dr	TS	1	1	0	2	1	0	2	3	0	1	3	1	24.9	45.4	C	D
5	Monterey Av/ Dinah Shore Dr	TS	2	3	0	2	3	1>>	2	2	1	2	2	1	34.1	41.7	C	D
6	Via Vail/ N. Project Access		Future Intersection															
7	Via Vail/ S. project Access		Future Intersection															

[1] TS = Traffic Singal; CSS= Cross-street stop
[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L= Left; T= Through; R=Right; d= Defacto Right Turn Lanes; 0.5= Shared Lane; 1!= Shared Left/Through/Right lane; >>= Free-Right Turn
[3] Per the Highway Capacity Manual (7th Edition), overall average intersections delay and level of service are shown for intersections with 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 movement sharing a single lane) are shown. Delay and level of service is calculated using Syncho 12 analysis software.

Project Year 2026 Traffic Volume

Forecasted traffic conditions assume trip generation based on the proposed land use with buildout by 2026. An ambient growth factor of 4.04% (2 percent per year over 2 years, 2024 to 2026) is added to future traffic projections so as to account for the City's regional traffic growth. The results indicate that all intersections will continue to operate within the City's LOS standard of D or better. As such, traffic increases by the Project's implementation are not expected to have significant impacts to the local circulation system.

Table 29
Intersection Analysis at Project Buildout in 2026 Conditions

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2]												Delay[3] (secs)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Key Largo Av/ Dinah Shore Dr	TS	1	0	1	0	0	0	1	3	0	1	3	0	15.0	10.1	B	B
2	Key Lago Av/ Via Vail	CSS	0.5	0.5	d	0.5	0.5	d	0	1!	0	0	1!	0	9.4	10.8	B	C
3	Miriam Wy-George Montogomery/ Dinah Shore Dr	TS	1	1	0	1	1	0	2	3	0	1	3	1	4.4	21.4	A	C
4	Shoppers Ln/ Dinah Shore Dr	TS	1	1	0	2	1	0	2	3	0	1	3	1	26.0	46.2	C	D
5	Monterey Av/ Dinah Shore Dr	TS	2	3	0	2	3	1>>	2	2	1	2	2	1	37.0	46.3	D	D
6	Via Vail/ N. Project Access	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	0	0	0	0	0	7.3	7.3	A	A
7	Via Vail/ S. project Access	**CSS**	0	**1**	0	0	**1**	0	0	**1!**	0	0	0	0	8.7	8.6	A	A

[1] TS = Traffic Singal; CSS= Cross-street stop
[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L= Left; T= Through; R=Right; d= Defacto Right Turn Lanes; 0.5= Shared Lane; 1!= Shared Left/Through/Right lane; >>= Free-Right Turn; **1**= Improvement
[3] Per the Highway Capacity Manual (7th Edition), overall average intersections delay and level of service are shown for intersections with 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 movement sharing a single lane) are shown. Delay and level of service is calculated using Syncho 12 analysis software.

Cumulative Traffic Conditions

A total of 22 cumulative developments were identified as posing a potential cumulative effect in the local circulation system in connection with the Project buildout. Of the 22 cumulative developments, the proposed Via Vail Village project located immediately north of the site was included to account for traffic generated within the Project area by a future affordable housing development. The ambient growth factor of 4.04 percent was also applied to future cumulative traffic conditions. As shown in Table 30, traffic from the proposed Project and other cumulative projects would not reduce LOS below acceptable levels. All intersections will continue to operate at a LOS D, at minimum.

Table 30
Intersection Analysis for Cumulative Conditions

#	Intersection	Traffic Control[1]	Intersection Approach Lanes[2]												Delay[3] (secs)		Level of Service	
			Northbound			Southbound			Eastbound			Westbound						
			L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM
1	Key Largo Av/ Dinah Shore Dr	TS	1	0	1	0	0	0	1	3	0	1	3	0	18.2	15.8	B	B
2	Key Lago Av/ Via Vail	CSS	0.5	0.5	d	0.5	0.5	d	0	1!	0	0	1!	0	11.8	22.6	B	C
3	Miriam Wy-George Montogomery/ Dinah Shore Dr	TS	1	1	0	1	1	0	2	3	0	1	3	1	6.6	25.0	A	C
4	Shoppers Ln/ Dinah Shore Dr	TS	1	1	0	2	1	0	2	3	0	1	3	1	27.1	46.6	C	D
5	Monterey Av/ Dinah Shore Dr	TS	2	3	0	2	3	1>>	2	2	1	2	2	1	42.1	53.7	D	D
6	Via Vail/ N. Project Access	**CSS**	**0.5**	**0.5**	0	0	**1**	0	0	0	0	0	0	0	7.3	7.5	A	A
7	Via Vail/ S. project Access	**CSS**	0	**1**	0	0	**1**	0	0	**1!**	0	0	0	0	9.2	9.3	A	A

[1] TS = Traffic Singal; CSS= Cross-street stop
[2] When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width for right turning vehicles to travel outside the through lanes.
L= Left; T= Through; R=Right; d= Defacto Right Turn Lanes; 0.5= Shared Lane; 1!= Shared Left/Through/Right lane; >>= Free-Right Turn; **1**= Improvement
[3] Per the Highway Capacity Manual (7th Edition), overall average intersections delay and level of service are shown for intersections with 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 movement sharing a single lane) are shown. Delay and level of service is calculated using Syncho 12 analysis software.

Conclusion

Project generated traffic is not expected to cause traffic inefficiencies at any studied intersection under projected 2026 conditions or cumulative conditions, both of which account for regional traffic growth. All intersections will operate at acceptable LOS at or above an LOS D. Although the Project would have limited effects to the local circulation system, the traffic report makes the following recommendations as to ensure the buildout of Via Vail achieves acceptable peak hour operations with full occupancy of the Project, which have been incorporated into Project design.

- The northerly access entry design must accommodate separate visitor and resident entry lanes, with minimum 50 ft. stacking distance. A crosswalk should be provided for north-south crossing on the west leg of the Via Vail and north Project access intersection
- The southerly access exit design is recommended to be modified to provide a minimum 25 ft spacing between exit gate and stop bar. A cross street sign control is recommended with one outbound share left-right lane. A crosswalk should be provided for north-south crossing on the west leg of the Via Vail and south Project access intersection

The proposed Project would cause less than significant impacts to traffic movement within corridors at or near the Project site.

b) LESS THAN SIGNIFICANT IMPACT: Under CEQA Guidelines Section 15064.3, subdivision (b), all lead agencies are required to adopt a VMT analysis approach in evaluating transportation impacts for a proposed project. However, prior to a full VMT analysis, projects are evaluated for proposed development, urban setting, and trip generation so as to determine whether an exemption is appropriate. The VMT screening for the Project (Appendix I) concluded that the Project is exempt from a VMT analysis based on the following:

- The Project's residential component meets the Project Type Screening criteria for Affordable Housing by having 100% affordable housing
- The Project's affordable housing will allow nearby interactions between Project residents, retail jobs, and retail services which will reduce auto VMT by encouraging pedestrian and bicycle activity. This determination of non-significant VMT impact is consistent with the intent of SB 743.
- The Project's location in a low VMT area for residential uses meets the map-based screening criteria and no further analysis is necessary.

Based on these findings, the Project would not be required to prepare a full VMT analysis given the development would not cause adverse effects related to an increase in vehicle miles traveled by nature of the land use within a highly urbanized area of Rancho Mirage. As such, potential impacts will be less than significant.

c, d) LESS THAN SIGNIFICANT IMPACT: Access points to the proposed Project would be provided by two entry/exit points on the north and south side along the property's frontage with Via Vail. Regional access to the site will be provided by Key Largo Avenue, Dinah Shore Drive, Monterey Avenue, and Interstate-10. Emergency vehicles will have access to the site via Key Largo and Via Vail. The design of the corridor will occur in accordance with the City's standards for a local roadway and other standards pursuant to the City Municipal Code. The design of the access points would be reviewed by the Police and Fire Departments as well as

the City Engineer to assure adequate sight lines and turning movements. As such, the Project would not increase hazards due to geometric design features or provide inadequate emergency access.

17.3 *Mitigation Measures:*

None required.

18 - Tribal Cultural Resources

TRIBAL CULTURAL RESOURCES – Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Source: City of Rancho Mirage General Plan, 2017; California Natural Resources Agency, Coachella Valley Mountains Conservancy Returns Ancestral Land to the Agua Caliente Band of Cahuilla Indians, October 2024; Historical/Archaeological Resources Survey Report for Assessor's Parcel Number 685-090-016 in City of Rancho Mirage prepared by CRM TECH, July 2024 (Appendix C).

18.1 Setting

The Coachella Valley is the original home of the Takic-speaking Cahuilla people. The Cahuilla people are generally divided into three groups based on their geographic settings and include (1) Pass Cahuilla of the San Gorgonio Pass-Palm Springs area, (2) Mountain Cahuilla of the San Jacinto and Santa Rosa Mountains and the Cahuilla Valley, and (3) Desert Cahuilla of the eastern Coachella Valley.

Although geographically divided, these tribes interacted amongst themselves through trade, intermarriage, and ceremonies. The Cahuilla depended on the natural landscape for subsidence with their diet consisting of seeds, roots, wild fruits and berries, as well as common game animals and, when the Holocene Lake Cahuilla was present, fish and waterfowl. The Cahuilla hunted with throwing sticks, clubs, nets, traps, and scares, and other common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow-straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade and travel.

Cultivation practices became prominent in the Coachella Valley and helped the Cahuilla share the landscape. The planting of palms by the Cahuilla is well-documented as well as their burning practices to generate higher yields, control pests, and avoid the accumulation of dead undergrowth.

It is estimated the Cahuilla population ranged from 3,600 to as high as 10,000 people covering the Coachella Valley and greater southern California territory encompassing over 2,400 square miles, prior to European contact. During the 19th century, the Cahuilla population experienced a drastic decline as a direct result of European disease, most notably smallpox, for which the Native people had no immunity.

Today, Native Americans of Pass or Desert Cahuilla heritage are affiliated with one or more of the Indian reservations in and near the Coachella Valley including the Agua Caliente, Morongo, Cabazon, Torres Martinez, and Augustine. As part of their reservation land, the Agua Caliente Band of Cahuilla Indian is steward to 34,000 acres[26] of desert land within regional cities including Palm Springs, Cathedral City, and Rancho Mirage. In Rancho Mirage, a total of six Cahuilla cultural heritage sites were identified within the City boundary and one in the City's Sphere of Influence (SOI). Other sites are located adjacent or in proximity to the City which include the Bradley Canyon Trail, Magnesia Spring, and Edom Hill/Indio Hills.[27]

Under California Assembly Bill 52, local governments must request consultation with local Native tribes prior to considering new proposed development which would trigger a CEQA assessment. Specifically, AB 52 updated CEQA guidelines to include a tribal cultural resource section in which a project would be categorized as causing significant impact if adverse changes to "tribal cultural resources". Public Resources Code Section 21074 defines "tribal cultural resources" as:

- Sites, features, places, cultural landscapes, sacred places, and objects which cultural value to a California Native American tribe that are either of the following: included or determined to be eligible for inclusion in the California Register of Historical Resources, or included in a local register of historical resources as defined in subdivision (k) of Section 5020.1
- A resource determined by the lead agency in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.
- A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.
- A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

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26 California Natural Resources Agency, Coachella Valley Mountains Conservancy Returns Ancestral Land to the Agua Caliente Band of Cahuilla Indians, https://resources.ca.gov/Newsroom/Page-Content/News-List/Coachella-Valley-Mountains-Conservancy-Returns-Ancestral-Land-to-the-Agua-Caliente, October 2024.

27 City of Rancho Mirage General Plan, Open Space and Conservation Element, 2017.

18.2 Discussion of Impacts:

a,b) LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED: A historical/archeological resources survey report was prepared to assess the potential for cultural and tribal cultural resources within the Project's 5± acre parcel. A written request for records on tribal resources within a 1-mile radius of the Project site was sent to the State of California Native American Heritage Commission (NAHC) on April 16, 2024. The findings yield negative results for recorded tribal cultural resources at or within proximity to the Project. Nonetheless, in accordance with the NAHC recommendation, ACBCI was consulted for additional information on potential tribal cultural resources in the vicinity. On April 22, 2024, a cultural resources analyst with ACBCI tribal historical preservation office, identified the Project as located within the tribe's Traditional Use area and request review of all cultural resource documents generated for the Project. Additionally, there was a request for a qualified archaeologist to perform a cultural resource inventory with an ACBCI resource monitor, prior to any development approval.

Although less than significant impacts were identified in the cultural resource report, the possibility for tribal resources to occur at the site cannot be completely ruled out, resulting in the implementation of Mitigation Measure CUL-1 in Section 5 above. In addition, the City has undertaken consultation under AB 52, which began March 21, 2025, and concluding April 23, 2025. A total of 21 representatives from 11 local tribes were contacted and as of April 14, the City received two responses that did not wish to comment and one, Agua Caliente Band of Cahuilla Indian Tribe (ACBCI) providing a response to consult. From the consultation meeting, ACBCI requested for on-site monitoring to be present at all times in regard to ground disturbance activities during the construction process. Additionally, preconstruction training will be conducted prior to construction and if the unexpected event human remains were to found on-site the necessary measures will be executed as stated in Mitigation Measure TRI-3. All tribe-specific requirements associated with the protection and conservation of tribal cultural resources potentially located within the Project site are listed in Section 18.3 and subject to conditional approval.

18.3 Mitigation Measures:

TRI-1 The Agua Caliente Band of Cahuilla Indians must be notified a minimum of 30 days period to any earth-moving activities including grading, grubbing, trenching, or excavations at the site. All earth-moving activities including grading, grubbing, trenching, or excavations at the site shall be monitored by a qualified archeologist and/or approved Agua Caliente Native American Cultural Resource Monitor(s).

TRI-2 A qualified archeologist and approved Agua Caliente Native American Cultural Resource Monitor(s) shall provide preconstruction training for all earthmoving construction personnel prior to the stat of any ground-disturbing activities, regarding how to recognize the types of Tribal Cultural Resources and/or

archaeological resources that may be encountered and to instruct personnel about action to be taken in the event of a discovery. Should cultural materials be discovered, they shall be recorded and evaluated in the field. The monitors shall be prepared to recover artifacts to avoid construction delays but must have the power to temporarily halt or divert construction equipment to allow for controlled archeological recovery if a substantial cultural deposits is encountered. If artifacts are discovered, these shall be cataloged and analyzed. The archeologist and monitor, in discussion with the Tribal Historic Preservation Office, shall determine and implement the best course of action for the treatment and disposition of the artifacts.

TRI-3 In the unexpected event human remains are uncovered during construction activities, all construction work taking place within the vicinity of the discovered remains must cease and the necessary steps to ensure the integrity of the immediate area must be taken. The County Coroner must be notified within 24 hours of the discovery of human remains. If the remains discovered are determined by the Coroner to be of Native American descent, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC would in turn contact the Most Likely Descendant (MLD) would determine further action to be taken. The NLD would have 48 hours to access the site and make a recommendation regarding disposition of the remains.

19 - Utilities and Service Systems

UTILITIES AND SERVICE SYSTEMS – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the projects projected demand in addition to the providers existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statues and regulations related to solid waste?	☐	☐	☐	☒

Sources: Rancho Mirage General Plan (2017); 2020 Coachella Valley Regional Urban Water Management Plan (June 2021); Coachella Valley Water District general information (accessed June 2024); California Department of Water Resource, Coachella Valley Groundwater Basin, Indio Subbasin (updated February 2024).

19.1 Setting

Domestic Water

The Coachella Valley Water District (CVWD) provides Rancho Mirage with domestic water drawn primarily from the Whitewater River subbasin, underlying the City. The CVWD operates a domestic water system consisting of 97 active wells, 2,000 miles of pipeline, and 133 million

gallons of storage in 65 enclosed distribution reservoirs. The CVWD service area encompasses regional cities including Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, and Coachella[28] to service a consumer base of 235,000 people.

All domestic water serviced by CVWD comes from groundwater basins. For Rancho Mirage, the West Valley portion of the Whitewater River subbasin is the City's main source of potable water. Daily demand for potable water averages 240.9 acre feet (af) and CVWD delivers 87,959 AFY to its service area.[29] The subbasin has a total storage capacity of 29.8 million af per year.[30]

In addition to domestic water services, CVWD, in collaboration with the Desert Water Agency (DWA), coordinates subbasin recharge efforts to ensure the Whitewater River subbasin's groundwater levels are not reduced substantially with the increased demand for potable water. CVWD operates and maintains groundwater recharge facilities in three locations in the Coachella Valley, including the Palm Springs (WWR-GRF), the Thomas E. Levy GRF (TEL-GRF), and the Palm Desert GRF (PD-GRF). Each facility consists of multiple recharge ponds that collect stormwater, natural runoff from nearby mountains, and water imported from the Colorado River Aqueduct. These groundwater replenishment efforts ensure the local availability to groundwater in the foreseeable future.

Wastewater

The CVWD also provides wastewater and recycling services to its service area including Rancho Mirage. The CVWD wastewater reclamation system consists of approximately 1,100 miles of collection piping and 5 wastewater reclamation plants (WRPs). On a daily basis, CVWD's wastewater system collects and treats approximately 17 million gallons per day from nearly 95,000 individual connections. The main focus of the recycle water system is to provide non-potable water to regional golf courses and homeowners for irrigation purposes in an attempt to conserve the use of domestic water.

Solid Waste

Burrtec Waste Industries (Burrtec) is contracted by the City to provide solid waste management and disposal services to residential, commercial, and institutional properties/facilities. Most of the collected waste is transported to the Edom Hill Transfer Station, located at 70100 Edom Hill Road in Cathedral City. The landfill is a transfer station indicating that the waste will be processed at a local point before its final disposal site. The Edom Hill transfer station has a maximum permitted throughput of 3,500 tons per day and permitted capacity of 17,777 cubic yard for general waste such as agricultural, construction, food, green materials, industrial, metals, and the like.[31]

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28 Coachella Valley Water District, CVWD Water Map, http://www.cvwd.org/333/CVWD-Map, accessed June 2024.

29 Coachella Valley Water District, Domestic Water, https://www.cvwd.org/161/Domestic-Water, accessed June 2024.

30 California Department of Water Resource, Coachella Valley Groundwater Basin, Indio Subbasin, updated February 2004.

31 California Department of Recycle, Solid Waste Information System Facility/Site Activity Details for Edom Hill Transfer Station, https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/5189?siteID=4186, accessed June 2024.

Electricity
Imperial Irrigation District (IID) provides a portion of Rancho Mirage with electricity services. IID is a not-for-profit utility district focused on the providing low service rates. Currently, IID service rates are lower than SCE rates. IID energy is derived in part by renewable sources including biomass, biowaste, geothermal, hydroelectric, solar, and wind.

Natural Gas
Southern California Gas (SCG) is the gas utility provider servicing Rancho Mirage. SCG operates miles of transmission lines that run along Intertate-10 and high pressure distribution lines that intercept each service area including Rancho Mirage. The City's distribution line is located under Monterey Avenue and travels north-south with subsections branching off to specific regions.

Telecommunication
Spectrum (formerly Time Warner Capable) and Frontier Communications provide the City's telephone and capable service.

19.2 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT: The Project proposes the development of a multi-family residential apartment complex on 5±-acres of undeveloped land. No utility service or underground systems are present within the proposed parcel. As such, the Project warrants the extension of utility connections on-site from nearby development including residential communities to the west of Key Largo Avenue. According to the Project's conceptual grading plans, the extension of Via Vail adjacent to the property would include a public sanitary sewer line and public water main to connect the property with CVWD's domestic water and wastewater system. Implementation of these utility connections has been planned prior to the Project's proposal given that the property is zoned for residential use and thus, CVWD has anticipated the need to provide utility connection at the site once a formal development has been proposed and accepted by the City.

Other utility services including electricity, natural gas, and telecommunication follow the same framework of building internal frameworks so as to gradually accommodate a greater demand, on the basis of the City's forecasted growth. As described above, the Project is consistent with the City General Plan Land Use and development standards for a R-H/AHO and thus, utility expansion to accommodate the parcel's residential development has been planned in accordance with the City buildout. As such, the Project would not result in a significant environmental impact from the expansion or construction of new utility connections, as all expansions have been planned and are subject to the most current development standards and regulations designed to minimize environmental impact as mandated by CEQA. As such, less than significant impacts are anticipated.

b) LESS THAN SIGNIFICANT IMPACT: The Project's development is expected to generate a water demand during construction and operation. The following section characterizes water usage at each phase of development and determine their respective potential for adverse effects onto CVWD's supply of potable water.

Construction

For analysis purposes, a construction duration of 24-month is assumed with a start date in February 2027 with buildout in 2029. During construction, hauling trucks are expected to deliver water to the site so as to irrigate the property in accordance with SCAQMD's fugitive dust control mandate under Rule 403. The site's irrigation will occur during ground disturbance, Including site preparation and grading. Irrigation needs for construction are therefore temporary and expected to occur for a short period. The Project's construction would not generate a permanent water demand and thus, water demand related to irrigation of the construction site would not cause substantial impact to CVWD's supply of potable water.

Operation

Once operational, the Project site will consist of seven multi-family residential apartment buildings, totaling 150 dwelling units, a Community Center, 948 sf swimming pool, and a landscape area of 42,802± sf. These land uses are described in Table 12 and Table 13 in Section 10 (Hydrology and Water Quality). As shown in those Tables, the Project's operational water demand for indoor and outdoor water use would total to 28.26 acres-feet per year (AFY). The Project's annual water demand of 28.26 AFY would account for less than one percent (0.017% exactly) of the CVWD's total gross water supply of 164,966 AFY by 2045.[32] Although water demand for landscaping is estimated at 2.80 AFY, the exact water demand for landscape irrigation is anticipated to be lower, considering the Project's compliance with Rancho Mirage Municipal Code Section 17.24.040(g) which mandates all vegetation used for landscape be drought-tolerant and water-efficient. In accordance with water efficient standards, the Project's permanent water demand would not substantially reduce groundwater supply served by CVWD.

Additionally, projected water demand for future years is estimated by the 2022 UWMP in accordance with local jurisdictions' land use. The Project is consistent with the parcel's land use of High-Density Residential with an Affordable Housing Overlay, and thus, the Project's proposal for a multi-family residential project within Rancho Mirage would not result in an unplanned development with a water demand beyond CVWD projected supply. As such, less than significant impact from the Project's water demand is anticipated.

c) LESS THAN SIGNIFICANT IMPACT: CVWD will also provide wastewater treatment services to the Project site. The treatment facility for the Project is WRP-4 located in Indio. According to the 2022 Urban Water Management Plan, WRP-4 has a treatment capacity of 9.9-million gallons per day (gpd). Based on the Project's land use and total square footage, the site is estimated to generate 37,500 gallons of wastewater per day, which equates to less than one percent of WRP-4 daily treatment capacity, as shown in Table 31. Given the Project would not contribute to an excessive volume of wastewater treated by CVWD sewer system, related impacts are expected to be less than significant.

[32] Table 4-10 in the 2020 Coachella Valley Regional Urban Water Management Plan, July 2021.

Table 31 Project Wastewater Generation			
Land Use	**Size**	**Generation Rate[1] (gpd)**	**Daily Wastewater Generated**
Multi-Family Residential	150	250	37,500
% of CVWD's WRP-4 Daily Treatment Capacity			**0.38**
[1] Coachella Valley Water District Regulations Governing Sanitation Service, under CVWD Ordinance No. 1427.1, December 2017.			

d) LESS THAN SIGNIFICANT IMPACT: Burrtec provides solid waste services to residential, commercial, and institutional users in the City of Rancho Mirage. Most of the collected waste is transported to the Edom Hill Transfer Station, located at 70100 Edom Hill Road in Cathedral City, before the waste is transported to one of five landfills managed by the Riverside County Department of Waste Resources. These landfills include the Badlands Sanitary Landfill, Blythe, Desert Center, Lamb Canyon, and Oasis Sanitary Landfill. Table 32 lists each landfill and their remaining capacity. As shown, these landfills have a combined remaining capacity of 18.6-million cubic yards (CY).

Table 32 Remaining Capacity for Riverside County's Regional Landfills	
Site Name	**Remaining Capacity (CY)**
Badlands Sanitary Landfill	4,900,000
Blythe Sanitary Landfill	3,271,203
Desert Center Sanitary Landfill	102,850
Lamb Canyon Sanitary Landfill	14,540,000
Oasis Sanitary Landfill	204,558
Total (Remaining Capacity)	**18,608,611**
Source: CalRecycle, SWIS Facility/Site Activity Details, https://www2.calrecycle.ca.gov/SolidWaste/Site/Search, accessed March 2025.	

Construction Waste

The Project would generate solid waste during construction and operation. Construction-related waste would consist of cardboard, plastic, construction material, and similar material that must be recycled, reused, or repurposed in accordance with the City mandate to divert all recyclable construction waste from regional landfills as stated in City Municipal Code Section 7.07.060 (Construction and Demolition Debris Plan). In compliance with the City's diversion program, the Project would prepare a construction and demolition debris plan to estimate the volume of solid waste diverted from the Project's construction. Nonetheless, the Project is not anticipated to generate significant solid waste during construction given that no demolition will occur as part of the Project buildout. Therefore, construction-related solid waste would result in less than significant impact to regional landfills.

Operation Waste

At buildout, the Project site will include 150 dwelling units, a Community Center, and outdoor recreational spaces. Solid waste generated will largely result from residential activities. Based on the Project's proposed land use and size, the site is estimated to generate 164.45 CY of

solid waste per year. The Project would account for less than one percent of Riverside County regional landfill capacity of 18.6-million cubic yards. As a result, potential impacts to regional landfills would be less than significant.

Table 33
Estimated Solid Waste Generation at Project Buildout

Land Use	Size	Waste Production Factor (lbs/size/day)	Daily Waste Production (lbs)	Annual Waste Production (CY)
Multi-Family Residencies	150 DU	5.31	796.50	145.36
Community Center	3,353 sf	3.12	104.61	19.09
			Total (Annual Solid Waste Generation)	**164.45**
			% of Regional Landfill Capacity	**0.00088**

Source: Coachella Valley Water District, Regulations Governing Sanitation Service, Table A-1, https://cvwd.org/ArchiveCenter/ViewFile/Item/860, December 2017.

e) NO IMPACT: As required by the California Building Code and Rancho Mirage Municipal Code, the Project would adhere to all applicable waste reduction and recycling standards. As such, no conflicts are anticipated and thus, no impacts would occur.

19.3 Mitigation Measures:

None required.

20 - Wildfire

WILDFIRE – Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Sources: City of Rancho Mirage General Plan, 2017; California Department of Forestry and Fire Prevention, Fire Hazard Severity Zones in State Responsibility Area Map, April 2024; Preliminary Drainage Study for Rancho Mirage Affordable Apartments, Atlas Civil Design, Inc., October 2024 (Appendix F); Project Material.

20.1 Setting

The California Department of Forestry and Fire Prevention (CalFire) reports on probability of an area being impacted by wildfires based on regional fire history, native vegetation, terrain, weather, and proximity to wildlands. CalFire Fire Hazard Severity Zones models Moderate, High, and Very High Fire Hazard Severity Zones (VHFHSZ) at a statewide scale.

According to the latest 2023 Fire Hazard model, Rancho Mirage is not located within an area with a moderate, high, or very high fire hazard classification.[33] The nearest fire hazard area to the City is located within the Santa Rosa Mountains with a moderate to high fire hazard ranking. No areas within the City are identified as state responsibility areas. In the event of a fire emergency, the local jurisdiction will be responsible for providing immediate support.

20.2 Discussion of Impacts:

a-d) NO IMPACT: The City of Rancho Mirage receives fire protection services from the Riverside County Fire Department and coordinates its emergency response activities with the County's Emergency Operations Plan (EOP) as well as the County's Multi-Jurisdictional Local Hazard Mitigation Plan (MJLHMP). The Project site is not in or near a wildfire hazard area, and will not be subject to wildfire, given its urban setting, the lack of substantial vegetation on and around the site, and the development patterns in this portion of the City. Prior to construction, the Project plans will be reviewed by the City and the Fire Department to ensure that the Project will not conflict or impact the effective implementation of the emergency plans. In addition, the Project will be required to comply with all local safety regulations and standards, including the Fire Code, to ensure the appropriate preventative measures are being implemented to reduce the risk for fire or other natural hazards. No impacts will occur.

20.3 Mitigation Measures:

None required.

[33] California Department of Forestry and Fire Prevention, Fire Hazard Severity Zones in State Responsibility Area, https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008, accessed May 2024.

21 - Mandatory Findings of Significance

MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

21.1 Discussion of Impacts:

a) LESS THAN SIGNIFICANT IMPACT WITH MITIGATION INCORPORATED: As discussed in Section 4 (Biological Resources) of this report, the Project-specific biological resource assessment determined the property as having limited value as habitat for special status species considering the site's isolation, surrounding urban setting, level of disturbance, and lack of suitable substrate. For these reasons, most special status species identified as potentially occurring on-site have a low to very probability or are otherwise categorized as absent. As such, the probability for the Project to cause adversely affect or limit access to key habitats for special status species is negligible. No impacts to special status species would occur in connection to the Project construction and operation. Nonetheless, the site consists of dense desert shrubs that may be suitable for bird nesting. If construction activities are scheduled within the nesting season (mid-January to end of August), a preconstruction survey

is mandatory so as to ensure the property does not house nesting birds. Implementation of Mitigation Measure BIO-1 is required in accordance with the Mitigatory Bird Treaty Act. The survey will also assure the absence of burrowing owls, even though no suitable burrows were identified on the site. Compliance with relevant plans, policies, standards, in addition to the mitigation measure would ensure the Project does not result in substantial impacts to any species. As such, less than significant impacts are anticipated with mitigation.

Section 5 (Cultural Resources) discussed the probability for historical and archeological resources to be uncovered at the Project site. As determined, the property does not include any historical resource. Although identified as a Traditional Use Area for local native American tribes, the field survey yielded no evidence to suggest the site may include significant cultural resources. But given the property has not been previously disturbed, the probability for cultural resources to be uncovered may not be completely ruled out. As such, all ground disturbance activities during construction must comply with Mitigation Measure CUL-1. The measure requires that all construction activities cease immediately and for a qualified archeologist to evaluate the findings so as to determine significance of the artifact. In accordance with Mitigation Measure CUL-1, less than significant impact would occur to cultural resources within the property boundary. Building from this, Section 18 (Tribal Cultural Resources), in accordance with tribal consultation, mandates Mitigation Measure TRI-1 through TRI-3 to be implemented, which would require preconstruction training prior to ground disturbance, on-site tribal monitoring, and preventative measures in the unexpected event human remains are encountered at the site. Implementation of these mitigation measures will avoid causing significant effect to nonrenewable cultural and tribal cultural resources and thus, the Project would result in less than significant impacts.

b) LESS THAN SIGNFICANT IMPACT WITH MITIGATION INCORPORATED: Cumulative impacts would result if the proposed Project, in combination with other proposed projects, would cause an impact to be cumulatively significant. In this case, the proposed Project is consistent with the City's General Plan, and its impacts have been studied in that context in the General Plan EIR. In addition, as described in this document, all impacts associated with this Project can be mitigated to less than significant levels. Similarly, other projects occurring in the City will be required to assess their impacts, and conformance with predicted growth patterns, to ascertain whether their development would exceed planned growth rates. In the case of the proposed Project, cumulative impacts will remain less than significant, and not cumulatively considerable.

c) LESS THAN SIGNFICANT IMPACT: Adverse effects to humans from development typically occur in connect to geologic hazards, air quality impacts, and noise. As described in this document, the Project will be designed and constructed to meet or exceed all Building Code requirements, so as to ensure that people living in the apartments are protected to the greatest extent from geologic hazards. Section 3 of this document demonstrates that the Project will not exceed any threshold established by the SCAQMD, including Local Significance Thresholds, and that sensitive receptors will not be exposed to high concentrations of air pollutants. Finally, the noise analysis clearly shows that noise levels at and from the Project site will not increase significantly, and will remain within the City's standards for Project residents and for surrounding sensitive receptors. Impacts to humans will be less than significant.

21.3 Mitigation Measures:

None required.

Table 34: Mitigation Monitoring and Reporting Program			
Mitigation Measure	**Responsible Agency**	**Timing**	**Verification (Date and Initials)**
BIOLOGICAL RESOURCES			
A site-specific nesting bird survey shall be performed by a qualified ornithologist or biologist no more than 3 days prior to vegetation removal or ground disturbance activities. If active nests are found during the pre-construction nesting bird survey, the biologist shall assess the conditions and establish an appropriate nest buffer to be marked on the ground. Nest buffer are species specific and shall be 100 to 300 feet for unlisted songbirds and at least 500 feet for birds-of-prey and species listed as threatened or endangered. The nesting area shall not be disturbed until the biologist has determined the young have fledged or the nest is no longer active. The biologist has the authority to stop work if the nesting area exhibit signs of disturbance.	The Project's assigned ornithologist or biologist, and the City Planning Department would share monitoring responsibilities.		
CULTURAL RESOURCES			
If buried materials are discovered during any earth-moving operations associated with the project, all work in the immediate area should be halted or diverted until a qualified archeologist can evaluate the nature and significance of the find.	The Project's qualified archeologist and City Planning Department would share responsibility.		
TRIBAL CULTURAL RESOURCES			
The Agua Caliente Band of Cahuilla Indians must be notified a minimum of 30 days period to any earth-moving activities including grading, grubbing, trenching, or excavations at the site. All earth-moving activities including grading, grubbing, trenching, or excavations at the site shall be monitored by a qualified archeologist and/or approved Agua Caliente Native American Cultural Resource Monitor(s). A qualified archeologist and approved Agua Caliente Native American Cultural Resource Monitor(s) shall provide preconstruction training for all earthmoving construction personnel prior to the start of any ground-disturbing activities, regarding how to recognize the types of Tribal Cultural Resources and/or archaeological resources that may be encountered and to instruct personnel about action to be taken in the event of a discovery. Should cultural materials be discovered, they shall be recorded and evaluated in the field. The monitors shall be prepared to recover artifacts to avoid construction delays but must have the power to temporarily halt or divert construction equipment to allow for controlled archeological recovery if a substantial cultural deposits is encountered. If artifacts are discovered, these shall be cataloged and analyzed. The archeologist and monitor, in discussion with the Tribal Historic Preservation Office, shall determine and implement the best course of action for the treatment and disposition of the artifacts.	Project's qualified archeologist and/or ACBCI Cultural Resource Monitor, and City Planning Department would share responsibility. Project's qualified archeologist, ACBCI Cultural Resource Monitor, City Planning Department would share responsibility.		

In the unexpected event human remains are uncovered during construction activities, all construction work taking place within the vicinity of the discovered remains must cease and the necessary steps to ensure the integrity of the immediate area must be taken. The County Coroner must be notified within 24 hours of the discovery of human remains. If the remains discovered are determined by the Coroner to be of Native American descent, the Coroner shall contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC would in turn contact the Most Likely Descendant (MLD) would determine further action to be taken. The NLD would have 48 hours to access the site and make a recommendation regarding disposition of the remains.	Project Applicant and City Planning Department would share responsibility.		

CHAPTER 3: REFERENCES

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CHAPTER 4: APPENDICES

Appendix A	Air Quality Report
Appendix B	Biological Resources Assessment
Appendix C	Historical/Archeological Resources Survey Report
Appendix D	Design-Phase Geotechnical Investigation Report
Appendix E	Phase I Environmental Site Assessment
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Appendix I	Traffic Analysis Report & Vehicle Miles Traveled Screening Analysis Report

CHAPTER 5: REPORT PREPARERS

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CEQA Consultant

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Appendix A
Air Quality Report

Rancho Mirage Affordable Housing Family Apartments Detailed Report

Table of Contents

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Rancho Mirage Affordable Housing Family Apartments
Construction Start Date	2/1/2027
Operational Year	2029
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.30
Precipitation (days)	0.80
Location	33.797385503049995, -116.39430045644497
County	Riverside-Salton Sea
City	Rancho Mirage
Air District	South Coast AQMD
Air Basin	Salton Sea
TAZ	5671
EDFZ	19
Electric Utility	Imperial Irrigation District
Gas Utility	Southern California Gas
App Version	2022.1.1.29

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Apartments Mid Rise	150	Dwelling Unit	3.00	7,889	42,802	—	485	—

Parking Lot	224	Space	2.00	0.00	0.00	—	—	—
Road Construction	0.07	Mile	0.32	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

No measures selected

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	4.84	41.3	47.4	0.12	21.8	10.8	15,778
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	5.24	44.3	50.2	0.09	22.5	11.0	10,688
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	1.23	10.5	14.2	0.03	3.51	1.53	4,068
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.22	1.92	2.59	0.01	0.64	0.28	674
Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	75.0	100	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—
2027	4.84	41.3	47.4	0.12	21.8	10.8	15,778
2028	1.28	8.18	18.6	0.02	1.80	0.60	4,002
Daily - Winter (Max)	—	—	—	—	—	—	—
2027	5.24	44.3	50.2	0.09	22.5	11.0	10,688
2028	3.64	14.6	25.4	0.04	2.52	0.93	5,577
2029	3.51	14.0	25.0	0.04	2.49	0.89	5,531
Average Daily	—	—	—	—	—	—	—
2027	1.23	10.5	14.2	0.03	3.51	1.53	4,068
2028	1.07	6.44	12.5	0.02	1.35	0.46	2,929
2029	0.15	0.35	0.73	< 0.005	0.08	0.03	166
Annual	—	—	—	—	—	—	—
2027	0.22	1.92	2.59	0.01	0.64	0.28	674
2028	0.20	1.17	2.29	< 0.005	0.25	0.08	485
2029	0.03	0.06	0.13	< 0.005	0.02	< 0.005	27.4

2.4. Operations Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Unmit.	3.58	3.46	39.8	0.09	7.27	1.91	10,596
Daily, Winter (Max)	—	—	—	—	—	—	—
Unmit.	2.39	3.63	20.8	0.08	7.27	1.91	9,628
Average Daily (Max)	—	—	—	—	—	—	—
Unmit.	2.88	3.54	28.3	0.08	7.27	1.91	10,011
Annual (Max)	—	—	—	—	—	—	—
Unmit.	0.53	0.65	5.16	0.01	1.33	0.35	1,658

Exceeds (Daily Max)	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Average Daily)	—	—	—	—	—	—	—
Threshold	55.0	55.0	550	150	150	55.0	—
Unmit.	No	No	No	No	No	No	—
Exceeds (Annual)	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	—	3,000
Unmit.	—	—	—	—	—	—	No

2.5. Operations Emissions by Sector, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Sector	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Mobile	2.55	2.89	31.0	0.08	7.23	1.87	8,489
Area	0.99	0.08	8.53	< 0.005	< 0.005	< 0.005	22.8
Energy	0.03	0.49	0.21	< 0.005	0.04	0.04	1,784
Water	—	—	—	—	—	—	90.4
Waste	—	—	—	—	—	—	209
Refrig.	—	—	—	—	—	—	0.06
Total	3.58	3.46	39.8	0.09	7.27	1.91	10,596
Daily, Winter (Max)	—	—	—	—	—	—	—
Mobile	2.11	3.14	20.6	0.07	7.23	1.87	7,545
Area	0.26	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.03	0.49	0.21	< 0.005	0.04	0.04	1,784
Water	—	—	—	—	—	—	90.4
Waste	—	—	—	—	—	—	209

Refrig.	—	—	—	—	—	—	0.06
Total	2.39	3.63	20.8	0.08	7.27	1.91	9,628
Average Daily	—	—	—	—	—	—	—
Mobile	2.23	3.02	23.9	0.08	7.23	1.87	7,916
Area	0.62	0.04	4.21	< 0.005	< 0.005	< 0.005	11.3
Energy	0.03	0.49	0.21	< 0.005	0.04	0.04	1,784
Water	—	—	—	—	—	—	90.4
Waste	—	—	—	—	—	—	209
Refrig.	—	—	—	—	—	—	0.06
Total	2.88	3.54	28.3	0.08	7.27	1.91	10,011
Annual	—	—	—	—	—	—	—
Mobile	0.41	0.55	4.36	0.01	1.32	0.34	1,311
Area	0.11	0.01	0.77	< 0.005	< 0.005	< 0.005	1.86
Energy	0.01	0.09	0.04	< 0.005	0.01	0.01	295
Water	—	—	—	—	—	—	15.0
Waste	—	—	—	—	—	—	34.7
Refrig.	—	—	—	—	—	—	0.01
Total	0.53	0.65	5.16	0.01	1.33	0.35	1,658

3. Construction Emissions Details

3.1. Linear, Grubbing & Land Clearing (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.29	2.62	3.02	< 0.005	0.14	0.13	431

Dust From Material Movement	—	—	—	—	0.46	0.05	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.08	< 0.005	< 0.005	< 0.005	11.8
Dust From Material Movement	—	—	—	—	0.01	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	1.95
Dust From Material Movement	—	—	—	—	< 0.005	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.03	0.04	0.35	0.00	0.10	0.02	92.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	2.70
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.45
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.3. Linear, Grading & Excavation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	2.39	19.8	23.6	0.05	0.83	0.77	5,431
Dust From Material Movement	—	—	—	—	2.78	0.30	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.13	1.08	1.29	< 0.005	0.05	0.04	298
Dust From Material Movement	—	—	—	—	0.15	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.20	0.24	< 0.005	0.01	0.01	49.3
Dust From Material Movement	—	—	—	—	0.03	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.12	0.15	1.52	0.00	0.42	0.10	399
Vendor	< 0.005	0.03	0.01	< 0.005	0.01	< 0.005	31.6
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.10	0.00	0.02	0.01	23.4
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	1.73
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	3.87
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.29
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.5. Linear, Drainage, Utilities, & Sub-Grade (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.98	16.8	19.4	0.05	0.65	0.60	4,852
Dust From Material Movement	—	—	—	—	2.32	0.25	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.98	16.8	19.4	0.05	0.65	0.60	4,852
Dust From Material Movement	—	—	—	—	2.32	0.25	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.14	1.15	1.33	< 0.005	0.04	0.04	332
Dust From Material Movement	—	—	—	—	0.16	0.02	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.21	0.24	< 0.005	0.01	0.01	55.0
Dust From Material Movement	—	—	—	—	0.03	< 0.005	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.12	0.12	2.27	0.00	0.36	0.08	397
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.10	0.13	1.29	0.00	0.36	0.08	338
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.11	0.00	0.02	0.01	24.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	4.10
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.7. Linear, Paving (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.64	5.50	8.00	0.01	0.22	0.20	1,201
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.60	0.88	< 0.005	0.02	0.02	132
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.11	0.16	< 0.005	< 0.005	< 0.005	21.8
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.09	0.09	1.65	0.00	0.26	0.06	289
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.06	0.01	< 0.005	0.02	< 0.005	52.7
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.13	0.00	0.03	0.01	28.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	5.78
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.01	< 0.005	4.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.96

3.9. Site Preparation (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	2.66	24.2	24.1	0.04	1.04	0.95	4,581
Dust From Material Movement	—	—	—	—	17.2	8.84	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—

Off-Road Equipment	2.66	24.2	24.1	0.04	1.04	0.95	4,581
Dust From Material Movement	—	—	—	—	17.2	8.84	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.15	1.33	1.32	< 0.005	0.06	0.05	251
Dust From Material Movement	—	—	—	—	0.94	0.48	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.24	0.24	< 0.005	0.01	0.01	41.6
Dust From Material Movement	—	—	—	—	0.17	0.09	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.09	0.09	1.65	0.00	0.26	0.06	289
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.07	0.09	0.94	0.00	0.26	0.06	246
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.06	0.00	0.01	< 0.005	14.4
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	2.38

Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.11. Grading (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	1.40	12.5	15.0	0.02	0.54	0.50	2,601
Dust From Material Movement	—	—	—	—	6.27	3.01	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.19	1.71	2.05	< 0.005	0.07	0.07	356
Dust From Material Movement	—	—	—	—	0.86	0.41	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.31	0.37	< 0.005	0.01	0.01	59.0
Dust From Material Movement	—	—	—	—	0.16	0.08	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.08	0.08	1.44	0.00	0.23	0.05	253
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.16	8.09	1.93	0.05	2.18	0.72	7,676
Daily, Winter (Max)	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.14	0.00	0.03	0.01	31.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.02	1.16	0.27	0.01	0.30	0.10	1,051
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.03	0.00	0.01	< 0.005	5.21
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.21	0.05	< 0.005	0.05	0.02	174

3.13. Building Construction (2027) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.85	7.69	10.1	0.02	0.28	0.25	1,976
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.85	7.69	10.1	0.02	0.28	0.25	1,976
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.33	2.97	3.88	0.01	0.11	0.10	762
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.06	0.54	0.71	< 0.005	0.02	0.02	126
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.46	0.47	8.90	0.00	1.41	0.33	1,559

Vendor	0.02	0.49	0.21	< 0.005	0.14	0.05	508
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.39	0.51	5.05	0.00	1.41	0.33	1,327
Vendor	0.02	0.53	0.22	< 0.005	0.14	0.05	507
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.16	0.18	2.44	0.00	0.54	0.13	547
Vendor	0.01	0.20	0.08	< 0.005	0.06	0.02	196
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	0.03	0.03	0.45	0.00	0.10	0.02	90.5
Vendor	< 0.005	0.04	0.01	< 0.005	0.01	< 0.005	32.4
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.15. Building Construction (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.82	7.29	10.1	0.02	0.25	0.23	1,976
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.82	7.29	10.1	0.02	0.25	0.23	1,976
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.59	5.22	7.21	0.01	0.18	0.16	1,415
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.95	1.32	< 0.005	0.03	0.03	234
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Worker	0.45	0.42	8.32	0.00	1.41	0.33	1,530
Vendor	0.01	0.47	0.20	< 0.005	0.14	0.05	496
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.37	0.47	4.68	0.00	1.41	0.33	1,302
Vendor	0.01	0.51	0.21	< 0.005	0.14	0.05	495
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.28	0.30	4.21	0.00	1.01	0.24	997
Vendor	0.01	0.35	0.15	< 0.005	0.10	0.03	355
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	0.05	0.05	0.77	0.00	0.18	0.04	165
Vendor	< 0.005	0.06	0.03	< 0.005	0.02	0.01	58.8
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.17. Building Construction (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.80	6.99	10.0	0.02	0.23	0.21	1,976

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.25	0.35	< 0.005	0.01	0.01	69.6
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.04	0.06	< 0.005	< 0.005	< 0.005	11.5
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.31	0.42	4.41	0.00	1.41	0.33	1,280
Vendor	0.01	0.48	0.20	< 0.005	0.14	0.05	482
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.19	0.00	0.05	0.01	48.2
Vendor	< 0.005	0.02	0.01	< 0.005	0.01	< 0.005	17.0
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.01	< 0.005	7.97
Vendor	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	2.81
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.19. Paving (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—

Off-Road Equipment	0.55	5.27	7.72	0.01	0.21	0.19	1,177
Paving	0.17	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.05	0.48	0.71	< 0.005	0.02	0.02	108
Paving	0.02	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.09	0.13	< 0.005	< 0.005	< 0.005	17.9
Paving	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.05	0.06	0.65	0.00	0.20	0.05	181
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.06	0.01	< 0.005	0.02	< 0.005	51.3
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	0.01	0.08	0.00	0.02	< 0.005	17.8
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	4.72
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	2.94
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.78

3.21. Paving (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.54	5.13	7.72	0.01	0.19	0.18	1,177
Paving	0.17	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	4.61
Paving	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	< 0.005	0.76
Paving	< 0.005	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.04	0.06	0.61	0.00	0.20	0.05	178
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.06	0.01	< 0.005	0.02	< 0.005	50.0
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.74
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.20
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	0.12
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.03

3.23. Architectural Coating (2028) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.11	0.81	1.12	< 0.005	0.02	0.01	134
Architectural Coatings	1.47	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.08	< 0.005	< 0.005	< 0.005	9.96
Architectural Coatings	0.11	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	< 0.005	1.65
Architectural Coatings	0.02	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.07	0.09	0.94	0.00	0.28	0.07	260
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	0.01	0.01	0.09	0.00	0.02	< 0.005	20.7
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	< 0.005	< 0.005	3.43
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.25. Architectural Coating (2029) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Onsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Off-Road Equipment	0.10	0.79	1.11	< 0.005	0.01	0.01	134
Architectural Coatings	1.47	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.05	0.07	< 0.005	< 0.005	< 0.005	8.39
Architectural Coatings	0.09	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	1.39
Architectural Coatings	0.02	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Worker	0.06	0.08	0.88	0.00	0.28	0.07	256
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.07	0.00	0.02	< 0.005	17.1
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	< 0.005	< 0.005	2.84
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4. Operations Emissions Details

4.1. Mobile Emissions by Land Use

4.1.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	2.55	2.89	31.0	0.08	7.23	1.87	8,489
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.55	2.89	31.0	0.08	7.23	1.87	8,489
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	2.11	3.14	20.6	0.07	7.23	1.87	7,545
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.11	3.14	20.6	0.07	7.23	1.87	7,545
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	0.41	0.55	4.36	0.01	1.32	0.34	1,311
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total	0.41	0.55	4.36	0.01	1.32	0.34	1,311

4.2. Energy

4.2.1. Electricity Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1,066
Parking Lot	—	—	—	—	—	—	95.9
Total	—	—	—	—	—	—	1,162
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	1,066
Parking Lot	—	—	—	—	—	—	95.9
Total	—	—	—	—	—	—	1,162
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	177
Parking Lot	—	—	—	—	—	—	15.9
Total	—	—	—	—	—	—	192

4.2.3. Natural Gas Emissions By Land Use - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	0.03	0.49	0.21	< 0.005	0.04	0.04	622
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.49	0.21	< 0.005	0.04	0.04	622
Daily, Winter (Max)	—	—	—	—	—	—	—

Apartments Mid Rise	0.03	0.49	0.21	< 0.005	0.04	0.04	622
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.03	0.49	0.21	< 0.005	0.04	0.04	622
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	0.01	0.09	0.04	< 0.005	0.01	0.01	103
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.01	0.09	0.04	< 0.005	0.01	0.01	103

4.3. Area Emissions by Source

4.3.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Source	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.18	—	—	—	—	—	—
Architectural Coatings	0.08	—	—	—	—	—	—
Landscape Equipment	0.74	0.08	8.53	< 0.005	< 0.005	< 0.005	22.8
Total	0.99	0.08	8.53	< 0.005	< 0.005	< 0.005	22.8
Daily, Winter (Max)	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.18	—	—	—	—	—	—
Architectural Coatings	0.08	—	—	—	—	—	—
Total	0.26	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—
Hearths	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.03	—	—	—	—	—	—
Architectural Coatings	0.01	—	—	—	—	—	—

Landscape Equipment	0.07	0.01	0.77	< 0.005	< 0.005	< 0.005	1.86
Total	0.11	0.01	0.77	< 0.005	< 0.005	< 0.005	1.86

4.4. Water Emissions by Land Use

4.4.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	90.4
Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	90.4
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	90.4
Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	90.4
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	15.0
Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	15.0

4.5. Waste Emissions by Land Use

4.5.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	209

Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	209
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	209
Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	209
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	34.7
Parking Lot	—	—	—	—	—	—	0.00
Total	—	—	—	—	—	—	34.7

4.6. Refrigerant Emissions by Land Use

4.6.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	0.06
Total	—	—	—	—	—	—	0.06
Daily, Winter (Max)	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	0.06
Total	—	—	—	—	—	—	0.06
Annual	—	—	—	—	—	—	—
Apartments Mid Rise	—	—	—	—	—	—	0.01
Total	—	—	—	—	—	—	0.01

4.7. Offroad Emissions By Equipment Type

4.7.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.8. Stationary Emissions By Equipment Type

4.8.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.9. User Defined Emissions By Equipment Type

4.9.1. Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Equipment Type	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—

Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10T	PM2.5T	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Linear, Grubbing & Land Clearing	Linear, Grubbing & Land Clearing	2/1/2027	2/12/2027	5.00	10.0	—
Linear, Grading & Excavation	Linear, Grading & Excavation	2/13/2027	3/12/2027	5.00	20.0	—
Linear, Drainage, Utilities, & Sub-Grade	Linear, Drainage, Utilities, & Sub-Grade	3/13/2027	4/16/2027	5.00	25.0	—
Linear, Paving	Linear, Paving	4/17/2027	6/11/2027	5.00	40.0	—
Site Preparation	Site Preparation	3/12/2027	4/8/2027	5.00	20.0	—
Grading	Grading	4/9/2027	6/17/2027	5.00	50.0	—
Building Construction	Building Construction	6/18/2027	1/18/2029	5.00	415	—
Paving	Paving	11/15/2028	1/2/2029	5.00	35.0	—
Architectural Coating	Architectural Coating	11/24/2028	2/1/2029	5.00	50.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Linear, Grubbing & Land Clearing	Crawler Tractors	Diesel	Average	1.00	7.00	87.0	0.43
Linear, Grubbing & Land Clearing	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Linear, Grubbing & Land Clearing	Signal Boards	Electric	Average	1.00	7.00	6.00	0.82
Linear, Grading & Excavation	Crawler Tractors	Diesel	Average	1.00	7.00	87.0	0.43

Linear, Grading & Excavation	Excavators	Diesel	Average	3.00	7.00	36.0	0.38
Linear, Grading & Excavation	Graders	Diesel	Average	1.00	7.00	148	0.41
Linear, Grading & Excavation	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Linear, Grading & Excavation	Rubber Tired Loaders	Diesel	Average	1.00	5.00	150	0.36
Linear, Grading & Excavation	Scrapers	Diesel	Average	2.00	7.00	423	0.48
Linear, Grading & Excavation	Signal Boards	Electric	Average	1.00	7.00	6.00	0.82
Linear, Grading & Excavation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	5.00	84.0	0.37
Linear, Drainage, Utilities, & Sub-Grade	Air Compressors	Diesel	Average	1.00	7.00	37.0	0.48
Linear, Drainage, Utilities, & Sub-Grade	Generator Sets	Diesel	Average	1.00	7.00	14.0	0.74
Linear, Drainage, Utilities, & Sub-Grade	Graders	Diesel	Average	1.00	7.00	148	0.41
Linear, Drainage, Utilities, & Sub-Grade	Plate Compactors	Diesel	Average	1.00	7.00	8.00	0.43
Linear, Drainage, Utilities, & Sub-Grade	Pumps	Diesel	Average	1.00	7.00	11.0	0.74
Linear, Drainage, Utilities, & Sub-Grade	Rough Terrain Forklifts	Diesel	Average	1.00	7.00	96.0	0.40
Linear, Drainage, Utilities, & Sub-Grade	Scrapers	Diesel	Average	2.00	7.00	423	0.48
Linear, Drainage, Utilities, & Sub-Grade	Signal Boards	Electric	Average	1.00	7.00	6.00	0.82
Linear, Drainage, Utilities, & Sub-Grade	Tractors/Loaders/Backhoes	Diesel	Average	2.00	5.00	84.0	0.37
Linear, Paving	Pavers	Diesel	Average	1.00	7.00	81.0	0.42
Linear, Paving	Paving Equipment	Diesel	Average	1.00	5.00	89.0	0.36

Linear, Paving	Rollers	Diesel	Average	3.00	7.00	36.0	0.38
Linear, Paving	Signal Boards	Electric	Average	1.00	7.00	6.00	0.82
Linear, Paving	Tractors/Loaders/Backhoes	Diesel	Average	2.00	5.00	84.0	0.37
Site Preparation	Rubber Tired Dozers	Diesel	Average	3.00	7.00	367	0.40
Site Preparation	Tractors/Loaders/Backhoes	Diesel	Average	4.00	5.00	84.0	0.37
Site Preparation	Other Construction Equipment	Diesel	Average	1.00	3.00	150	0.42
Grading	Excavators	Diesel	Average	1.00	7.00	36.0	0.38
Grading	Graders	Diesel	Average	1.00	7.00	148	0.41
Grading	Rubber Tired Dozers	Diesel	Average	1.00	7.00	367	0.40
Grading	Tractors/Loaders/Backhoes	Diesel	Average	3.00	5.00	84.0	0.37
Grading	Other Construction Equipment	Diesel	Average	1.00	3.00	150	0.42
Building Construction	Cranes	Diesel	Average	1.00	7.00	367	0.29
Building Construction	Forklifts	Diesel	Average	3.00	5.00	82.0	0.20
Building Construction	Generator Sets	Diesel	Average	1.00	7.00	14.0	0.74
Building Construction	Tractors/Loaders/Backhoes	Diesel	Average	3.00	5.00	84.0	0.37
Building Construction	Welders	Diesel	Average	1.00	7.00	46.0	0.45
Paving	Pavers	Diesel	Average	2.00	7.00	81.0	0.42
Paving	Paving Equipment	Diesel	Average	2.00	5.00	89.0	0.36
Paving	Rollers	Diesel	Average	2.00	7.00	36.0	0.38
Architectural Coating	Air Compressors	Diesel	Average	1.00	6.00	37.0	0.48

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Site Preparation	—	—	—	—
Site Preparation	Worker	20.0	18.5	LDA,LDT1,LDT2
Site Preparation	Vendor	—	10.2	HHDT,MHDT
Site Preparation	Hauling	0.00	20.0	HHDT
Site Preparation	Onsite truck	—	—	HHDT
Grading	—	—	—	—
Grading	Worker	17.5	18.5	LDA,LDT1,LDT2
Grading	Vendor	—	10.2	HHDT,MHDT
Grading	Hauling	113	20.0	HHDT
Grading	Onsite truck	—	—	HHDT
Building Construction	—	—	—	—
Building Construction	Worker	108	18.5	LDA,LDT1,LDT2
Building Construction	Vendor	16.0	10.2	HHDT,MHDT
Building Construction	Hauling	0.00	20.0	HHDT
Building Construction	Onsite truck	—	—	HHDT
Paving	—	—	—	—
Paving	Worker	15.0	18.5	LDA,LDT1,LDT2
Paving	Vendor	—	10.2	HHDT,MHDT
Paving	Hauling	0.77	20.0	HHDT
Paving	Onsite truck	—	—	HHDT
Architectural Coating	—	—	—	—
Architectural Coating	Worker	21.6	18.5	LDA,LDT1,LDT2
Architectural Coating	Vendor	—	10.2	HHDT,MHDT
Architectural Coating	Hauling	0.00	20.0	HHDT
Architectural Coating	Onsite truck	—	—	HHDT
Linear, Grubbing & Land Clearing	—	—	—	—
Linear, Grubbing & Land Clearing	Worker	7.50	18.5	LDA,LDT1,LDT2

Linear, Grubbing & Land Clearing	Vendor	0.00	10.2	HHDT,MHDT
Linear, Grubbing & Land Clearing	Hauling	0.00	20.0	HHDT
Linear, Grubbing & Land Clearing	Onsite truck	—	—	HHDT
Linear, Grading & Excavation	—	—	—	—
Linear, Grading & Excavation	Worker	32.5	18.5	LDA,LDT1,LDT2
Linear, Grading & Excavation	Vendor	1.00	10.2	HHDT,MHDT
Linear, Grading & Excavation	Hauling	0.00	20.0	HHDT
Linear, Grading & Excavation	Onsite truck	—	—	HHDT
Linear, Drainage, Utilities, & Sub-Grade	—	—	—	—
Linear, Drainage, Utilities, & Sub-Grade	Worker	27.5	18.5	LDA,LDT1,LDT2
Linear, Drainage, Utilities, & Sub-Grade	Vendor	0.00	10.2	HHDT,MHDT
Linear, Drainage, Utilities, & Sub-Grade	Hauling	0.00	20.0	HHDT
Linear, Drainage, Utilities, & Sub-Grade	Onsite truck	—	—	HHDT
Linear, Paving	—	—	—	—
Linear, Paving	Worker	20.0	18.5	LDA,LDT1,LDT2
Linear, Paving	Vendor	0.00	10.2	HHDT,MHDT
Linear, Paving	Hauling	0.77	20.0	HHDT
Linear, Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
Architectural Coating	15,975	5,325	0.00	0.00	5,227

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Linear, Grubbing & Land Clearing	—	—	0.32	0.00	—
Linear, Grading & Excavation	0.00	0.00	0.00	0.00	—
Linear, Drainage, Utilities, & Sub-Grade	—	—	0.32	0.00	—
Site Preparation	—	—	26.3	0.00	—
Grading	—	45,000	8.00	0.00	—
Paving	0.00	0.00	0.00	0.00	2.32

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Apartments Mid Rise	—	0%
Parking Lot	2.00	100%
Road Construction	0.32	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2027	103	457	0.03	< 0.005
2028	0.00	457	0.03	< 0.005
2029	0.00	457	0.03	< 0.005

5.9. Operational Mobile Sources

5.9.1. Unmitigated

Land Use Type	Trips/Weekday	Trips/Saturday	Trips/Sunday	Trips/Year	VMT/Weekday	VMT/Saturday	VMT/Sunday	VMT/Year
Apartments Mid Rise	722	722	722	263,512	10,146	10,146	10,146	3,703,455
Parking Lot	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.10. Operational Area Sources

5.10.1. Hearths

5.10.1.1. Unmitigated

Hearth Type	Unmitigated (number)
Apartments Mid Rise	—
Wood Fireplaces	0
Gas Fireplaces	0
Propane Fireplaces	0
Electric Fireplaces	0
No Fireplaces	150
Conventional Wood Stoves	0
Catalytic Wood Stoves	0
Non-Catalytic Wood Stoves	0
Pellet Wood Stoves	0

5.10.2. Architectural Coatings

Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)
69413	46,854	0.00	0.00	5,227

5.10.3. Landscape Equipment

Season	Unit	Value
Snow Days	day/yr	0.00
Summer Days	day/yr	180

5.11. Operational Energy Consumption

5.11.1. Unmitigated

Electricity (kWh/yr) and CO2 and CH4 and N2O and Natural Gas (kBTU/yr)

Land Use	Electricity (kWh/yr)	CO2	CH4	N2O	Natural Gas (kBTU/yr)
Apartments Mid Rise	848,874	457	0.0330	0.0040	1,933,922
Parking Lot	76,317	457	0.0330	0.0040	0.00

5.12. Operational Water and Wastewater Consumption

5.12.1. Unmitigated

Land Use	Indoor Water (gal/year)	Outdoor Water (gal/year)
Apartments Mid Rise	6,101,066	981,696
Parking Lot	0.00	0.00

5.13. Operational Waste Generation

5.13.1. Unmitigated

Land Use	Waste (ton/year)	Cogeneration (kWh/year)
Apartments Mid Rise	111	—
Parking Lot	0.00	—

5.14. Operational Refrigeration and Air Conditioning Equipment

5.14.1. Unmitigated

Land Use Type	Equipment Type	Refrigerant	GWP	Quantity (kg)	Operations Leak Rate	Service Leak Rate	Times Serviced
Apartments Mid Rise	Average room A/C & Other residential A/C and heat pumps	R-410A	2,088	< 0.005	2.50	2.50	10.0
Apartments Mid Rise	Household refrigerators and/or freezers	R-134a	1,430	0.12	0.60	0.00	1.00

5.15. Operational Off-Road Equipment

5.15.1. Unmitigated

Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor

5.16. Stationary Sources

5.16.1. Emergency Generators and Fire Pumps

Equipment Type	Fuel Type	Number per Day	Hours per Day	Hours per Year	Horsepower	Load Factor

5.16.2. Process Boilers

Equipment Type	Fuel Type	Number	Boiler Rating (MMBtu/hr)	Daily Heat Input (MMBtu/day)	Annual Heat Input (MMBtu/yr)

5.17. User Defined

Equipment Type	Fuel Type

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	23.4	annual days of extreme heat
Extreme Precipitation	0.00	annual days with precipitation above 20 mm

Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2

Extreme Precipitation	N/A	N/A	N/A	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	N/A	N/A	N/A	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	N/A	N/A	N/A	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	88.7
AQ-PM	7.34
AQ-DPM	43.4
Drinking Water	45.4
Lead Risk Housing	1.31
Pesticides	0.00
Toxic Releases	3.08
Traffic	64.6
Effect Indicators	—

CleanUp Sites	0.00
Groundwater	0.00
Haz Waste Facilities/Generators	43.3
Impaired Water Bodies	0.00
Solid Waste	0.00
Sensitive Population	—
Asthma	20.9
Cardio-vascular	16.5
Low Birth Weights	20.3
Socioeconomic Factor Indicators	—
Education	25.9
Housing	86.8
Linguistic	7.38
Poverty	21.5
Unemployment	4.23

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	47.56833055
Employed	15.56525087
Median HI	74.56691903
Education	—
Bachelor's or higher	65.96945977
High school enrollment	100
Preschool enrollment	48.45374054
Transportation	—

Auto Access	37.4566919
Active commuting	25.81804183
Social	—
2-parent households	97.56191454
Voting	86.88566662
Neighborhood	—
Alcohol availability	82.80508148
Park access	2.194276915
Retail density	35.17259079
Supermarket access	45.92583087
Tree canopy	17.8108559
Housing	—
Homeownership	83.62633132
Housing habitability	22.35339407
Low-inc homeowner severe housing cost burden	25.38175286
Low-inc renter severe housing cost burden	6.274862056
Uncrowded housing	70.21686129
Health Outcomes	—
Insured adults	97.45925831
Arthritis	0.0
Asthma ER Admissions	80.6
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	94.6

Cognitively Disabled	39.7
Physically Disabled	49.3
Heart Attack ER Admissions	64.0
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	19.6
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	79.8
Elderly	0.9
English Speaking	70.5
Foreign-born	10.7
Outdoor Workers	98.2
Climate Change Adaptive Capacity	—
Impervious Surface Cover	47.2
Traffic Density	47.5
Traffic Access	23.0
Other Indices	—
Hardship	34.9
Other Decision Support	—

2016 Voting	92.5

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	7.00
Healthy Places Index Score for Project Location (b)	56.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	No
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Land Use	The residential development is proposed on 5-acres or 217,800 square feet of vacant land to include seven permanent three-story tall residential buildings, outdoor amenity space including a Community Center and swimming pool, and on-site parking. These on-site improvements are represented under "Residential" and "Parking" land uses. Given CalEEMod does not have a separate recreational land use for a community center, the facilities's 3,353 square feet are added to the total building area under "Residential". Similarly, the swimming pool square footage (948 sf) is added to the total building area for "Residential" because CalEEMod's recreational swimming pool land use only represents buildings associated with the land use, such as restrooms/changing rooms. The total lot acreage is modified to account for these added on-site usage (i.e., Community Center and swimming pool). Off-site development of Via

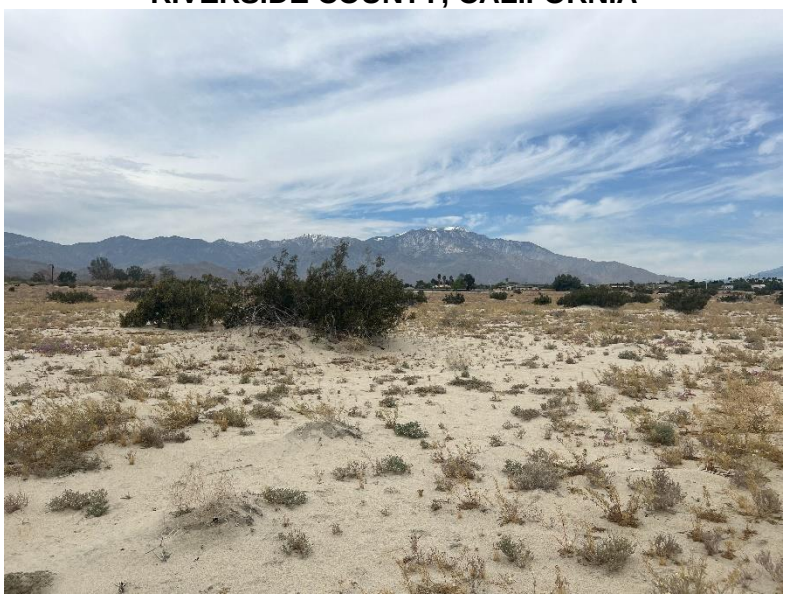
	Vail adjacent to the property's eastern frontage is proposed and reflect under "Linear" land use.
Construction: Construction Phases	The project is estimated to begin construction in February 2027 and be operation by 2029.
Operations: Vehicle Data	The Project-specific traffic report projects the residential development will generate 772 daily vehicle trips. To calculate weekday trips rate, daily vehicle trips were divided by "Apartment Mid Rise" size to generate a rate of 4.813 size per day.
Construction: Off-Road Equipment	"Other Construction Equipment" accounts for water trucks irrigating the site for dust control measures, pursuant to SCAQMD Rule 403. Adjusted CalEEMod construction equipment duration assuming that primary equipment operate an average of 7 hrs/day, material-handling equipment operate an avg. of 5 hrs/day, and other construction equipment operate an avg. of 3 hrs/day.
Construction: Dust From Material Movement	Development of the residential parcel would result in the export of 45,000 CY of material. Grading and excavation of Via Vail would result in a balanced site, meaning the amount of material imported and exported is the same.
Construction: Trips and VMT	The Project's total paved area is 2 acres for parking and 0.32 acres for Via Vail. The total paved area is then converted from ac to sf and multiplied by the average depth of pavement (0.25 ft). The value is converted to cubic yards and divided by CalEEMod default value of hauling trips (16 cubic yards per hauling trip). The total paving duration for parking and Via Vail is 75 days, which divides the total number of hauling trips, resulting in the Project generating 0.773 hauling trips per day during the two paving phases.
Operations: Hearths	None of the residential units would include a fireplace or wood stove.
Operations: Architectural Coatings	Added residential interior to reflect the total building area.

Appendix B
Biological Resources Assessment

VIA VAIL 3 PROJECT

Biological Resources Assessment & Coachella Valley Multiple Species Habitat Conservation Plan Compliance Report

RIVERSIDE COUNTY, CALIFORNIA



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Survey: May 2024

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1.0 INTRODUCTION

At the request of Terra Nova Planning and Research (Client), this biological resource assessment report (BRAR) was prepared by WSP USA Environment & Infrastructure Inc. (WSP) for the proposed Via Vail 3 Apartment Homes Project (project site/project), located in the city of Rancho Mirage, Riverside County., California. Information contained herein is intended to be used for compliance with the Coachella Valley Multiple Species Habitat Conservation Plan (CVMSHCP), California Environmental Quality Act (CEQA), as well as federal and California Endangered Species Acts.

2.0 PROJECT LOCATION / DESCRIPTION

The purpose of the proposed project is to development of apartment homes. To document the current biological resources within the project, a general biological resources assessment is required. This will provide a detailed assessment of the existing conditions. The project is located in Parcel 3, generally located north of B Street, southwest of Via Vail and east of Key Largo Avenue, in the city of Rancho Mirage, Riverside County. (Appendix A – Figure 1). Specifically, the project site is located within Section 30; Township 4 South; Range 6 East as shown on the United States Geological Survey (USGS) *Cathedral City*, California, 7.5-minute topographic quadrangle (Appendix A – Figure 2). The geographic coordinates near the approximate center of the project area are 33.795865° north latitude and -116.392824° west longitude. The elevation of the project site ranges from approximately 296 to 312 feet above mean sea level.

3.0 REGULATORY FRAMEWORK

3.1 Federal

Endangered Species Act (ESA) – The United States Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service are the designated federal agencies accountable for administering the ESA. The ESA defines species as “endangered” or “threatened” and provides regulatory protection at the federal level.

- Section 9 of the ESA prohibits the “take” of listed (i.e., endangered or threatened) species. The ESA’s definition of take is “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct.” Recognizing that take cannot always be avoided, Section 10(a) includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Specifically, Section 10(a) (1) (A) permits (authorized take permits) are issued for scientific purposes. Section 10(a) (1) (B) permits (incidental take permits) are issued for the incidental take of listed species that does not jeopardize the species.
- Section 7 (a) (2) requires federal agencies to evaluate the proposed project with respect to listed or proposed listed, species and their respective critical habitat (if applicable). Federal agencies must employ programs for the conservation of listed species and are prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its “critical habitat.”

As defined by the ESA, “individuals, organizations, states, local governments, and other non-federal entities are affected by the designation of critical habitat only if their actions occur on federal lands, require a federal permit, license, or other authorization, or involve federal funding.

Section 10(a) of the ESA authorizes the issuance of incidental take permits and establishes standards for the content of habitat conservation plans (see Section 3.3 below).

Migratory Bird Treaty Act (MBTA) – Treaties signed by the U.S., Great Britain, Mexico, Japan, and the countries of the former Soviet Union make it unlawful to pursue, capture, kill, and/or

possess, or attempt to engage in any such conduct to any migratory bird, nest, egg or parts thereof listed in the document. As with the ESA, the MBTA also allows the Secretary of the Interior to grant permits for the incidental take of these protected migratory bird species.

National Environmental Policy Act (NEPA) – If portions of a proposed project could fall under the jurisdiction of a federal agency (i.e., U.S. Bureau of Reclamation, U.S. Army Corps of Engineers) they are subject to environmental review pursuant to NEPA. NEPA establishes certain criteria that must be adhered to for any project that is "financed, assisted, conducted or approved" by a federal agency. The federal lead agency is required to "determine whether the proposed action will significantly affect the quality of the human environment."

Section 404 of the Clean Water Act – This section of the Clean Water Act, administered by the U.S. Army Corps of Engineers (USACE), regulates the discharge of dredged and fill material into "waters of the United States." The USACE has created a series of nationwide permits that authorize certain activities within waters of the U.S. provided that the proposed activity does not exceed the impact threshold of 0.5 acre for nationwide permits, takes steps to avoid impacts to wetlands and other designated U.S. waters where practicable, minimizes potential impacts to wetlands, and provides compensation for any remaining, unavoidable impacts through activities to restore or create wetlands. For projects that exceed the threshold for nationwide permits, individual permits under Section 404 can be issued. An inspection of the project site to determine presence or absence of potential jurisdictional wetlands and waters was conducted during the assessment for this project.

3.2 State

California Endangered Species Act (CESA) – This legislation is similar to the federal ESA, but it is administered by the California Department of Fish and Wildlife (CDFW – formerly Department of Fish and Game). The CDFW is authorized to enter into "memoranda of understanding" with individuals, public agencies, and other institutions to import, export, take, or possess state-listed species for scientific, educational, or management purposes. CESA prohibits the take of state-listed species except as otherwise provided in state law. Unlike the federal ESA, the CESA applies the take prohibitions to species currently petitioned for state-listing status (candidate species). State lead agencies are required to consult with CDFW to ensure that actions are not likely to jeopardize the continued existence of any state-listed species or result in the destruction or degradation of occupied habitat.

California Environmental Quality Act (CEQA) – The basic goal of CEQA is to maintain a high-quality environment now and in the future. The specific goals are for California's public agencies to:

1) identify the significant environmental effects of their actions; and, either
2) avoid those significant environmental effects, where feasible; or
3) mitigate those significant environmental effects, where feasible.

CEQA applies to "projects" proposed to be undertaken or requiring approval by state and local government agencies. Projects are activities that have the potential to have a physical impact on the environment and may include the enactment of zoning ordinances, the issuance of conditional use permits and the approval of tentative subdivision maps. Where a project requires approvals from more than one public agency, CEQA requires one of these public agencies to serve as the "lead agency."

A "lead agency" must complete the environmental review process required by CEQA. The most basic steps of the environmental review process are to:

4) Determine if the activity is a "project" subject to CEQA.

5) Determine if the "project" is exempt from CEQA.
6) Perform an Initial Study to identify the environmental impacts of the project and determine whether the identified impacts are "significant". Based on its findings of "significance", the lead agency prepares one of the following environmental review documents:
    a) Negative Declaration if it finds no "significant" impacts.
    b) Mitigated Negative Declaration if it finds "significant" impacts but revises the project to avoid or mitigate those significant impacts.
    c) Environmental Impact Report (EIR) if it finds "significant" impacts.

While there is no ironclad definition of "significance", Article 5 of the State CEQA Guidelines (California Natural Resources Agency 2014) provides criteria to lead agencies in determining whether a project may have significant effects.

The Native Plant Protection Act (NPPA) – The NPPA includes measures to preserve, protect, and enhance rare and endangered native plant species. Definitions for “rare and endangered” are different from those contained in CESA. However, the list of species afforded protection in accordance with the NPPA includes those listed as rare and endangered under CESA. NPPA provides limitations on take as follows: “no person will import into this state, or take, possess, or sell within this state” any rare or endangered native plants, except in accordance with the provisions outlined in the act. If a landowner is notified by CDFW, pursuant to section 1903.5 that a rare or endangered plant is growing on their property, the landowner shall notify CDFW at least 10 days prior to the changing of land uses to allow CDFW to salvage the plants.

Natural Community Conservation Planning (NCCP) Program – A NCCP, which is managed by the CDFW, is intended to conserve multiple species and their associated habitats, while also providing for compatible use of private lands. Through local planning, the NCCP planning process is designed to provide protection for wildlife and natural habitats before the environment becomes so fragmented or degraded by development that species listing are required under CESA. Instead of conserving small, often isolated “islands” of habitat for just one listed species, agencies, local jurisdictions, and/or other interested parties have an opportunity through the NCCP to work cooperatively to develop plans that consider broad areas of land for conservation that would provide habitat for many species. Partners enroll in the programs, and by mutual consent, areas considered to have high conservation priorities or values are set aside and protected from development. Partners may also agree to study, monitor, and develop management plans for these high value “reserve” areas. The NCCP provides an avenue for fostering economic growth by allowing approved development in areas with lower conservation value. The project site is in a combined Habitat Conservation Plan (HCP) / NCCP, see Section 3.3.

Sections 1600-1603 of the State Fish and Game Code – The California Fish and Game (Wildlife) Code, pursuant to Sections 1600 through 1603, regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife resources. Under state code, CDFW jurisdiction is assessed in the field based on one, or a combination, of the following criteria:

7) At minimum, intermittent, and seasonal flow through a bed or channel with banks and that also supports fish or other aquatic life.
8) A watercourse having a surface or subsurface flow regime that supports or that has supported riparian vegetation.
9) Hydrogeomorphically distinct top-of-embankment to top-of-embankment limits.
10) Outer ground cover and canopy extents of, typically, riparian associated vegetation species that would be sustained by surface and/or subsurface waters of the watercourse.

The CDFW requires that public and private interests apply for a "Streambed Alteration Agreement" for any project that may impact a streambed or wetland. The CDFW has maintained a "no net loss" policy regarding impacts to streams and waterways and requires replacement of lost habitats on at least a 1:1 ratio.

Section 2081 of the State Fish and Game Code – Under Section 2081 of the California Fish and Game Code, the CDFW authorizes individuals or public agencies to import, export, take, or possess state endangered, threatened, or candidate species in California through permits or memoranda of understanding. These acts, which are otherwise prohibited, may be authorized through permits or "memoranda of understanding" if (1) the take is incidental to otherwise lawful activities, (2) impacts of the take are minimized and fully mitigated, (3) the permit is consistent with regulations adopted in accordance with any recovery plan for the species in question, and (4) the applicant ensures suitable funding to implement the measures required by the CDFW. The CDFW shall make this determination based on the best scientific information reasonably available and shall include consideration of the species' capability to survive and reproduce.

Section 3505.5 of the State Fish and Game Code – This section makes it unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds-of-prey, e.g.: owls, hawks, eagles, etc.) or to take, possess, or destroy the nest or eggs of any bird-of-prey.

Clean Water Act – The Regional Water Quality Control Board (RWQCB) regulates activities pursuant to Section 401(a)(1) of the Clean Water Act (CWA). Section 401 of the CWA specifies that certification from the State is required for any applicant requesting a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities that may result in any discharge into navigable waters. Through the Porter Cologne Water Quality Control Act, the RWQCB asserts jurisdiction over Waters of the State of California (WSC) which is generally the same as WUS but may also include isolated waterbodies. The Porter Cologne Act defines WSC as "surface water or ground water, including saline waters, within the boundaries of the state".

3.3 Coachella Valley Multiple Species Habitat Conservation Plan

Finalized in October 2008, and amended in 2016, the CVMSHCP is a comprehensive regional plan that addresses the conservation needs of 27 species of native flora and fauna and 24 natural vegetation communities occurring throughout the Coachella Valley region of western Riverside County, California. Permits for the CVMSHCP were issued by the CDFW on September 9, 2008 and the United States Fish and Wildlife Service (USFWS) on October 1, 2008 (TE104604-0). Managed by the Coachella Valley Conservation Commission (CVCC), CVMSHCP participants include Riverside County, the Cities of Cathedral City, Coachella, Desert Hot Springs, Indian Wells, Indio, La Quinta, Palm Desert, Palm Springs, Rancho Mirage, as well as the Coachella Valley Association of Governments (CVAG), Coachella Valley Water District, Imperial Irrigation District, Mission Springs Water District and the California Department of Transportation (CVAG 2008, 2016).

The CVMSHCP serves two primary purposes: Balancing environmental protection and economic development objectives in the CVMSHCP planning area and simplifying compliance with endangered species related laws. The CVMSHCP accomplishes this by conserving unfragmented habitat to permanently protect and secure viable populations of the covered 27 species within the planning area. The covered species include those plants and animals that are either currently listed as threatened or endangered, are proposed for listing, or are believed by an appointed Scientific Advisory Committee, USFWS and CDFW, to have a high probability of being proposed for listing in the future if not conserved by the CVMSHCP. The goal of the CVMSHCP is to meet the requirements of the ESA and CESA, while at the same time allowing for the economic growth (land development) within the plan area without significant delay or hidden

costs. Under the CVMSHCP, land development/mitigation fees are collected from all new development projects occurring in the plan area. The purpose of this fee is to support the assembly of a preserve system for the covered species and natural vegetation communities within areas identified as having high conservation value (CVAG 2008).

4.0 METHODS

4.1 Literature Review

In preparation for the field surveys, a literature search was conducted to identify special status biological resources known from the vicinity of the project site. In the context of this report, and for the purpose of this assessment, vicinity is defined as areas within a 5-mile radius of the project site.

The literature search included a review of the following documents:

- California Natural Diversity Data Base (CNDDB) RareFind 5 (CDFW 2024a)
- Special Animals List (CDFW 2024b)
- California Native Plant Society's (CNPS) Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2023a)
- CVMSHCP (CVAG 2008)
- United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). 2024. Web Soil Survey
- USGS 7.5' *Cathedral City.* quadrangle (USGS 2021)

Scientific nomenclature for this document follows standard reference sources: For plant communities, CVMSHCP (CVAG 2008), Sawyer et. al (2009), and/or Holland (1986); for flora, Jepson eFlora (2022) and the USDA NRCS PLANTS Database (2022); for amphibians, reptiles, and mammals, CDFW (2016); and for birds, California Bird Records Committee (2022).

4.2 Field Assessment

The field assessment was conducted on 18 April 2024 by WSP Senior Wildlife Biologist Dale Hameister. On-site suitable habitat was assessed based on the presence of constituent habitat elements (e.g., soils, vegetation, and topography) characteristic of the potentially occurring special status biological resources determined by the literature review. The entire site and adjacent properties were also assessed for burrowing owl (*Athene cunicularia*). Inaccessible areas were scanned for burrowing owl habitat and sign (i.e., burrows & perches with whitewash) with binoculars. All on-site flora and fauna observed or otherwise detected (e.g., vocalizations, presence of scat, tracks, and/or bones) during the assessment were recorded in field notes and are included in Appendix B. General weather and site conditions were also recorded at the beginning and end of the survey. Temperatures and wind speeds were recorded with a handheld Kestrel 2000 anemometer. Percent cloud cover was visually estimated.

5.0 RESULTS

The project site contains sandy soils the entire site comprises of highly disturbed creosote scrub. There is an active dog park to the west and a commercial development to the north of the project site. There is a small amount of undeveloped land to the south and east with residential development beyond. MPeople were observed using the project site to walk their dogs and let them run off leash. Representative site photos are included in Appendix C.

5.1 Coachella Valley Multiple Species Habitat Conservation Plan

The project site is located within the CVMSHCP fee area and the but is not located within or adjacent to any Conservation Areas (Figure 4, Appendix A). The development of the project site

will have no effect on any CVMSHCP Conservation Areas. The project site is 2.2 miles southeast of the Thousand Palms Conservation Area.

5.2 Weather Conditions

Weather conditions during the field assessment were clear and warm. There was 40% cloud cover with temperatures that ranged from 78 to 84 degrees Fahrenheit. Winds were calm with wind speeds measured between 0 to 2 miles per hour.

5.3 Topography and Soils

The project site is very sandy and relatively flat with small undulating hills. One soil type, Myoma fine sand has been mapped on the project site. (USDA, NRCS. 2024) (Appendix A - Figure 3).

Typically, Myoma soils are light olive gray, moderately alkaline fine and very fine sands to a depth of about 31 inches. Below 31 inches they are strongly alkaline very fine sands.

The site does not contain active sand dunes or clay lenses.

5.4 Vegetation

The project site consists of sparse and disturbed creosote scrub. The entire property shows signs of disturbance including tire tracks, dog prints and scat, trash, and human footprints. Shrubs observed include creosote bush (*Larrea tridentata*), four-wing saltbush (*Atriplex canescens*), and dyebush (*Psorothamnus emoryi*). Annual species observed include desert dicoria (*Dicoria canescens*), Spanish needles (*Palafoxia arida*), narrow leaved forget me not (*Johnstonella angustifolia*), fanleaf crinklemat (*Tiquilia plicata*), Sahara mustard (*Brassica tournefortii),* old han schismus (*Schismus barbatus*).

5.5 Wildlife

Vertebrate wildlife directly observed and/or detected otherwise (e.g., scat, bones, tracks, feathers, burrows, etc.) were typical to species common to the region (Appendix B). This included some species common to desert scrub and/or developed areas of Coachella Valley. Wildlife observed onsite includes American crow (*Corvus brachyrhynchos*), house finch (*Haemorhous mexicanus*), verdin (*Auriparus flaviceps*), and Say's phoebe (*Sayornis saya*).

The number of species detected does not represent the total number of species that may occur on the project site. Brief, one visit assessments are limited by the seasonal timing and short duration of the survey period as well as the nocturnal, fossorial and/or migratory habits of many animals. It had rained the night before the survey, so the sandy surface was wet. There was not much evidence of rodent burrows as the sandy nature of the site would not provide a good burrowing substrate. No actively nesting birds were detected on or adjacent to the site during the assessment.

5.6 Special Status Biological Resources

Some plant and/or animal taxa are designated as having special status due to declining populations, limited geographic distributions and/or vulnerability to climate change, habitat loss and/or fragmentation. Some have been listed as threatened or endangered by the USFWS or by the CDFW and are protected by the federal and state ESAs. Others have been identified, and are managed as sensitive by the USFWS, CDFW, or by private conservation organizations, including the CNPS, but have not been formally listed as threatened or endangered. Impacts to such species can still be considered significant under the CEQA, if not avoided, minimized and/or mitigated by specific project design and implementation.

The literature review and field visit resulted in a list of 36 special status biological resources which occur or potentially occur on the project site and/or vicinity (5-mile radius) of the project site.

Tables 1-5 provide a summary of these resources, their current conservation status, habitat associations and potential to occur on the project site. No species listed as threatened or endangered were observed on the site.

Table 1. Special Status Plant Species

Species	Protective Status	Habitat	Flowering Period	Occurrence Probability
Abronia villosa var. *aurita* **chaparral sand-verbena**	F: None C: None CNPS: List 1B.1 State Rank: S2 MSHCP: No	Sandy areas in chaparral and coastal sage scrub, dunes; 75-1600 m (246-5249 ft.) above mean sea level (AMSL).	January - August	**Absent** Chaparral and sage scrub habitats lacking. Records within the region may be erroneous, misidentifications of common subspecies. The common subs species is present. Taxonomy of species is questionable [A. Sanders pers. com]
Astragalus lentiginosus var. *coachellae* **Coachella Valley milkvetch**	F: END C: None CNPS List: 1B.2 State Rank: S1 MSHCP: Yes	Sandy flats, washes, alluvial fans, sand field, dunes and dune edges; windblown sand deposits 40-655 m (131-2182 ft.) AMSL, a CA endemic.	February - May	**Low** Aeolian [wind-deposited] sand habitat is present, but highly disturbed and isolated. Records in the vicinity include one from the 1990s and the remaining from 1975. Not observed during the survey.
Astragalus tricarinatus **triple-ribbed milkvetch**	F: END C: None CNPS List: 1B.2 State Rank: S2 MSHCP: Yes	Sandy or gravelly areas in Joshua tree woodland & Sonoran desert scrub, 450-1,190 m (1,476-3,904 ft.) AMSL.	February - May	**Absent** Habitat potentially suitable but site is below elevation for this species.
Chorizanthe xanti var. *leucotheca* **white-bracted spineflower**	F: None C: None CNPS List: 1B.2 State Rank: S3 MSHCP: No	Sandy or gravelly areas in Mojave desert scrub, pinyon-juniper woodland, and coastal scrub; 300-1200 m (984-4003 ft.) AMSL.	April - June	**Absent** Habitat lacking
Euphorbia misera **cliff spurge**	F: None C: None CNPS List: 2B.2 State Rank: S2 MSHCP: No	Rocky coastal bluff, coastal scrub, Mojave scrub; 10-500 m (33-1640 ft) AMSL.	December - October	**Absent** Rocky coastal bluff and Mojave Desert scrub habitat [cliffs] lacking on-site, known from adjacent steep cliffs of Whitewater Cyn. This population has declined over the years and may now be extirpated. Only a single individual found during most recent survey [CNPS 2018, CCH 2018, A. Sanders pers. com.]

Imperata brevifolia **California satintail**	F: None C: None CNPS List: 2B.1 State Rank: S3 MSHCP: No	Coastal scrub, chaparral, riparian scrub, Mojave scrub, meadows and seeps; 0-1215 m (0-3986 ft.) AMSL.	September - May	**Absent** No suitable moist habitat onsite
Nemacaulis denudata var. *gracilis* **slender cottonheads**	F: None C: None CNPS: List 2B.2 State Rank: S2 MSHCP: No	Coastal and desert dunes, in Sonoran Desert scrub (sandy); -50 to 400 m (164-1312 ft.) AMSL.	April – May (rarely March)	**Low** Habitat marginal, sandy soils are present, 1948 CNDDB record is ~4 mi. W of the site, along Hwy. 111
Penstemon pseudospectabilis ssp. *pseudospectabilis* **desert beardtongue**	F: None C: None CNPS List: 2B.2 State Rank: S3 MSHCP: No	Sandy or rocky washes in Mojave Desert scrub and Sonoran desert scrub; 80-1953 m (262 – 6407 ft.) AMSL.	January - May	**Absent** No suitable habitat
Petalonyx linearis **narrow-leaf sandpaper-plant**	F: None C: None CNPS List: 2B.3 State Rank: S3? MSHCP: No	Sandy or rocky canyons in Mojave and Sonoran desert scrubs	(Jan-Feb)Mar-May(Jun-Dec)	**Absent** Closest CNDDB record is ~5 mi. NE. of site and is from 1879.
Saltugilia latimeri **Latimer's woodland-gilia**	F: None C: None CNPS: List 1B.2 Global Rank: G3 State Rank: S3 MSHCP: No	Rocky, sandy, often granitic, sometimes washes in chaparral, Mojave desert scrub, pinyon and juniper woodland; 400-1900 m (1312-6234 ft) AMSL.	March-June	**Absent** (Suitable habitat lacking, site below known elevational range of species)
Selaginella eremophila **desert spike-moss**	F: None C: None CNPS: List 2B.2 State Rank: S2S3 MSHCP: No	Shaded areas in crevices among rocks or on gravelly soils in Sonoran desert scrub; 200-900 m (656-2953 ft.) AMSL.	June	**Absent** (Site is fully exposed to sun, shaded areas very limited)

Table 2. Special Status Vegetation Communities

Community	Protective Status (F=Federal, C=California)	Occurrence Probability
Desert Fan Palm Oasis Woodland	F: ND C: ND State rank: S3.2 CVMSHCP: No	**Absent** This habitat is not present on project site.
Southern Riparian Forest	F: ND C: ND State rank: S4 CVMSHCP: No	**Absent** This habitat is not present on project site.

Table 3. Special Status Invertebrates

Species	Protective Status (F=Federal, C=California)	Habitat	Occurrence Probability
Bombus crotchii **Crotch's bumble bee**	F: C C: C - END State Rank: S2 CVMSHCP: No	Mainly coastal California east to the Sierra-Cascade Crest and south into Baja.	**Absent** Most records are from cismontane (coastal and inland valley) California. Not expected on this site unless there were sufficient flowering plants favored by this species.
Dinacoma caseyi **Casey's June beetle**	F: END C: None State rank: S1 MSHCP: No	Known from only two main populations in the southern Palm Springs area, generally associated with Palm Canyon Wash and its associated floodplain. Needs soils that are not too rocky or compacted and difficult to burrow in.	**Absent** The site is 4.8 miles E of the currently known range of the species. Site is not located within the historic range of the species.
Danaus plexippus **Monarch Butterfly**	F: C C: CSC State Rank: S2S3 CVMSHCP: No	Can be found in a variety of areas where milkweed and flowering plants are present; milkweeds are necessary for breeding	**Absent** No milkweed present on-site. Very little remaining vegetation for nectar sources.
Macrobaenetes valgum **Coachella giant sand treader cricket**	F: None C: None State rank: S1S2 MSHCP: Yes	Wind-deposited sand dune ridges, winter rains somewhat regulate abundance	**Low** Habitat at site is marginal, very limited loose wind-deposited sand areas. Area is highly disturbed.
Stenopelmatus cahuilaensis **Coachella Valley Jerusalem cricket**	F: None C: None State rank: S1S2 MSHCP: Yes	Sand dune and sand field habitats, in the vicinity of the north base of the San Jacinto Mountains	**Low** Habitat at site is marginal, very limited loose wind-deposited sand areas. Area is highly disturbed.

Table 3. Special Status Amphibians & Reptiles

Species	Protective Status (F=Federal, C=California)	Habitat	Occurrence Probability
Anniella stebbinsi **southern California legless lizard**	F = None C = SSC NDDB Element Rank: Global = G3 State = S3 MSHCP = No	Occurs in a variety of habitats, but seems to prefer areas with loose, moist soils (high moisture content).	**Low** Some potential habitat onsite, although soil moisture is likely low

Gopherus agassizi **desert tortoise**	Fed: THR Cal: THR NDDB Element Rank: Global = G3 State = S2S3 MSHCP = Yes (Conserved Habitat on-site for this species)	Various desert communities and habitats (Mojave creosote bush scrub, Joshua tree woodland, saltbush scrub); washes, arroyos, bajadas, rocky hillsides, open flat desert	**Absent** Fine sandy soils and disturbed and isolated nature of site are not suitable habitat. Soil type would not be suitable for burrows.
Phrynosoma mcallii Flat-tailed horned lizard	F: ND C: SSC State rank: S2 CVMSHCP: Yes	Fine sand in desert washes and flats with vegetative cover and ants, generally below 600 feet elevation in Riverside, San Diego, and Imperial Counties.	**Absent** Habitat marginal and poor quality, sandy areas are surrounded by development and have been highly disturbed. CNDDB records in vicinity are historic and have been mostly developed.
Uma inornata **Coachella Valley fringe-toed lizard**	F = THR C = END NDDB Element Rank: Global = G1Q State = S1 CVMSHCP = Yes	Restricted to sandy areas in the Coachella Valley; requires fine, loose, windblown sand interspersed with hardpan and widely spaced desert shrubs	**Absent** Although loose sandy soils are present, the site is isolated and disturbed. Records in the vicinity are from the 1994 and 1975.

Table 4. Special Status Birds

Species	Status	Habitat	Probability
Aquila chrysaetos **golden eagle**	F: None C: FP,WL NDDB Element Rank: State Rank: S3 Global: G5 MSHCP: No	Forages over rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons used for nesting, sometimes large trees in open areas	Nesting: **Absent** (Project site does not support nesting habitat. Foraging: **Low** (Do not forage in urban areas frequently)
Athene cunicularia **burrowing owl**	F = BLM Sensitive, BCC C = SSC (burrows) NDDB Element Rank: Global: G4 State: S3 MSHCP: Yes	Open, dry annual or perennial grassland, deserts & scrublands characterized by low-growing vegetation	Nesting: **Absent** No suitable burrows were observed. Foraging: **Low** Foraging habitat is available onsite and on adjacent properties, however the project site is isolated from other open areas and the site has a high level of dog activity which would discourage owls.

Table 4. Special Status Birds

Species	Status	Habitat	Probability
Dendroica petechia **yellow warbler**	F: MBTA, BCC C: SSC (nesting), F&G Code NDDB Element Rank: Global: G5 State: S3S4 MSHCP: Yes	Riparian forest and woodland; nests along Mojave River, Santa Ana River, Kern River, and many others in s. Calif.	Nesting: **Absent** No suitable habitat. Foraging: **Low** No suitable habitat.
Empidonax traillii extimus ***southwestern willow flycatcher***	F: END (subspecies), MBTA C: END (full species), F&G Code NDDB Element Rank: Global: G5T2 State: S1 MSHCP: Yes	Riparian woodlands	Nesting: **Absent** habitat lacking Foraging: **Absent** habitat lacking
Falco mexicanus **prairie falcon**	F = None, BCC C = WL NDDB Element Global = G5 State = S4 MSHCP = No	Breeding sites located on cliffs, forages far afield even to marshlands and ocean shores	Nesting: **Absent** (habitat lacking) Foraging: **Low** may forage over site
Lanius ludovicianus **loggerhead shrike**	F: MBTA, BCC C: SSC (nesting), F&G Code NDDB Element Rank: Global = G4 State = S4 MSHCP = No	Associated with a variety of vegetation communities including creosote bush scrub, Joshua tree woodland. Nests in trees and shrubs.	Nesting: **Low** low amount of nesting habitat on site Foraging: **High** (common in region)
Toxostoma lecontei **Le Conte's thrasher**	F = BLM Sensitive, BCC C = SSC (San Joaquin population only) NDDB Element Ranks: Global = G4 State = S3 MSHCP = Yes (Other Conserved Habitat and modeled habitat on-site for this species)	Desert resident, primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats; commonly nests in a dense, spiny shrub or densely branched cactus in desert wash habitat, usually 2-8 feet above ground	Nesting: **Absent** (Dense, spiny shrubs lacking onsite Foraging: **Low** spiny shrubs lacking onsite
Vireo bellii pusillus **least Bell's vireo**	F: END (nesting), MBTA C: END (nesting), F&G Code NDDB Element Ranks: Global = G5T2 State = S2 MSHCP = Yes	Willow riparian woodlands	Nesting: **Absent** habitat lacking Foraging: **Absent** habitat lacking

Table 5. Special Status Mammals

Species	Status	Habitat	Probability
Chaetodipus fallax pallidus **pallid San Diego pocket mouse**	F = None C = SSC NDDB Element Global = G5T34 State = S3S4 MSHCP = No	Desert border areas in desert wash, desert scrub, desert succulent scrub, pinon-juniper, etc.; sandy herbaceous areas usually in association with rocks or coarse gravel.	**Low** Onsite habitat is marginal and contains no rocky areas.
Corynorhinus townsendii **Townsend's big-eared bat**	F = None C = SSC NDDB Element Global = G3G4 State = S2 WBWG = H MSHCP = No	Generally viewed as a cave-dwelling species, but the western subspecies are also found on/in human-made structures (e.g. old mine workings and buildings). Roosts in open but extremely sensitive to human disturbance.	Roosting: **Absent** (roosting habitat not present) Foraging: **Low** Unlikely to forage due to disturbance and adjacent development.
Neotoma lepida intermedia **San Diego desert woodrat**	F = None C = SSC NDDB Element Global = G5T3T4 State = S3S4 MSHCP = No	The most common habitats are chaparral, coastal sage scrub (including Riversidean sage scrub and Diegan coastal sage scrub) and grassland, although this subspecies also occurs in desert habitats.	**Absent** No nests were observed onsite
Ovis canadensis nelsoni pop. 2 **Peninsular bighorn sheep DPS**	F = END C = THR NDDB Element Global = G4T3Q State = S1 MSHCP = Yes	Optimal habitat includes steep-walled canyons and ridges bisected by rocky or sandy washes with available water.	**Absent** Outside of species range and no habitat present
Perognathus longimembris bangsi **Palm Springs pocket mouse**	F = BLM Sensitive C = SSC NDDB Element Global = G5T2 State = S2 MSHCP = Yes (modeled habitat present)	Desert scrub, sandy, loosely-packed soils.	**Low** Sandy areas present onsite. The project site is isolated from other open areas and the site has a high level disturbance and dog activity
Xerospermophilus tereticaudus **Coachella Valley (Palm Springs) round-tailed ground squirrel**	F = BLM Sensitive C = SSC NDDB Element Global = G5T2Q State = S2 MSHCP = Yes (modeled habitat present)	Sand fields, dunes and hummocks in Sonoran creosote bush scrub, mesquite, saltbush and desert sink scrub. Also may occur in course sandy and pebbly alluvial substrates along washes.	**Low** Sandy areas present onsite. The project site is isolated from other open areas and the site has a high level disturbance and dog activity. CNDDB record from less than 1 mi. NW of site but is from 1954. No potential burrows observed.

Definitions of occurrence probability:

Occurs: Observed on the site by WSP personnel or recorded on-site by other qualified biologists.

High: Observed in similar habitat in region by qualified biologists, or habitat on the site is a type often utilized by the species and the site is within the known range of the species.

Moderate: Reported sightings in surrounding region, or site is within the known range of the species and habitat on the site is a type occasionally used by the species.

Low: Site is within the known range of the species but habitat on the site is rarely used by the species.

Very Low: Species not expected on site, but can not be completely ruled out.

Absent: A focused study failed to detect the species, or no suitable habitat is present.

Definitions of status designations and occurrence probabilities.
Federal designations: (federal Endangered Species Act, US Fish and Wildlife Service):

- END: Federally listed, Endangered.
- THR: Federally listed, Threatened.
- BCC: Bird of Conservation Concern
- C: Candidate for Federal listing
- ND: Not designated.

State designations: (California Endangered Species Act, California Dept. of Fish and Game)

- END: State listed, Endangered.
- THR: State listed, Threatened.
- C: Candidate for State listing
- RARE: State listed as Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
- SSC: Species of Special Concern.
- WL: Watch List Species.
- ND: Not designated.

CDFW CNDDB rankings: Animals
S1 = Extremely endangered: <6 viable occurrences or <1,000 individuals, or < 2,000 acres of occupied habitat
S2 = Endangered: about 6-20 viable occurrences or 1,000 - 3,000 individuals, or 2,000 to 10,000 acres of occupied habitat
S3 = Restricted range, rare: about 21-100 viable occurrences, or 3,000 – 10,000 individuals, or 10,000 – 50,000 acres of occupied habitat
S4 = Apparently secure; some factors exist to cause some concern such as narrow habitat or continuing threats
S5 = Demonstrably secure; commonly found throughout its historic range
SH = all sites are historical, this species may be extinct, further field work is needed

CDFW CNDDB rankings: Plants and Vegetation Communities
S1 = Less than 6 viable occurrences OR less than 1,000 individuals OR less than 2,000 acres
S1.1 = very threatened
S1.2 = threatened
S1.3 = no current threats known
S2 = 6-20 viable occurrences OR 1,000-3,000 individuals OR 2,000-10,000 acres
S2.1 = very threatened
S2.2 = threatened
S2.3 = no current threats known
S3 = 21-80 viable occurrences or 3,000-10,000 individuals OR 10,000-50,000 acres
S3.1 = very threatened
S3.2 = threatened
S3.3 = no current threats known
S4 = Apparently secure within California; this rank is clearly lower than S3, but factors exist to cause some concern. i.e., there is some threat, or somewhat narrow habitat.
S5 = Demonstrably secure to ineradicable in California.

California Native Plant Society (CNPS) designations:
California Rare Plant Ranks (CRPR) Note: According to the CNPS (http://www.cnps.org/programs/Rare_Plant/inventory/names.htm), ALL plants on Lists 1A, 1B, 2A, and 2B meet definitions for state listing as threatened or endangered under Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code. Certain plants on Lists 3 and 4 do as well.
The CDFW (http://www.dfg.ca.gov/hcpb/species/t_e_spp/nat_plnt_consv.shtml) states that plants on Lists 1A, 1B, 2A, and 2B of the CNPS Inventory consist of plants that may qualify for listing, and recommends they be addressed in CEQA projects (CEQA Guidelines Section 15380). However, a plant need not be in the Inventory to be considered a rare, threatened, or endangered species under CEQA. In addition, CDFW recommends, and local governments may require, protection of plants which are regionally significant, such as locally rare species, disjunct populations of more common plants, or plants on the CNPS Lists 3 and 4.
List 1A: Plants presumed extinct in California.
List 1B: Plants rare and endangered in California and throughout their range.
List 2A: Plants presumed extirpated in California, but more common elsewhere.
List 2B: Plants rare, threatened, or endangered in California, but more common elsewhere.
List 3: Plants for which more information is needed.
List 4: Plants of limited distribution; a "watch list."

CA Endemic: Taxa that occur only in California
CNPS Threat Code:
.1 - Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
.2 – Fairly endangered in California (20-80% occurrences threatened)
.3 – Not very endangered in California (<20% of occurrences threatened, or no current threats known)
Note: All List 1A (presumed extinct in California) and some List 3 (need more information- a review list) plants lacking any threat information receive no threat code extension. Also, these Threat Code guidelines represent a starting point in the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Code.

Western Bat Working Group (WBWG) designations:
The Western Bat Working Group is comprised of agencies, organizations and individuals interested in bat research, management and conservation from the 13 western states and provinces. Its goals are (1) to facilitate communication among interested parties and reduce risks of species decline or extinction; (2) to provide a mechanism by which current information on bat ecology, distribution and research techniques can be readily accessed; and (3) to develop a forum to discuss conservation strategies, provide technical assistance and encourage education programs.
H: High: Species which are imperiled or are at high risk of imperilment based on available information on distribution, status, ecology and known threats.
M: Medium: Species which warrant a medium level of concern and need closer evaluation, more research, and conservation actions of both the species and possible threats. A lack of meaningful information is a major obstacle in adequately assessing these species' status and should be considered a threat.
L: Low: Species for which most of the existing data support stable populations, and for which the potential for major changes in status in the near future is considered unlikely. There may be localized concerns, but the overall status of the species is believed to be secure. Conservation actions would still apply for these bats, but limited resources are best used on High and Medium status species.
P: Periphery: This designation indicates a species on the edge of its range, for which no other designation has been determined.

CVMSHCP designations
Yes: Conserved by the CVMSHCP
No: Not Specifically Conserved by the CVMSHCP
C: Considered, but not included in the CVMSHCP

5.7 Discussion of the Special-status Species Tables

Based on examination of historic aerial photography of the site (on Google Earth Pro), the California fan palm oasis and southern riparian forest are not present at the site or within the vicinity.

5.7.1 CVMSHCP Covered Species

Nineteen of the species listed in Tables 1 – 3 are conserved under the CVMSHCP: Coachella Valley milk-vetch, triple-ribbed milk-vetch, Mecca aster, Little San Bernardino Mountains linanthus, Coachella giant sand treader cricket, Coachella Valley Jerusalem cricket, desert pupfish, desert tortoise, flat-tailed horned lizard, Coachella Valley fringe-toed lizard, burrowing owl, Southwestern willow flycatcher, crissal thrasher Le Contes' thrasher, Least Bell's vireo, western yellow bat, Palm Springs pocket mouse, Coachella Valley (Palm Springs) round-tailed ground squirrel, and Peninsular bighorn sheep. Six of these species are expected to have at least a low to very low probability of occurring on the project site. These include Coachella Valley milk-vetch, Coachella giant sand treader cricket, Coachella Valley Jerusalem cricket, burrowing owl, Palm Springs pocket mouse, and Coachella Valley (Palm Springs) round-tailed ground squirrel. Participation in the CVMSHCP, and participation in the plan, if required will fully mitigate project related impacts (although none are anticipated) to all of these CVMSHCP covered species with the exception of burrowing owl.

No burrows suitable for burrowing owl use were observed on or adjacent to the project site. Where accessible, adjacent vacant lands were surveyed within 500 feet of the site. No burrowing owls, their sign, or burrows capable of supporting owls were observed in this buffer area. The burrowing owl is not listed as threatened or endangered by the USFWS or CDFW. It is, however, managed as a Bird of Conservation Concern (BCC) by the USFWS and designated as a SSC by the CDFW. It is also protected from take by the MBTA and California Fish and Game Code. The burrowing owl is a covered species under the CVMSHCP, however the federal permit for the CVMSHCP does not allow take of this species under the MBTA. For these reasons, all burrowing owls must be avoided or relocated prior to any ground disturbing activities. No burrowing owls, owl sign, or suitable burrows were observed during the survey.

5.7.2 Potentially Occurring Species Not Covered Under the CVMSHCP and USFWS IPAC Species

Seven special status species that are not covered by the CVMSHCP are considered to have at least some potential (low to very low) to occur on or forage over the project site. Prairie falcon are expected to have a low probability to forage over the site (although this would be rare given the developed nature of the site and surrounding area). Prairie falcon is not listed as threatened or endangered by either State or Federal agencies but is considered a "Species of Special Concern" by the California Department of Fish and Wildlife. Slender cottonheads are expected to have a low probability of growing on this site. Slender cottonheads were not observed during the survey. This plant species is not listed as threatened or endangered and are generally not expected to occur on the site. Still, they could not be absolutely ruled out due to presence of marginally suitable habitat and the seasonal timing of the site visit.

The USFWS IPAC report generated for this project lists five sensitive wildlife species and one plant as having potential to be affected by development of this project. As discussed in Tables 1 – 3 in Section 5.6, none of the listed species are expected to occur onsite. Monarch butterflies require milkweeds for larval development and other flowering plants for adult nectar sources. No milkweed plants were observed on the site. There is no quality habitat present for desert tortoise

due to the sandy nature of the soil which do not provide good burrowing substrate as well as the high level of disturbance. Suitable habitat for Coachella Valley fringe-toed lizard is present, however the site is highly disturbed and isolated from other open areas. The most recent record in the areas for Coachella Valley fringed-toed lizard are from 1994. Least Bell's vireo is absent from the site due to a lack of any suitable riparian habitat.

6.0 DISCUSSION

The proposed project includes the permanent disturbance of approximately 5 acres of disturbed creosote scrub to build apartment homes.

6.1 Protection of Nesting Birds

All native bird species that are excluded from coverage under the CVMSHCP are still protected by the MBTA and the state Fish and Game Code. This includes virtually all native migratory and resident bird species. Avoidance of impacts to these birds is a requirement of the federal permit issued for the CVMSHCP. To avoid impacting nesting birds either avoidance of project-related disturbance during the nesting season, nesting bird surveys should be conducted by a qualified ornithologist or biologist immediately prior to on-site disturbance. If nesting birds are found, no work would be permitted near the nest until young have fledged. There is no established protocol for nest avoidance, however, when consulted the CDFW generally recommends avoidance buffers of about 500 feet for birds-of-prey and species listed as threatened or endangered, and 100–300 feet for unlisted songbirds.

6.2 Burrowing Owl

As noted above, no burrowing owls or their sign were present on site. Also, no burrows or burrow surrogates that could be used by burrowing owls were present on the site at the time of this survey. This species nests and roosts underground so is uniquely vulnerable to ground disturbing activities. Since no burrowing owl sign or suitable burrows were observed, a search for burrowing owls during the required MBTA survey prior to construction should be sufficient to ensure there are no impacts to burrowing owls. The MBTA survey should be conducted prior to initiating construction to ensure that no nesting birds have moved onto the site in the interim between this survey and project startup. Unless avoidable, all burrowing owls present must be relocated prior to any ground disturbing activities. If burrows are found on-site, a Burrowing Owl Relocation and Management Plan will be prepared to describe and outline how the burrowing owl will be actively or passively relocated per CDFW guidelines. Prior to construction, any owls occurring on-site will be relocated prior to vegetation removal or grading activities. Relocation will require prior permission from the CDFW, at a minimum, but is not anticipated at this time. Since the burrowing owl is a covered species under the CVMSHCP, additional mitigation/conservation measures will not be required.

7.0 CONCLUSION

The project site is highly disturbed and being used as a homeless camp and for local people to run their dogs off leash. No sensitive species were observed within the project area. No nesting bird activity was observed. Suitable nesting habitat is present so a clearance nesting bird survey should be conducted prior to any ground disturbance.

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USGS 7.5' *Cathedral City, Calif.* 7.5-minute topographic quadrangles (USGS 2021)

APPENDIX A

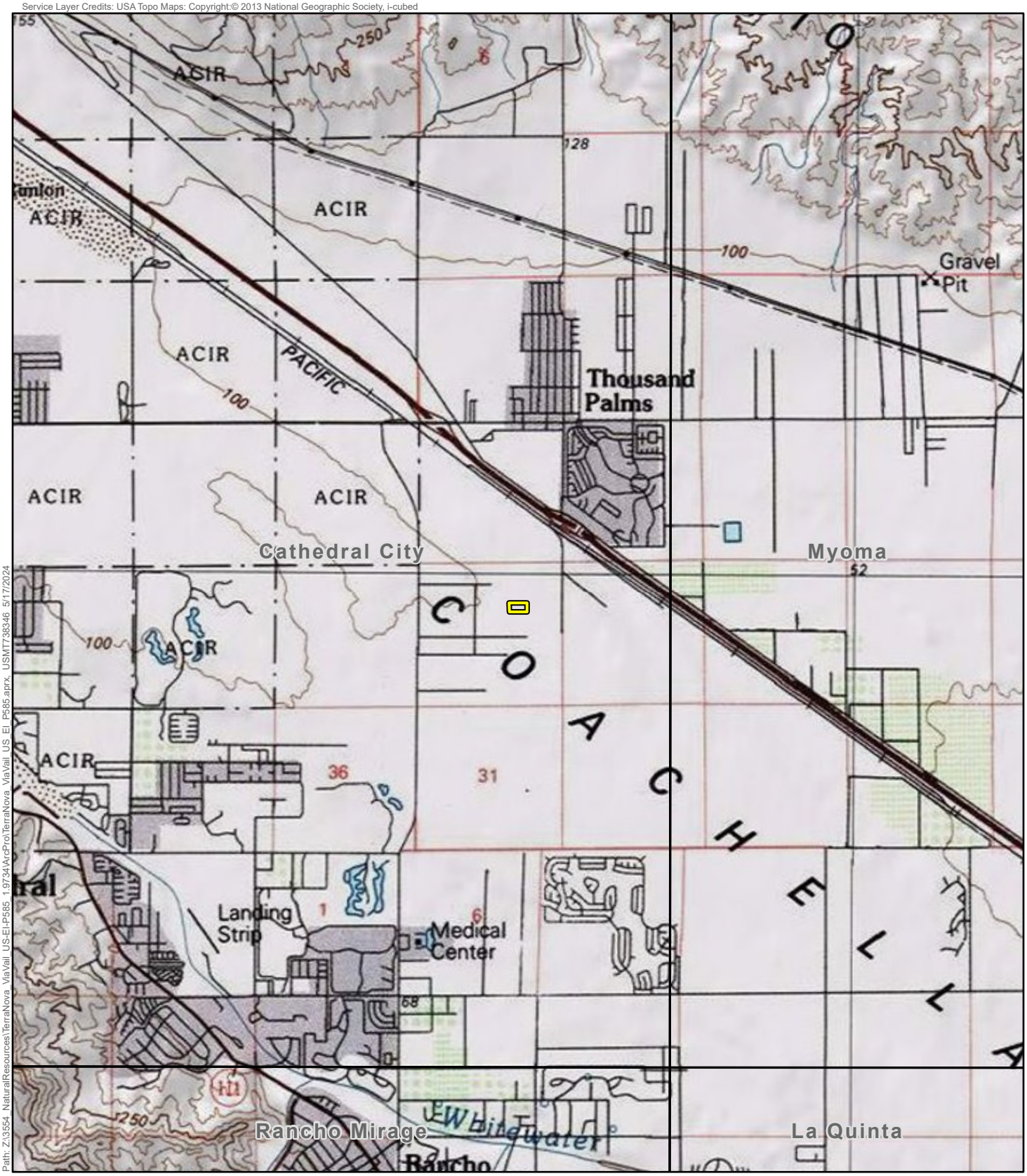
FIGURES

Project Boundary

CA Counties

FIGURE 1

Project Vicinity and Location
Via Vail
Parcel 3 Apartment Homes Project
Coachella Valley, CA



Project Boundary

FIGURE 2
USGS 7.5' Topo Quad: Coachella Valley
Via Vail
Parcel 3 Apartment Homes Project
Coachella Valley, CA

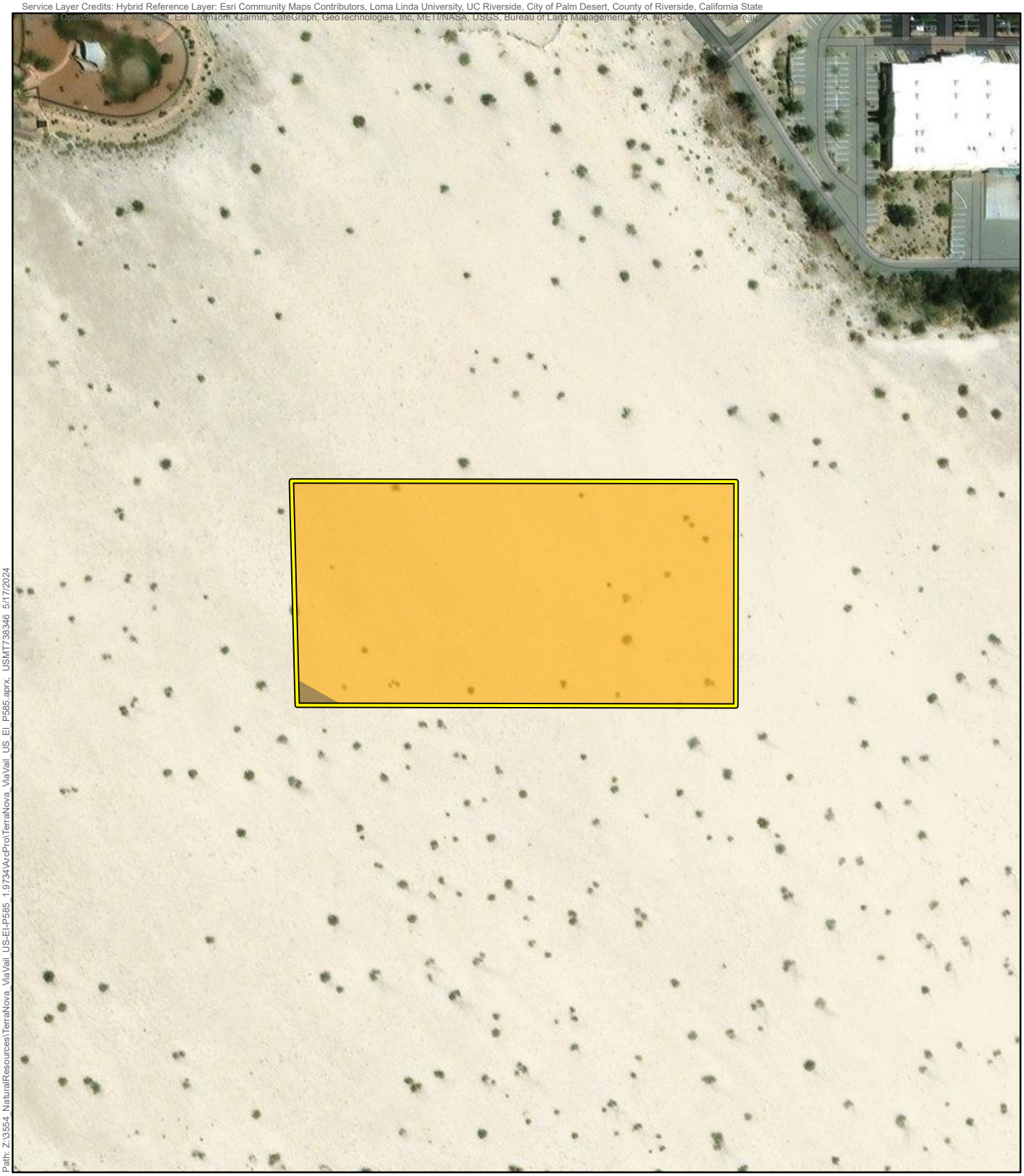
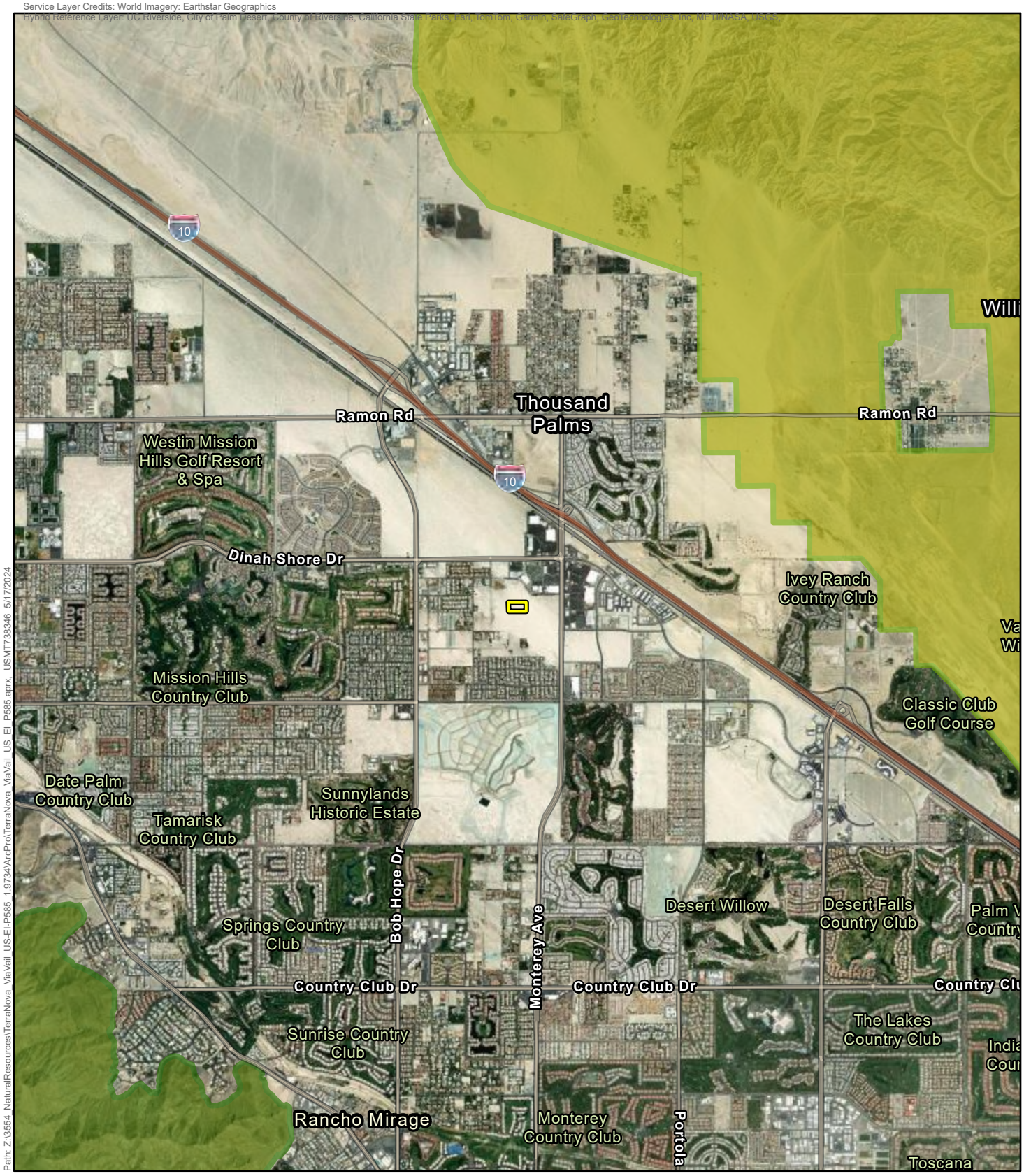


FIGURE 3

Soils
Via Vail
Parcel 3 Apartment Homes Project
Coachella Valley, CA



Project Boundary

Conservation Areas

Santa Rosa and San Jacinto Mountains

Thousand Palms

1 inch =5,000 feet

0 2,500 5,000 Feet

FIGURE 4

CVMSHCP
Via Vail
Parcel 3 Apartment Homes Project
Coachella Valley, CA

FIGURE 5

Vegetation Communities
Via Vail
Parcel 3 Apartment Homes Project
Coachella Valley, CA

APPENDIX B

PLANTS AND VERTEBRATE WILDLIFE OBSERVED

Vertebrate Species Observed

Corvidae	
Corvus brachyrhynchos	American crow
Fringillidae	
Haemorhous mexicanus	house finch
Remizidae	
Auriparus flaviceps	verdin
Tyrannidae	
Sayornis saya	Say's phoebe

Plant Species Observed

Amaranthaceae	
Atriplex canescens	four-wing saltbush
Asteraceae	
Dicoria canescens	desert dicoria
Palafoxia arida	Spanish needles
Boraginaceae	
Johnstonella angustifolia	narrow leaved forget me not
Tiquilia plicata	fanleaf crinklemat
Brassicaceae	
Brassica tournefortii	Sahara mustard
Fabaceae	
Psorothamnus emoryi	dyebush
Geraniaceae	
Erodium cicutarium	red stemmed filaree
Loasaceae	
Petalonyx thurberi	sandpaper plant
Nyctaginaceae	
Abronia villosa	desert sand verbena
Onagraceae	
Chylismia claviformis ssp. *claviformis*	browneyes
Zygophyllaceae	
Larrea tridentata	creosote bush
Poaceae	
Schismus barbatus	old han schismus

APPENDIX C

SITE PHOTOS

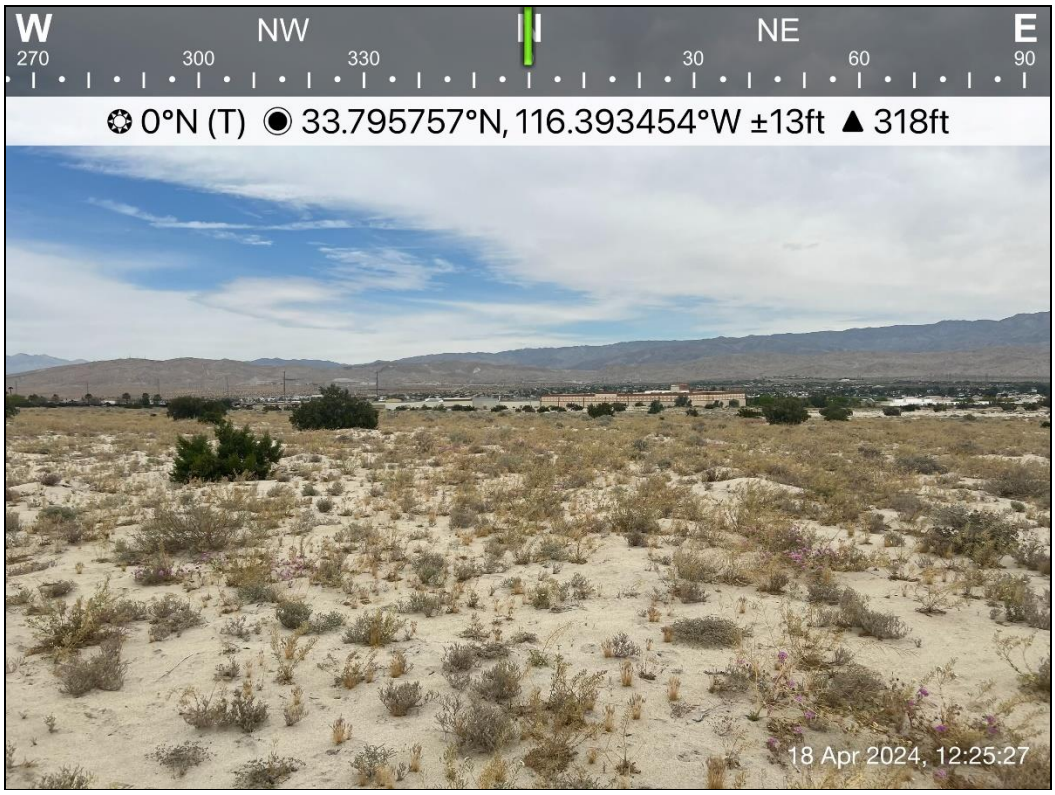


Photo 1. Looking north across the site.

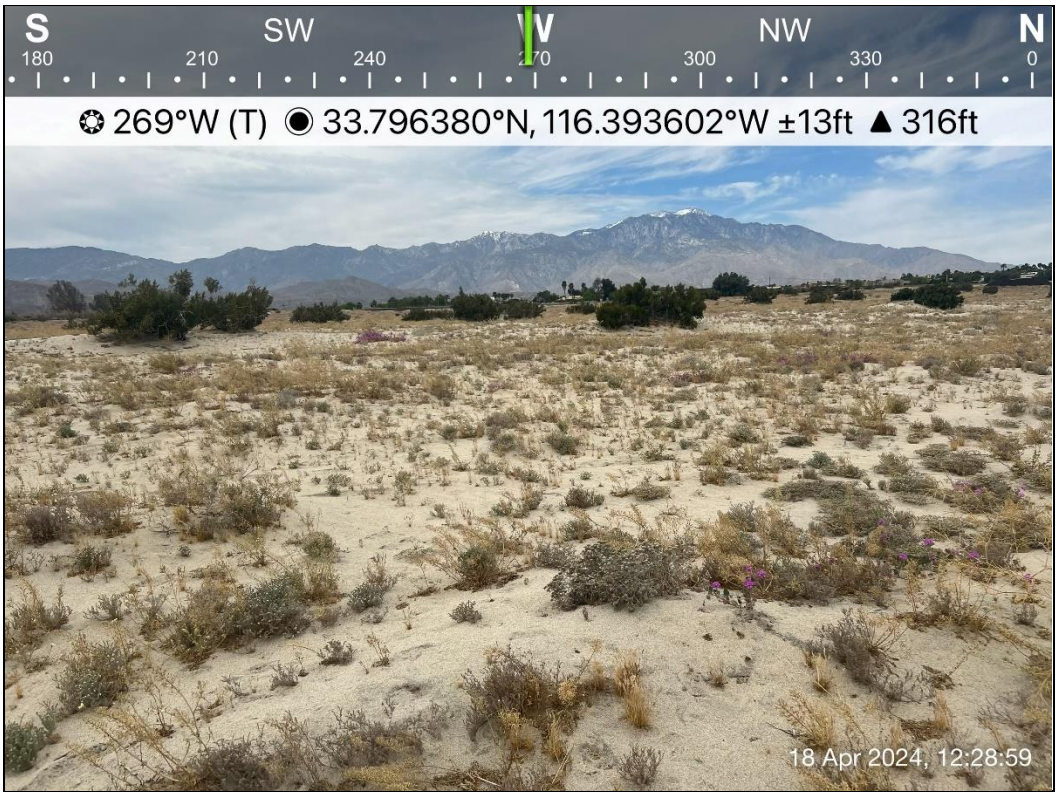


Photo 2. Looking west across the site.

Photo 3. Looking west across the site shows a portion of the homeless camp.

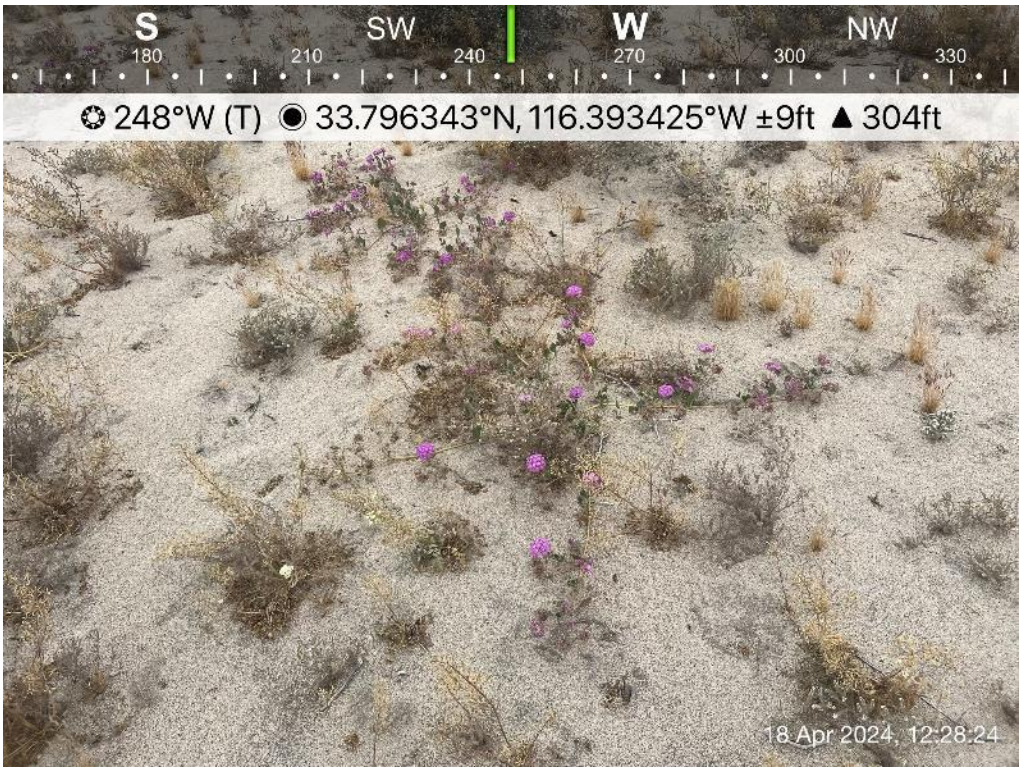


Photo 4. Showing annual species within the sandy site.

APPENDIX D

CVMSHCP Table 4-112:
Coachella Valley Native Plants Recommended for Landscaping

Coachella Valley Native Plants Recommended for Landscaping

BOTANICAL NAME	**COMMON NAME**
Trees	
Washingtonia filifera	California fan palm
Cercidium floridum	blue palo verde
Chilopsis linearis	desert willow
Olneya tesota	ironwood tree
Prosopis glandulosa var. *torreyana*	honey mesquite
Shrubs	
Acacia greggii	cat's claw acacia
Ambrosia dumosa	burro bush
Atriplex canescens	four wing saltbush
Atriplex lentiformis	quailbush
Atriplex polycarpa	cattle spinach
Baccharis sergiloides	squaw water-weed
Bebia juncea	sweet bush
Cassia (Senna) covesii	desert senna
Condalia parryi	crucilllo
Crossosoma bigelovii	crossosoma
Dalea emoryi	dye weed
Dalea (Psorothamnus) schottii	indigo bush
Datura meteloides	jimson weed
Encelia farinosa	brittle bush
Ephedra aspera	Mormon tea
Eriogonum fasciculatum	California buckwheat
Eriogonum wrightii membranaceum	Wright's buckwheat
Fagonia laevis	no common name
Gutierrezia sarothrae	matchweed
Haplopappus acradenius	goldenbush
Hibiscus denudatus	desert hibiscus
Hoffmannseggia microphylla	rush pea
Hymenoclea salsola	cheesebush
Hyptis emoryi	desert lavender
Isomeris arborea	bladder pod
Juniperus californica	California juniper
Krameria grayi	ratany
Krameria parvifolia	little-leaved ratany
Larrea tridentata	creosote bush
Lotus rigidus	desert rock pea
Lycium andersonii	box thorn
Petalonyx linearis	long-leaved sandpaper plant
Petalonyx thurberi	sandpaper plant
Peucephyllum schottii	pygmy cedar
Prunus fremontii	desert apricot
Rhus ovata	sugar-bush
Salazaria mexicana	paper-bag bush
Salvia apiana	white sage
Salvia eremostachya	Santa Rosa sage

Salvia vaseyi	wand sage
Simmondsia chinensis	jojoba
Sphaeralcia ambigua	globemallow (desert mallow)
Sphaeralcia ambigua rosacea	apricot mallow
Trixis californica	trixis
Zauschneria californica	California fuchsia

Groundcovers

Mirabilis bigelovii	wishbone bush (four o'clock)
Mirabilis tenuiloba	white four o'clock (thin-lobed)

Vines

Vitis girdiana	desert grape

Accent

Muhlenbergia rigens	deer grass

Herbaceous Perennials

Adiantum capillus-veneris	maiden-hair fern
Carex alma	sedge
Dalea parryi	Parry dalea
Eleocharis montevidensis	spike rush
Equisetum laevigatum	horsetail
Juncus bufonis	toad rush
Juncus effuses	juncus
Juncus macrophyllus	juncus
Juncus mexicanus	Mexican rush
Juncus xiphioides	juncus
Notholaena parryi	Parry cloak fern
Pallaea mucronata	bird-foot fern

Cacti and Succulents

Agave deserti	desert agave
Asclepias albicans	desert milkweed (buggy-whip)
Asclepias subulata	ajamete
Dudleya arizonica	live-forever
Dudleya saxosa	rock dudleya
Echinocereus engelmannii	calico hedgehog cactus
Ferocactus acanthodes	barrel cactus
Fouquieria splendens	ocotillo
Mamillaria dioica	nipple cactus
Mamillaria tetrancistra	corkseed cactus
Nolina parryi	Parry nolina
Opuntia acanthocarpa	stag-horn or deer-horn cholla
Opuntia bigelovii	teddy bear or jumping cholla
Opuntia basilaris	beavertail cactus
Opuntia echinocarpa	silver or golden cholla
Opuntia ramosissima	pencil cholla, darning needle cholla
Yucca schidigera	Mojave yucca, Spanish dagger
Yucca whipplei	Our Lord's candle

APPENDIX E

Prohibited Invasive Ornamental Plants

Prohibited Invasive Ornamental Plants

BOTANICAL NAME	COMMON NAME
Acacia spp. (all species except A. greggii)	(all species except native catclaw acacia)
Arundo donax	giant reed or arundo grass
Atriplex semibaccata	Australian saltbush
Avena barbata	slender wild oat
Avena fatua	wild oat
Brassica tournefortii	African or Saharan mustard
Bromus madritensis ssp. rubens	red brome
Bromus tectorum	cheat grass or downy brome
Cortaderia jubata [syn.C. atacamensis]	jubata grass or Andean pampas grass
Cortaderia dioica [syn. C. selloana]	pampas grass
Descurainia sophia	tansy mustard
Eichhornia crassipes	water hyacinth
Elaegnus angustifolia	Russian olive
Foeniculum vulgare	sweet fennel
Hirschfeldia incana	Mediterranean or short-pod mustard
Lepidium latifolium	perennial pepperweed
Lolium multiflorum	Italian ryegrass
Nerium oleander	oleander
Nicotiana glauca	tree tobacco
Oenothera berlandieri	Mexican evening primrose
Olea europea	European olive tree
Parkinsonia aculeata	Mexican palo verde
Pennisetum clandestinum	Kikuyu grass
Pennisetum setaceum	fountain grass
Phoenix canariensis	Canary Island date palm
Phoenix dactylifera	date palm
Ricinus communis	castorbean
Salsola tragus	Russian thistle
Schinus mole	Peruvian pepper tree
Schinus terebinthifolius	Brazilian pepper tree
Schismus arabicus	Mediterranean grass
Schismus barbatus	Saharan grass, Abu Mashi
Stipa capensis	no common name
Tamarix spp. (all species)	tamarisk or salt cedar
Taeniatherum caput-medusae	Medusa-head
Tribulus terrestris	puncturevine
Vinca major	periwinkle
Washingtonia robusta	Mexican fan palm
Yucca gloriosa	Spanish dagger

Sources: California Exotic Pest Plant Council, United States Department of Agriculture-Division of Plant Health and Pest Prevention Services, California Native Plant Society, Fremontia Vol. 26 No. 4, October 1998, The Jepson Manual; Higher Plants of California, and County of San Diego Department of Agriculture.

APPENDIX F

USFWS IPaC Report

Appendix C
Historical/Archaeological Resources Survey Report

HISTORICAL/ARCHAEOLOGICAL RESOURCES SURVEY REPORT

ASSESSOR'S PARCEL NUMBER 685-090-016

City of Rancho Mirage
Riverside County, California

For Submittal to:

Development Services Department, Planning Division
City of Rancho Mirage
69825 Highway 111
Rancho Mirage, CA 92270

Prepared for:

Terra Nova Planning and Research, Inc.
42635 Melanie Place, Suite 101
Palm Desert, CA 92211

Prepared by:

CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324

Bai "Tom" Tang, Principal Investigator
Michael Hogan, Principal Investigator

July 1, 2024
CRM TECH Contract No. 4127

Title: Historical/Archaeological Resources Survey: Assessor's Parcel Number 685-090-016, City of Rancho Mirage, Riverside County, California

Author(s): Bai "Tom" Tang, Principal Investogator/Historian
Frank Raslich, Archaeologist/Report Writer
Michael Richards, Archaeologist

Consulting Firm: CRM TECH
1016 East Cooley Drive, Suite A/B
Colton, CA 92324
(909) 824-6400

Date: July 1, 2024

For Submittal to: Development Services Department, Planning Division
City of Rancho Mirage
69825 Highway 111
Rancho Mirage, CA 92270
(760) 328-2266

Prepared for: Nicole Criste, Vice President
Terra Nova Planning and Research, Inc.
42635 Melanie Place, Suite 101
Palm Desert, CA 92211
(760) 320-9811

Project Size: Approximately five acres

USGS Quadrangle: Cathedral City, Calif., 7.5' quadrangle (Section 30, T4S R6E, San Bernardino Baseline and Meridian)

Keywords: Coachella Valley region, western Colorado Desert; no "historical resources" under CEQA

EXECUTIVE SUMMARY

Between April and July 2024, at the request of Terra Nova Planning and Research, Inc., CRM TECH performed a cultural resources survey on approximately five acres of vacant desert land in the northeastern portion of the City of Rancho Mirage, Riverside County, California. The subject property of the study, Assessor's Parcel Number 685-090-016, is located to the south of Dinah Shore Drive and between Monterey Avenue and Key Largo Avenue, in the northeast quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian.

The study is a part of the environmental review process for a proposed housing development project on the property. The City of Rancho Mirage, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA, that may exist in or around the project area.

In order to identify such resources, CRM TECH reviewed the results of a recent historical/archaeological resources records search on an adjacent property, contacted pertinent Native American representatives, pursued historical background research, and carried out an intensive-level field survey. Throughout the course of these research procedures, no cultural resources of prehistoric or historic origin were encountered within or adjacent to the project area. Therefore, CRM TECH recommends to the City of Rancho Mirage a finding that the proposed project will have *No Impact* on any "historical resources."

No further cultural resources investigation is recommended for the project unless development plans undergo such changes as to include areas not covered by this study. However, if buried cultural materials are discovered during any earth-moving operations associated with the project, all work in the immediate area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the finds.

TABLE OF CONTENTS

LIST OF FIGURES

INTRODUCTION

Between April and July 2024, at the request of Terra Nova Planning and Research, Inc., CRM TECH performed a cultural resources survey on approximately five acres of vacant desert land in the northeastern portion of the City of Rancho Mirage, Riverside County, California (Fig. 1). The subject property of the study, Assessor's Parcel Number 685-090-016, is located to the south of Dinah Shore Drive and between Monterey Avenue and Key Largo Avenue, in the northeast quarter of Section 30, T4S R6E, San Bernardino Baseline and Meridian (Figs. 2, 3).

The study is a part of the environmental review process for a proposed housing development project on the property. The City of Rancho Mirage, as the lead agency for the project, required the study in compliance with the California Environmental Quality Act (CEQA; PRC §21000, et seq.). The purpose of the study is to provide the City with the necessary information and analysis to determine whether the proposed project would cause substantial adverse changes to any "historical resources," as defined by CEQA, that may exist in or around the project area.

In order to identify such resources, CRM TECH reviewed the results of a recent historical/ archaeological resources records search on an adjacent property, contacted pertinent Native American representatives, pursued historical background research, and carried out an intensive-level field survey. The following report is a complete account of the methods, results, and final conclusion of the study. Personnel who participated in the study are named in the appropriate sections below, and their qualifications are provided in Appendix 1.

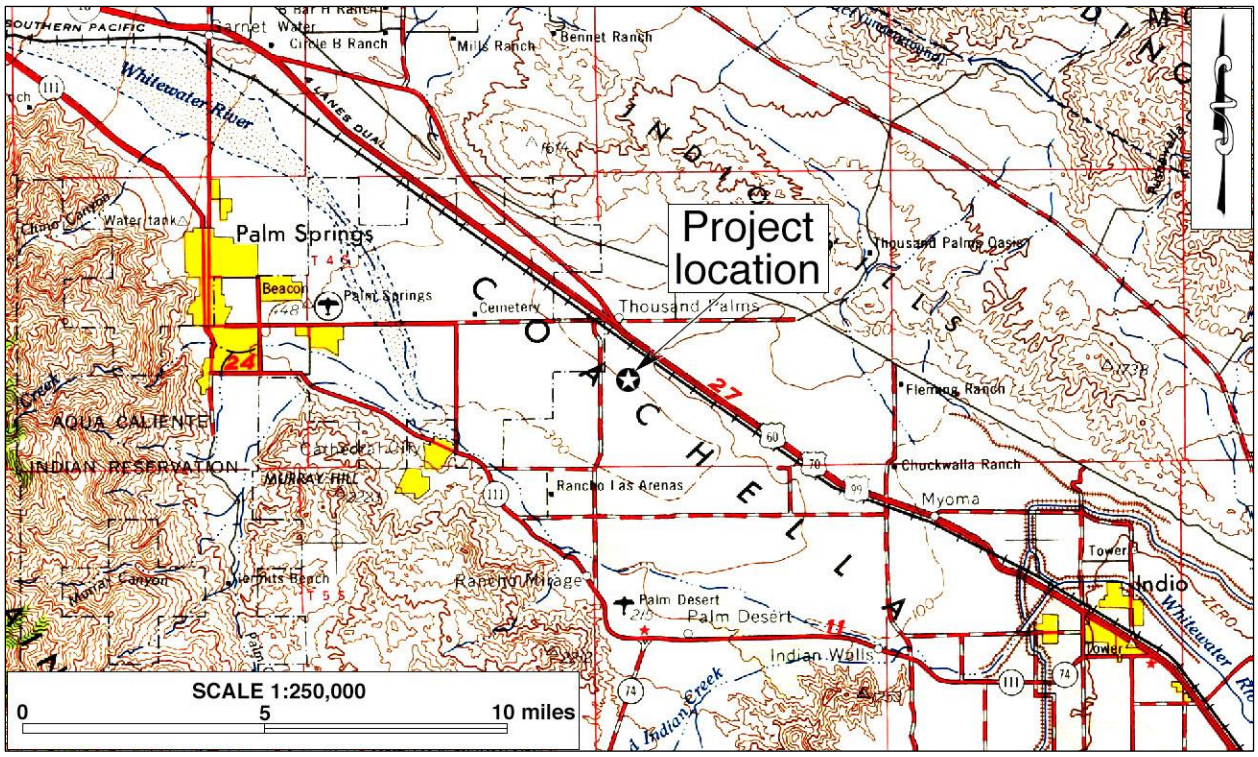


Figure 1. Project vicinity. (Based on USGS Santa Ana, Calif., 120'x60' quadrangle [USGS 1979])

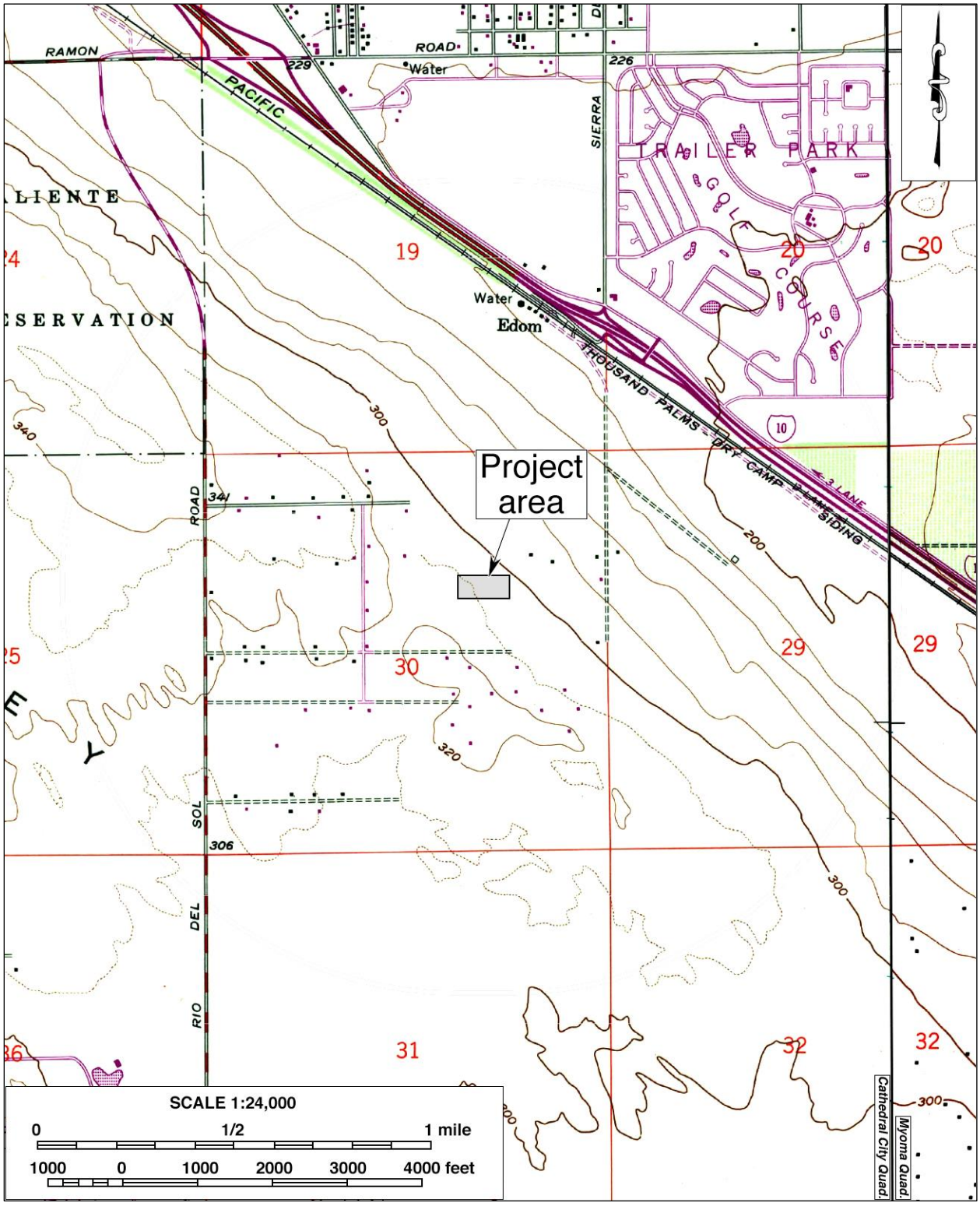


Figure 2. Project area. (Based on USGS Cathedral City and Myoma, Calif., 7.5' quadrangles [USGS 1978; 1981])

Figure 3. Recent satellite image of the project area. (Based on Google Earth imagery)

SETTING

CURRENT NATURAL SETTING

The City of Rancho Mirage is located in the Coachella Valley, a northwest-southeast trending desert valley that constitutes the western end of the Colorado Desert. Dictated by this geographic setting, the climate and environment of the region are typical of the southern California desert country, marked by extremes in temperature and aridity. Temperatures in the region reach over 120 degrees Fahrenheit in summer, and dip to near freezing in winter. Average annual precipitation is less than five inches, and the average annual evaporation rate exceeds three feet.

The rectangular shaped project area lies on a generally level and sandy desert ridge between the San Jacinto Mountains to the southwest and the Indio Hills to the northeast. It is surrounded by other parcels of vacant land of similar character, with the Monterey Marketplace shopping center further to the north and a residential neighborhood to the west across Kay Largo Avenue (Fig. 3). Elevations in the project area range roughly from 300 feet to 315 feet above mean sea level, with the terrain sloping gently downward to the northeast. Vegetation in the project area consists of a scattered growth of native plants, mainly creosote bushes and other small desert shrubs and grasses.

Figure 4. Typical landscape in the project area, view to the southwest. (Photograph taken on May 14, 2024)

CULTURAL SETTING

Prehistoric Context

Numerous investigations on the history of cultural development in southern California have led researchers to propose a number of cultural chronologies for the desert regions. A specific cultural sequence for the Colorado Desert was offered by Schaefer (1994) on the basis of the many archaeological studies conducted in the area. The earliest time period identified is the Paleoindian

(ca. 8,000 to 10,000-12,000 years ago), when "small, mobile bands" of hunters and gatherers, who relied on a variety of small and large game animals as well as wild plants for subsistence, roamed the region (Schaefer 1994:63). These small groups settled "on mesas and terraces overlooking larger washes" (Schaefer 1994:64). The artifact assemblage of that period typically consists of very simple stone tools, "cleared circles, rock rings, [and] some geoglyph types" (Schaefer 1994).

The Early Archaic Period follows and dates to ca. 8,000 to 4,000 years ago. It appears that a decrease in population density occurred at this time and that the indigenous groups of the area relied more on foraging than hunting. Very few archaeological remains have been identified to this time period. The ensuing Late Archaic Period (ca. 4,000 to 1,500 years ago) is characterized by continued low population densities and groups of "flexible" sizes that settled near available seasonal food resources and relied on "opportunistic" hunting of game animals. Groundstone artifacts for food processing were prominent during this time period.

The most recent period in Schaefer's scheme, the Late Prehistoric, dates from ca. 1,500 years ago to the time of the Spanish missions, saw the continuation of the seasonal settlement pattern. Peoples of the Late Prehistoric Period were associated with the Patayan cultural pattern and relied more heavily on the availability of seasonal "wild plants and animal resources" (Schaefer 1994:66). It was during this period that ceramics and the bow/arrow were introduced into the region.

The shores of Holocene Lake Cahuilla, during times of its presence, attracted much settlement and resource procurement activities. In times of the lake's desiccation and absence, according to Schaefer (1994:66), the Native people moved away from its receding shores towards rivers, streams, and mountains. Numerous archaeological sites dating to the last high stand of Holocene Lake Cahuilla, roughly between 1600 and 1700 A.D., have been identified along its former shoreline. Testing and mitigative excavations at these sites have recovered brown and buff ware ceramics, a variety of groundstone and projectile point types, ornaments, and cremation remains.

Ethnohistoric Context

The Coachella Valley is a historical center of Native American settlement, where U.S. surveyors noted large numbers of Indian villages and *rancherías*, occupied by the Cahuilla people, in the mid-19th century. The origin of the name "Cahuilla" is unclear, but may originate from their own word *káwiya*, meaning master or boss (Bean 1978). The Takic-speaking Cahuilla are generally divided by anthropologists into three groups, according to their geographic setting: the Pass Cahuilla of the San Gorgonio Pass-Palm Springs area, the Mountain Cahuilla of the San Jacinto and Santa Rosa Mountains and the Cahuilla Valley, and the Desert Cahuilla of the eastern Coachella Valley. The basic written sources on Cahuilla culture and history include Kroeber (1925), Strong (1929), and Bean (1978), based on information provided by such Cahuilla informants as Juan Siva, Francisco Patencio, Katherine Siva Saubel, and Mariano Saubel. The following ethnohistoric discussion is based primarily on these sources.

The Cahuilla did not have a single name that referred to an all-inclusive tribal affiliation. Instead, membership was in terms of lineages or clans. Each lineage or clan belonged to one of two main divisions of the people, known as moieties. Their moieties were named for the Wildcat, or *Tuktum*, and Coyote, or *Istam*. Members of clans in one moiety had to marry into clans from the other

moiety. Individual clans had villages, or central places, and territories they called their own, for purposes of hunting game, and gathering raw materials for food, medicine, ritual, or tool use. They interacted with other clans through trade, intermarriage, and ceremonies.

Cahuilla subsistence was defined by the surrounding landscape and primarily based on the hunting and gathering of wild and cultivated foods, exploiting nearly all of the resources available in a highly developed seasonal mobility system. They were adapted to the arid conditions of the desert floor, the lacustral cycles of Holocene Lake Cahuilla, and the environments of the nearby mountains. When the lake was full, or nearly full, the Cahuilla would take advantage of the resources presented by the body of fresh water, building elaborate stone fish traps. Once the lake had desiccated, they relied on the available terrestrial resources. The cooler temperatures and resources available at higher elevations in the nearby mountains were also taken advantage of.

The Cahuilla diet included seeds, roots, wild fruits and berries, acorns, wild onions, piñon nuts, and mesquite and screw beans. Medicinal plants such as creosote, California sagebrush, yerba buena and elderberry were typically cultivated near villages (Bean and Saubel 1972). Common game animals included deer, antelope, big horn sheep, rabbits, wood rats and, when Holocene Lake Cahuilla was present, fish and waterfowl. The Cahuilla hunted with throwing sticks, clubs, nets, traps, and snares, as well as bows and arrow (Bean 1978; CSRI 2002). Common tools included manos and metates, mortars and pestles, hammerstones, fire drills, awls, arrow-straighteners, and stone knives and scrapers. These lithic tools were made from locally sourced material as well as materials procured through trade or travel. They also used wood, horn, and bone spoons and stirrers; baskets for winnowing, leaching, grinding, transporting, parching, storing, and cooking; and pottery vessels for carrying water, storage, cooking, and serving food and drink (Bean 1978; CSRI 2002).

As the landscape defined their subsistence practices, the tending and cultivation practices of the Cahuilla helped shape the landscape. Biological studies have recently found evidence that the fan palms found in the Coachella Valley and throughout the southeastern California desert (*Washingtonia filifera*) may not be relics from a paleo-tropical environment, but instead a relatively recent addition brought to the area and cultivated by native populations (Anderson 2005). The planting of palms by the Cahuilla is well-documented, as is their enhancement of palm stands through the practice of controlled burning (Anderson 2005; Bean and Saubel 1972). Burning palm stands would increase fruit yield dramatically by eliminating pests such as the palm borer beetle, date scales, and spider mites (Bean and Saubel 1972). It also prevented out-of-control wildfires by eliminating dead undergrowth before it accumulated to dangerous levels. The Cahuilla also burned stands of chia to produce higher yields, and deergrass to yield straighter, more abundant stalks for basketry (Bean and Saubel 1972; Anderson 2005).

Population data prior to European contact is almost impossible to obtain, but estimates range from 3,600 to as high as 10,000 persons covering a territory of over 2,400 square miles. During the 19th century, the Cahuilla population was decimated as a result of European diseases, most notably smallpox, for which the Native peoples had no immunity. Today, Native Americans of Pass or Desert Cahuilla heritage are mostly affiliated with one or more of the Indian reservations in and near the Coachella Valley, including Agua Caliente, Morongo, Cabazon, Torres Martinez, and Augustine. There has been a resurgence of traditional ceremonies in recent years, and the language, songs, and stories are now being taught to the youngest generations.

Historic Context

In 1823-1825, José Romero, José Maria Estudillo, and Romualdo Pacheco became the first noted European explorers to travel through the Coachella Valley when they led a series of expeditions in search of a route to Yuma (Johnston 1987:92-95). Due to its harsh environment, few non-Indians ventured into the desert valley during the Mexican and early American periods, except those who traveled along the established trails. The most important of these trails was the Cocomaricopa Trail, an ancient Indian trading route that was "discovered" in 1862 by William David Bradshaw and known after that as the Bradshaw Trail (Gunther 1984:71; Ross 1992:25). In much of the Coachella Valley, this historic wagon road traversed a similar course to that of present-day State Route 111. During the 1860s-1870s, the Bradshaw Trail served as the main thoroughfare between coastal southern California and the Colorado River, until the completion of the Southern Pacific Railroad in 1876-1877 brought an end to its heyday (Johnston 1987:185).

Non-Indian settlement in the Coachella Valley began in the 1870s with the establishment of railroad stations along the Southern Pacific Railroad, and spread further in the 1880s after public land was opened for claims under the Homestead Act, the Desert Land Act, and other federal land laws (Laflin 1998:35-36; Robinson 1948:169-171). Farming became the dominant economic activity in the valley thanks to the development of underground water sources, often in the form of artesian wells. Around the turn of the century, the date palm was introduced into the Coachella Valley, and by the late 1910s dates were the main agricultural crop and the tree an iconic image celebrating the region as the "Arabia of America" (Shields Date Gardens 1957). Then, starting in the 1920s, a new industry featuring equestrian camps, resorts, hotels, and eventually country clubs began to spread throughout the Coachella Valley, transforming it into southern California's premier winter retreat.

In the Rancho Mirage area, the first notable settlement activities occurred in the 1910s-1920s, when several date ranches were established within the present-day city boundary (Love and Tang 1996:7). In 1924, R.P. "Bert" Davie and E.E. McIntyre subdivided the Rancho Rio del Sol Estates around today's Clancy Lane, creating a small community nicknamed "Little Santa Monica" (Love and Tang 1996:8). Ten years later, Louis Blankenhorn and Laurence Macomber began a new subdivision at the mouth of Magnesia Spring Canyon, and for the first time bestowed the name Rancho Mirage on the community (Love and Tang 1996). After the end of WWII, Rancho Mirage embarked on a period of rapid growth. With the development of the Thunderbird Country Club and the Tamarisk Country Club in 1951-1952, Rancho Mirage set the trend in the post-WWII boom among the five cove communities along Highway 111 (Love and Tang 1996:8-9). This trend has continued into the present and has given rise to the City of Rancho Mirage's popular reputation as the "country club city."

RESEARCH METHODS

RECORDS SEARCH

The historical/archaeological resources records search results used for this study was prepared for an adjacent property to the north (now Assessor's Parcel Number 685-090-017). The records search

was conducted by CRM TECH archaeologist Nina Gallardo on February 9, 2024, at the Eastern Information Center (EIC) of the California Historical Resources Information System. Located on the campus of the University of California, Riverside, the EIC is the State of California's official cultural resource records repository for the County of Riverside.

In addition, CRM TECH also reviewed the results of other records searches completed nearby in recent years to compile a complete inventory of previously identified cultural resources and existing cultural resources reports within a one-mile radius of the current project location. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Historic Landmarks, as well as those listed in the National Register of Historic Places, the California Register of Historical Resources, or the California Historical Resources Inventory.

NATIVE AMERICAN PARTICIPATION

On April 16, 2024, CRM TECH submitted a written request to the State of California Native American Heritage Commission (NAHC) for a records search in the commission's Sacred Lands File. The NAHC is the State of California's trustee agency for the protection of "tribal cultural resources," as defined by California Public Resources Code §21074, and is tasked with identifying and cataloging properties of Native American cultural value throughout the state. In the meantime, CRM TECH contacted the nearby Agua Caliente Band of Cahuilla Indians for additional information on potential Native American cultural resources in the vicinity and invited tribal participation in the upcoming archaeological field survey. Responses from the NAHC and the Agua Caliente Band are attached to this report in Appendix 2 and summarized in the sections below.

HISTORICAL BACKGROUND RESEARCH

Historical background research for this study was conducted by CRM TECH archaeologist Frank Raslich. Sources consulted during the research included published literature in local history, historical maps of the Coachella Valley area, and aerial/satellite photographs of the project vicinity. Among the maps consulted for this study were the U.S. General Land Office's (GLO) land survey plat maps dated 1856 and the U.S. Geological Survey's (USGS) topographic maps dated 1904-1981, which are available at the websites of the U.S. Bureau of Land Management and the USGS. The aerial and satellite photographs, taken in 1959-2024, are accessed at the Nationwide Environmental Title Research (NETR) Online website and through the Google Earth software.

FIELD SURVEY

On May 14, 2024, CRM TECH archaeologist Michael Richards carried out the field survey of the project area with the assistance of Native American monitors Luz Salazar and Xitlaly Madrigal from the Agua Caliente Band of Cahuilla Indians. The survey was conducted at an intensive level by walking a series of parallel north-south transects at 15-meter (approximately 50-foot) intervals. In this way, the entire project area was systematically and carefully examined for any evidence of human activities dating to the prehistoric or historic period (i.e., 50 years or older). Ground visibility was good (above 75%) throughout the course of the survey (Fig. 4).

RESULTS AND FINDINGS

RECORDS SEARCH

According to EIC records, the project area had not been surveyed systematically for cultural resources prior to this study, and no cultural resources had been recorded within or adjacent to the project boundaries. Within the one-mile scope of the records search, EIC records identify a total of 35 previously completed cultural resources studies on various tracts of land and linear features. In addition, in April 2024 CRM TECH completed a similar study on the adjacent property to the north, which is yet to be incorporated into EIC records.

As a result of the past survey efforts, 17 cultural resources within the one-mile radius have been recorded into the California Historical Resources Inventory, including four prehistoric (i.e., Native American) sites, seven historic-period sites, and six isolates (i.e., localities with fewer than three artifacts), as listed below in Table 1. The nearest among these, Site 33-017008, was located roughly a half-mile northwest of the project area and consisted of the remains of a collapsed shed of unknown age. Since none of the 17 known cultural resources was found in close proximity to the project location, none of them requires further consideration during this study.

Table 1. Previously Recorded Cultural Resources within the Scope of the Records Search

Primary Number	Trinomial	Description	Date Recorded
33-003440	CA-RIV-3440H	Remains of Edom Station and Siding on Southern Pacific Railroad	1999
33-005625	N/A	Remains of Kubic Ranch	2004
33-009498	CA-RIV-6381H	Southern Pacific (now Union Pacific) Railroad	2005
33-009748	CA-RIV-6495H	Early alignment of Rio del Sol Road (now Bob Hope Drive), ca. 1941-1958	2000
33-010953	N/A	Two sanitary cans	2000
33-010954	N/A	Sanitary can	2000
33-010955	N/A	Sanitary can	2000
33-010956	N/A	Sanitary can	2000
33-015933	N/A	Beer cans from a six-pack	2000
33-017005	CA-RIV-8852H	Refuse scatter	2007
33-017007	CA-RIV-8854	Scattered groundstone and flaked-stone artifacts	2007
33-017008	CA-RIV-8855H	Remains of collapsed wood-and-metal shed	2007
33-017009	CA-RIV-8856	Cremation remains	2007
33-017010	CA-RIV-8857	Cremation remains with associated lithic artifacts	2007
33-017011	CA-RIV-8858	Scattered groundstone and flaked-stone artifacts	2007
33-017012	N/A	Pottery sherd	2007
33-026824	CA-RIV-12609H	Refuse scatter	2017

NATIVE AMERICAN PARTICIPATION

In response to CRM TECH's inquiry, the NAHC reported in a letter dated May 6, 2024, that the Sacred Lands File search yielded negative results for Native American cultural resources in the project vicinity. Noting that the absence of specific information would not necessarily indicate the absence of cultural resources, however, the NAHC recommended that local Native American groups be consulted for further information and provided a referral list of potential contacts in the region who may have knowledge of such resources. The NAHC's reply is attached in Appendix 2 for

reference by the City of Rancho Mirage in future government-to-government consultations with the pertinent Native American representatives, if necessary.

On April 22, 2024, Xitlaly Madrigal, Cultural Resources Analyst with the Agua Caliente Tribal Historic Preservation Office, replied to CRM TECH in writing. In the letter, she identified the project location as a part of the tribe's Traditional Use Area and requested to review all cultural resources documentation generated for this project, including the records search results. In addition, she requested that a qualified archaeologist perform a cultural resources inventory prior to development and an approved Agua Caliente Native American Cultural Resource Monitor be present during any ground-disturbing activities in the project area (see Appendix 2). As mentioned above, representatives of the Agua Caliente Tribal Historic Preservation Office subsequently participated in the archaeological field survey on May 14, 2024.

HISTORICAL BACKGROUND RESEARCH

Historical sources consulted for this study yielded no evidence of any settlement or development activities within the project area throughout the historic period (Figs. 5-8; NETR Online 1959-1979). In the late 19th and early 20th centuries, the nearest human-made feature known to be extant was the Southern Pacific (now Union Pacific) Railroad, which was later joined by U.S. Highway 60/70/99, the forerunner of today's Interstate Highway 10 (Figs. 6, 7). By the 1950s, some scattered buildings had appeared in the vicinity, but none of them was located within or adjacent to the project boundaries (Fig. 8; NETR Online 1959). Since the 1990s, real estate development has accelerated noticeably in the surrounding area, as exemplified by the construction of the Monterey Marketplace

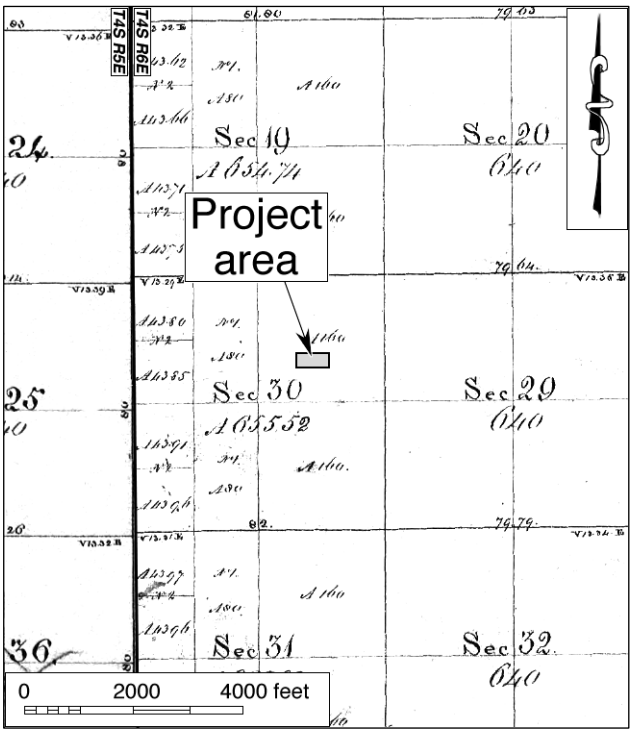


Figure 5. The project area and vicinity in 1855-1856. (Source: GLO 1856a; 1856b)

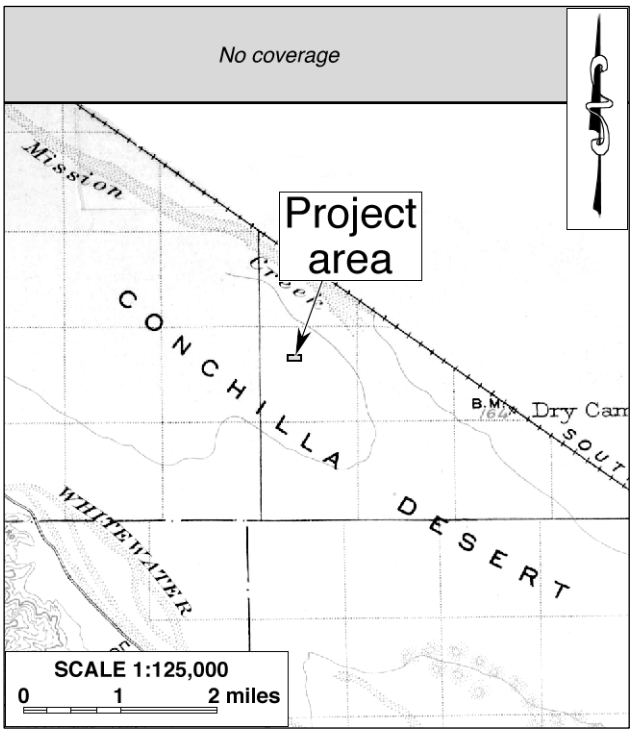


Figure 6. The project area and vicinity in 1901. (Source: USGS 1904)

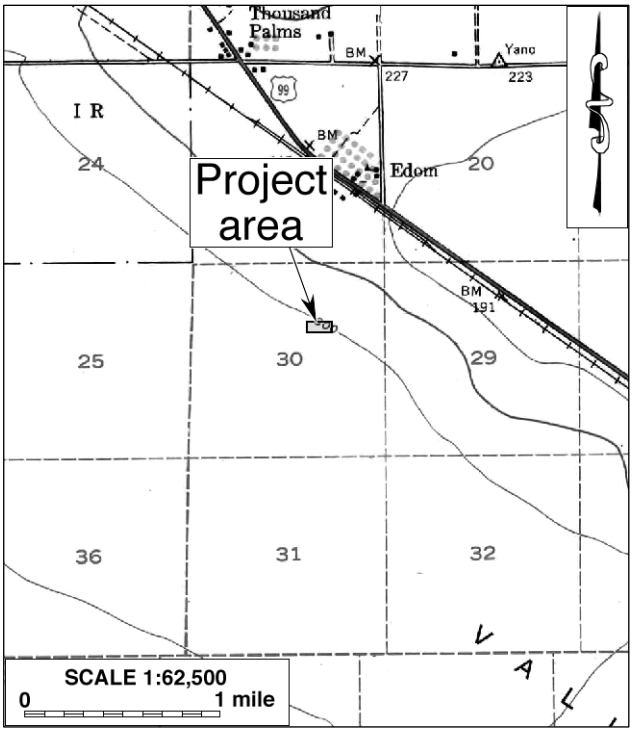


Figure 7. The project area and vicinity in 1941. (Source: USGS 1941)

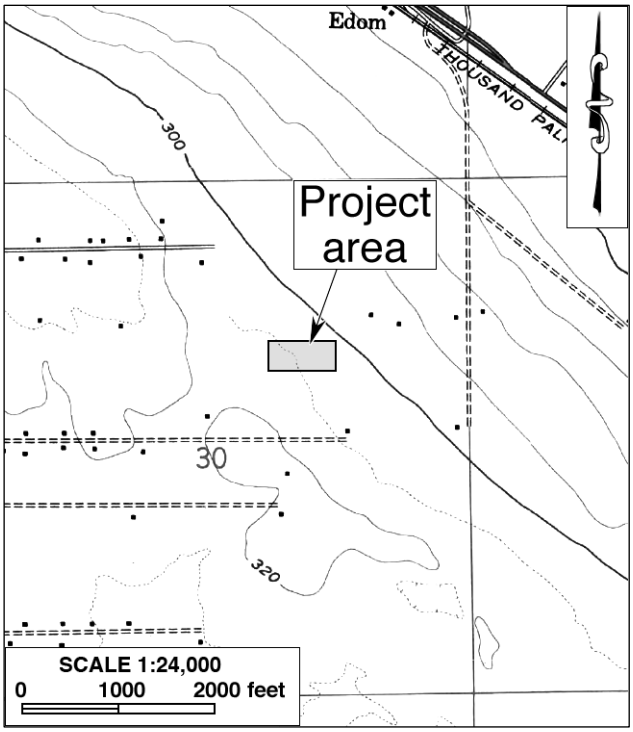


Figure 8. The project area and vicinity in 1951-1958. (Source: USGS 1958)

shopping center and the residential tracts on the west side of Key Largo Avenue (NETR Online 1959-2005). In contrast, the project area has remained unsettled, undeveloped, and evidently unused to the present time (NETR Online 1959-2020).

FIELD SURVEY

The field survey of the project area produced negative results for potential "historical resources." Throughout the course of the survey, no buildings, structures, objects, sites, features, or artifact deposits of prehistoric or historical origin were encountered. Scattered refuse was noted over portions of the property, but all the items are clearly modern in origin, evidently associated with a homeless encampment nearby, and none of them is of any historical/archaeological interest.

DISCUSSION

The purpose of this study is to identify any cultural resources within the project area and to assist the City of Rancho Mirage in determining whether such resources meet the official definition of "historical resources," as provided in the California Public Resources Code, in particular CEQA. According to PRC §5020.1(j), "'historical resource' includes, but is not limited to, any object, building, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

More specifically, CEQA guidelines state that the term "historical resources" applies to any such resources listed in or determined to be eligible for listing in the California Register of Historical Resources, included in a local register of historical resources, or determined to be historically significant by the lead agency (Title 14 CCR §15064.5(a)(1)-(3)). Regarding the proper criteria for the evaluation of historical significance, CEQA guidelines mandate that "generally a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing on the California Register of Historical Resources" (Title 14 CCR §15064.5(a)(3)). A resource may be listed in the California Register if it meets any of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history. (PRC §5024.1(c))

As discussed above, no potential "historical resources" were previously recorded within or adjacent to the project area, and none was found during the present survey. The Native American Sacred Lands File identified no properties of traditional cultural value in the vicinity, and no notable cultural features were known to be present in the project area throughout the historic period. Based on these findings, and in light of the criteria listed above, the present study concludes that no "historical resources" exist within or adjacent to the project area.

CONCLUSIONS AND RECOMMENDATIONS

CEQA establishes that "a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (PRC §21084.1). "Substantial adverse change," according to PRC §5020.1(q), "means demolition, destruction, relocation, or alteration such that the significance of a historical resource would be impaired."

In conclusion, the present study has identified no "historical resources" within or adjacent to the project area. Therefore, CRM TECH presents the following recommendations to the City of Rancho Mirage:

- The proposed project will not cause a substantial adverse change to any known "historical resources."
- No further cultural resources investigation is necessary for the project unless development plans undergo such changes as to include areas not covered by this study.
- If buried cultural materials are discovered during any earth-moving operations associated with the project, all work in the immediate area should be halted or diverted until a qualified archaeologist can evaluate the nature and significance of the find.

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1981 Map: Cathedral City, Calif. (7.5', 1:24,000); 1958 edition photorevised in 1978.

APPENDIX 1:
PERSONNEL QUALIFICATIONS

PRINCIPAL INVESTIGATOR/HISTORIAN
Bai "Tom" Tang, M.A.

Education

1988-1993	Graduate Program in Public History/Historic Preservation, University of California, Riverside.
1987	M.A., American History, Yale University, New Haven, Connecticut.
1982	B.A., History, Northwestern University, Xi'an, China.
2000	"Introduction to Section 106 Review," presented by the Advisory Council on Historic Preservation and the University of Nevada, Reno.
1994	"Assessing the Significance of Historic Archaeological Sites," presented by the Historic Preservation Program, University of Nevada, Reno.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1993-2002	Project Historian/Architectural Historian, CRM TECH, Riverside, California.
1993-1997	Project Historian, Greenwood and Associates, Pacific Palisades, California.
1991-1993	Project Historian, Archaeological Research Unit, University of California, Riverside.
1990	Intern Researcher, California State Office of Historic Preservation, Sacramento.
1990-1992	Teaching Assistant, History of Modern World, University of California, Riverside.
1988-1993	Research Assistant, American Social History, University of California, Riverside.
1985-1988	Research Assistant, Modern Chinese History, Yale University.
1985-1986	Teaching Assistant, Modern Chinese History, Yale University.
1982-1985	Lecturer, History, Xi'an Foreign Languages Institute, Xi'an, China.

Cultural Resources Management Reports

Preliminary Analyses and Recommendations Regarding California's Cultural Resources Inventory System (with Special Reference to Condition 14 of NPS 1990 Program Review Report). California State Office of Historic Preservation working paper, Sacramento, September 1990.

Numerous cultural resources management reports with the Archaeological Research Unit, Greenwood and Associates, and CRM TECH, since October 1991.

PRINCIPAL INVESTIGATOR/ARCHAEOLOGIST
Michael Hogan, Ph.D., RPA (Registered Professional Archaeologist)

Education

1991	Ph.D., Anthropology, University of California, Riverside.
1981	B.S., Anthropology, University of California, Riverside; with honors.
1980-1981	Education Abroad Program, Lima, Peru.
2002	"Section 106—National Historic Preservation Act: Federal Law at the Local Level," UCLA Extension Course #888.
2002	"Recognizing Historic Artifacts," workshop presented by Richard Norwood, Historical Archaeologist.
2002	"Wending Your Way through the Regulatory Maze," symposium presented by the Association of Environmental Professionals.
1992	"Southern California Ceramics Workshop," presented by Jerry Schaefer.
1992	"Historic Artifact Workshop," presented by Anne Duffield-Stoll.

Professional Experience

2002-	Principal Investigator, CRM TECH, Riverside/Colton, California.
1999-2002	Project Archaeologist/Field Director, CRM TECH, Riverside, California.
1996-1998	Project Director and Ethnographer, Statistical Research, Inc., Redlands, California.
1992-1998	Assistant Research Anthropologist, University of California, Riverside.
1992-1995	Project Director, Archaeological Research Unit, U.C. Riverside.
1993-1994	Adjunct Professor, Riverside Community College, Mt. San Jacinto College, U.C. Riverside, Chapman University, and San Bernardino Valley College.
1991-1992	Crew Chief, Archaeological Research Unit, U.C. Riverside.
1984-1998	Project Director, Field Director, Crew Chief, and Archaeological Technician for various southern California cultural resources management firms.

Research Interests

Cultural Resource Management, Southern Californian Archaeology, Settlement and Exchange Patterns, Specialization and Stratification, Culture Change, Native American Culture, Cultural Diversity.

Cultural Resources Management Reports

Principal investigator for, author or co-author of, and contributor to numerous cultural resources management study reports since 1986.

Memberships

Society for American Archaeology; Society for California Archaeology; Pacific Coast Archaeological Society; Coachella Valley Archaeological Society.

PROJECT ARCHAEOLOGIST/REPORT WRITER
Frank J. Raslich, M.A.

Education

2016-	Ph.D. candidate, Michigan State University, East Lansing.
2010	M.A., Anthropology, Michigan State University, East Lansing.
2005	B.A., Anthropology, University of Michigan, Flint.
2019	Grant and Research Proposal Writing for Archaeologists; Society for American Archaeology online seminar.
2014	Bruker Industries Tracer S1800 pXRF Training; presented by Dr. Bruce Kaiser, Bruker Scientific.

Professional Experience

2022-	Project Archaeologist/Report Writer, CRM TECH, Colton, California.
2022	Archaeological Monitor, Agua Caliente Band of Cahuilla Indians, Palm Springs, California.
2014-2022	Board of Directors, Ziibiwing Center of Anishinabe Culture and Lifeways, Saginaw Chippewa Indian Tribe of Michigan.
2008-2021	Archaeological Consultant, Saginaw Chippewa Indian Tribe of Michigan.
2019	Archaeologist, Sault Tribe of Chippewa Indians and Little Traverse Bay Band of Odawa Indians.
2016-2018	Adjunct Lecturer, Michigan State University, East Lansing.
2017-2018	Adjunct Lecturer, University of Michigan, Flint.
2009-2017	Teaching Assistant, Michigan State University, East Lansing.
2008-2014	Research Assistant, Intellectual Property Issues in Cultural Heritage, Simon Fraser University, British Columbia, Canada.
2010-2013	Research Assistant, Michigan State University, East Lansing.
2009-2011	Archaeologist/Crew Chief, Saginaw Chippewa Indian Tribe of Michigan.

Publications

2017	Preliminary Results of a Handheld X-Ray Fluorescence (pXRF) Analysis on a Marble Head Sarcophagus Sculpture from the Collection of the Kresge Art Center, Michigan State University. Submitted to Jon M. Frey, Department of Art, Art History, and Design, Michigan State University, East Lansing.
2013	Geochemical Analysis of the Dickenson Group of the Upper Peninsula, Michigan: A study of an Accreted Terrane of the Superior Province. Geological Society of America *Abstracts with Programs* 45:4(53).

PROJECT ARCHAEOLOGIST
Michael D. Richards, M.A., Registered Professional Archaeologist

Education

2002	M.A., Anthropology, California State University, Northridge (CSUN).
1986	B.A., Anthropology: University of California, Los Angeles (UCLA).
1982	A.A., Los Angeles Valley College, Los Angeles, California.

2015	Section 106 workshop.
2000	CSUN "Olmec" field excavation and lab analysis; La Venta, Mexico.
1999	Rock art recording, UCLA Extension; Little Lake, California.
1998	Rock art symposium, UCLA Extension.

Professional Experience

2018-	Project Archaeologist/Paleontologist, CRM TECH, Colton, Calif.
2016-2018	Co-Principal Investigator/Archaeologist, LSA Associates Inc.
2012-2016	Co-Principal Investigator/Archaeologist, ICF International (Jones & Stokes).
2010-2012	Co-Principal Investigator/Archaeologist, various CRM firms (on call).
2007-2010	Principal Investigator/Field Director/Crew Chief, ASM Affiliates, Inc.
2004-2007	Project Manager/Co-Principal Investigator, ArchaeoPaleo Resource Management, Inc.
2003-2004	Staff Archaeologist/Crew Chief, SRI, Inc.
2000-2003	Project Archaeologist/Field Director, Ancient Enterprises (Clewlow, Jr.).
1999-2000	Staff Archaeologist/Lab Crew Chief, CSC/Edwards Air Force Base.

Memberships

Society for American Archaeology; Society for California Archaeology; Archaeological Institute of America; Conejo Open Space Trails Advisory Committee; Conejo Valley Historical Society.

PROJECT ARCHAEOLOGIST/NATIVE AMERICAN LIAISON
Nina Gallardo, B.A.

Education

2004	B.A., Anthropology/Law and Society, University of California, Riverside.

Professional Experience

2004-	Project Archaeologist, CRM TECH, Riverside/Colton, California.

Cultural Resources Management Reports

Co-author of and contributor to numerous cultural resources management reports since 2004.

APPENDIX 2

NATIVE AMERICAN RESPONSES

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

03-008-2024-006

April 22, 2024

[VIA EMAIL TO:ngallardo@crmtech.us]
CRM TECH
Ms. Nina Gallardo
1016 E. Cooley Drive, Suite A/B
Colton, CA 92324

Re: CRM Tech No. 4127

Dear Ms. Nina Gallardo,

The Agua Caliente Band of Cahuilla Indians (ACBCI) appreciates your efforts to include the Tribal Historic Preservation Office (THPO) in the CRM TECH No. 4127 project. The project area is not located within the boundaries of the ACBCI Reservation. However, it is within the Tribe's Traditional Use Area. For this reason, the ACBCI THPO requests the following:

*A cultural resources inventory of the project area by a qualified archaeologist prior to any development activities in this area.

*Copies of any cultural resource documentation (report and site records) generated in connection with this project.

*A copy of the records search with associated survey reports and site records from the information center.

*The presence of an approved Agua Caliente Native American Cultural Resource Monitor(s) during any ground disturbing activities (including archaeological testing and surveys). Should buried cultural deposits be encountered, the Monitor may request that destructive construction halt and the Monitor shall notify a Qualified Archaeologist (Secretary of the Interior's Standards and Guidelines) to investigate and, if necessary, prepare a mitigation plan for submission to the State Historic Preservation Officer and the Agua Caliente Tribal Historic Preservation Office.

*We would like to participate in the survey.

Again, the Agua Caliente appreciates your interest in our cultural heritage. If you have questions or require additional information, please call me at (760) 423-3485. You may also email me at ACBCI-THPO@aguacaliente.net.

Cordially,

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

AGUA CALIENTE BAND OF CAHUILLA INDIANS

TRIBAL HISTORIC PRESERVATION

Xitlaly Madrigal
Cultural Resources Analyst
Tribal Historic Preservation Office
AGUA CALIENTE BAND
OF CAHUILLA INDIANS

5401 DINAH SHORE DRIVE, PALM SPRINGS, CA 92264
T 760/699/6800 F 760/699/6924 WWW.AGUACALIENTE-NSN.GOV

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov

May 6, 2024

Nina Gallardo
CRM TECH

Via Email to: ngallardo@crmtech.us

Re: Proposed Rancho Mirage 2 Project, Riverside County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Riverside County
5/6/2024

Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Fax #	Email Address	Cultural Affiliation	Counties
Agua Caliente Band of Cahuilla Indians	F	Lacy Padilla, Director of Historic Preservation/THPO	5401 Dinah Shore Drive Palm Springs, CA, 92264	(760) 333-5222	(760) 699-6919	ACBCI-THPO@aguacaliente.net	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Augustine Band of Cahuilla Indians	F	Tribal Operations,	84-001 Avenue 54 Coachella, CA, 92236	(760) 398-4722		info@augustinetribe-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Cabazon Band of Mission Indians	F	Doug Welmas, Chairperson	84-245 Indio Springs Parkway Indio, CA, 92203	(760) 342-2593	(760) 347-7880	jstapp@cabazonindians-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Cahuilla Band of Indians	F	Anthony Madrigal, Tribal Historic Preservation Officer	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		anthonymad2002@gmail.com	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Cahuilla Band of Indians	F	BobbyRay Esaprza, Cultural Director	52701 CA Highway 371 Anza, CA, 92539	(951) 763-5549		besparza@cahuilla-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Cahuilla Band of Indians	F	Erica Schenk, Chairperson	52701 CA Highway 371 Anza, CA, 92539	(951) 590-0942	(951) 763-2808	chair@cahuilla-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Los Coyotes Band of Cahuilla and Cupeño Indians	F	Ray Chapparosa, Chairperson	P.O. Box 189 Warner Springs, CA, 92086-0189	(760) 782-0711	(760) 782-0712		Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Morongo Band of Mission Indians	F	Ann Brierty, THPO	12700 Pumarra Road Banning, CA, 92220	(951) 755-5259	(951) 572-6004	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial, Kern, Los Angeles, Riverside, San Bernardino, San Diego
Morongo Band of Mission Indians	F	Robert Martin, Chairperson	12700 Pumarra Road Banning, CA, 92220	(951) 755-5110	(951) 755-5177	abrierty@morongo-nsn.gov	Cahuilla Serrano	Imperial, Kern, Los Angeles, Riverside, San Bernardino, San Diego
Quechan Tribe of the Fort Yuma Reservation	F	Jill McCormick, Historic Preservation Officer	P.O. Box 1899 Yuma, AZ, 85366	(928) 261-0254		historicpreservation@quechantribe.com	Quechan	Imperial, Kern, Los Angeles, Riverside, San Bernardino, San Diego
Quechan Tribe of the Fort Yuma Reservation	F	Manfred Scott, Acting Chairman - Kw'ts'an Cultural Committee	P.O. Box 1899 Yuma, AZ, 85366	(928) 210-8739		culturalcommittee@quechantribe.com	Quechan	Imperial, Kern, Los Angeles, Riverside, San Bernardino, San Diego
Quechan Tribe of the Fort Yuma Reservation	F	Jordan Joaquin, President, Quechan Tribal Council	P.O.Box 1899 Yuma, AZ, 85366	(760) 919-3600		executivesecretary@quechantribe.com	Quechan	Imperial, Kern, Los Angeles, Riverside, San Bernardino, San Diego
Ramona Band of Cahuilla	F	John Gomez, Environmental Coordinator	P. O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	jgomez@ramona-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Ramona Band of Cahuilla	F	Joseph Hamilton, Chairperson	P.O. Box 391670 Anza, CA, 92539	(951) 763-4105	(951) 763-4325	admin@ramona-nsn.gov	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Santa Rosa Band of Cahuilla Indians	F	Vanessa Minott, Tribal Administrator	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	vminott@santarosa-nsn.gov	Cahuilla	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego
Santa Rosa Band of Cahuilla Indians	F	Steven Estrada, Tribal Chairman	P.O. Box 391820 Anza, CA, 92539	(951) 659-2700	(951) 659-2228	sestrada@santarosa-nsn.gov	Cahuilla	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego
Soboba Band of Luiseno Indians	F	Isaiah Vivanco, Chairperson	P.O. Box 487 San Jacinto, CA, 92581	(951) 654-5544	(951) 654-4198	ivivanco@soboba-nsn.com	Cahuilla Luiseno	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego
Soboba Band of Luiseno Indians	F	Jessica Valdez, Cultural Resource Specialist	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-6261	(951) 654-4198	jvaldez@soboba-nsn.gov	Cahuilla Luiseno	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego
Soboba Band of Luiseno Indians	F	Joseph Ontiveros, Tribal Historic Preservation Officer	P.O. Box 487 San Jacinto, CA, 92581	(951) 663-5279	(951) 654-4198	jontiveros@soboba-nsn.gov	Cahuilla Luiseno	Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego

Torres-Martinez Desert Cahuilla Indians	F	Mary Belardo, Cultural Committee Vice Chair	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300		belardom@gmail.com	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Torres-Martinez Desert Cahuilla Indians	F	Thomas Tortez, Chairperson	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300	(760) 397-8146	thomas.tortez@tmdci.org	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Torres-Martinez Desert Cahuilla Indians	F	Gary Resvaloso, TM MLD	P.O. Box 1160 Thermal, CA, 92274	(760) 777-0365		grestmtm@gmail.com	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Torres-Martinez Desert Cahuilla Indians	F	Alesia Reed, Cultural Committee Chairwoman	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300		lisareed990@gmail.com	Cahuilla	Imperial, Riverside, San Bernardino, San Diego
Torres-Martinez Desert Cahuilla Indians	F	Abraham Becerra, Cultural Coordinator	P.O. Box 1160 Thermal, CA, 92274	(760) 397-0300		abecerra@tmdci.org	Cahuilla	Imperial, Riverside, San Bernardino, San Diego

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Rancho Mirage 2 Project, Riverside County.

Record: PROJ-2024-002329
Report Type: List of Tribes
Counties: Riverside
NAHC Group: All

Appendix D
Design-Phase Geotechnical Investigation Report

PETRA GEOSCIENCES INC.

SOLID AS A ROCK

ENGINEERS + GEOLOGISTS + ENVIRONMENTAL SCIENTISTS

DESIGN-PHASE GEOTECHNICAL INVESTIGATION REPORT PROPOSED RANCHO MIRAGE APARTMENTS APPROXIMATELY 5 ACRES SOUTH OF THE RANCHO MIRAGE DOG PARK A PORTION OF ASSESSOR'S PARCEL NO. 685-090-011 RANCHO MIRAGE, RIVERSIDE COUNTY, CALIFORNIA

NATIONAL CORE

July 25, 2024
J.N. 24-112

July 25, 2024
J.N. 24-112

NATIONAL CORE
430 E. State Street, Suite 100
Eagle, Idaho 83616

Attention: Ms. Taylor Libolt Varner

Subject: Design-Phase Geotechnical Investigation Report, Proposed Rancho Mirage Apartments, Approximately 5 Acres South of the Rancho Mirage Dog Park, a Portion of Assessor's Parcel No. 685-090-011, Rancho Mirage, Riverside County, California

Dear Ms. Libolt Varner:

Petra Geosciences, Inc. (Petra) is submitting herewith our geotechnical investigation report for the proposed construction of approximately 150 apartments at the subject location in the city of Rancho Mirage. The proposed improvements will also include utilities, paved parking, landscaping, and on-site stormwater retention. This work was performed in general accordance with the scope of services outlined in our Proposal No. 24-112P, dated January 17, 2024. This report presents the results of our field investigation, laboratory testing, and our engineering and geologic analysis, judgment, opinions, conclusions and recommendations pertaining to geotechnical design aspects of the proposed improvements.

It is a pleasure to be of service to you on this project. Should you have any questions regarding the contents of this report, or should you require additional information, please do not hesitate to contact us.

Respectfully submitted,

PETRA GEOSCIENCES, INC.

Alan Pace
Senior Associate Geologist

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DESIGN-PHASE GEOTECHNICAL INVESTIGATION REPORT
PROPOSED RANCHO MIRAGE APARTMENTS
APPROXIMATELY 5 ACRES SOUTH OF THE RANCHO MIRAGE DOG PARK
A PORTION OF ASSESSOR'S PARCEL NO. 685-090-011
RANCHO MIRAGE, RIVERSIDE COUNTY, CALIFORNIA

PURPOSE AND SCOPE OF SERVICES

Petra Geosciences, Inc. (Petra) is presenting herein our design-phase geotechnical investigation report for an apartment buildings complex and various improvements that are currently proposed at the vacant site located in the city of Rancho Mirage, California. The improvements include the construction of a series of apartment buildings and associated utilities, paved parking, landscaping, and on-site stormwater retention. The purposes of this investigation were to 1) obtain information regarding surface and subsurface geologic conditions within the area of the proposed construction, 2) evaluate the engineering properties of the onsite soil materials, and 3) provide conclusions and recommendations for design and construction of the proposed improvements. To accomplish these objectives, our scope of services included the following:

1. Reviewing of published and unpublished literature and maps pertaining to regional faulting, seismic hazards and soil and geologic conditions within and adjacent to the site that could influence the design of the proposed structural elements.

2. Reviewing of historical aerial photographs of the area of proposed construction.

3. Performing a subsurface investigation within the area of proposed construction. The investigation consisted of drilling 3 exploratory borings to depths of 20 to 66 feet using a hollow-stem drilling rig. Additionally, drilling 1 exploratory boring to 10 feet below ground surface using the hollow-stem auger drilling method and performing a falling-head percolation test in the borehole. The boring logs are presented in Appendix A and the percolation tests results and infiltration rate calculations are presented in Appendix E.

4. Logging and field-classifying soil materials encountered in each boring in accordance with the visual-manual procedures outlined in the Unified Soil Classification System and the American Society for Testing and Materials (ASTM) Procedure D 2488-90. All field activities were performed by or under the direct observation of a State of California Certified Engineering Geologist.

5. Collecting representative bulk and relatively undisturbed soil samples for laboratory analysis. Undisturbed samples will be retrieved at 3- to 10-foot depth intervals utilizing a 2.4-inch inside diameter, modified-California split-spoon sampler. In addition, where granular soils were encountered within the saturated zone, these materials were selectively sampled using the Standard Penetration Test (SPT) method in accordance with ASTM Procedure D 1586-92.

6. Performing appropriate laboratory analysis on soil samples which included the following: in-situ and maximum dry density; in-situ and optimum moisture content; sieve analysis, remolded direct shear; collapse analysis; soluble sulfate and chloride content; general soil corrosivity (Sulfate, Chloride, pH and minimum resistivity).

7. Engineering and geologic analyses of the field and laboratory data as they pertain to the proposed construction.

8. An evaluation of faulting and seismicity of the region, and the possible impact of regional seismicity on the proposed construction.

9. Preparation of this geotechnical report presenting the results of our evaluation and recommendations for the proposed development in general conformance with the 2022 California Building Code (2022 CBC) and in accordance with applicable state and local jurisdictional requirements.

LOCATION AND SITE DESCRIPTION

The area of study considered under the scope of this investigation consists of 5 acres located to the southeast of the Rancho Mirage Dog Park. The location of the site with respect to nearby roadways and other landmarks is shown on the Site Location Map, Figure 1. The subject site is vacant and is bordered on the north by vacant land and existing shopping center along Dinah Shore Drive, on the east by vacant land and Monterey Avenue, on the west by vacant land and Key Largo Avenue, and on the south by undeveloped vacant land. The topography is approximately flat and level, with approximately 10 feet of relief from the south end of the site to the north end. The subject site's natural landscaping consists of few grasses and light desert scrub with no trees.

PROPOSED IMPROVEMENTS

Petra understands that the site is to be developed into approximately 150 apartments. Additionally, the improvements will consist of utilities, paved parking, landscaping, and on-site storm water retention. Neither grading plans nor specific details related to the proposed improvements were provided to Petra at the time this report was prepared. Based on the nearby development and the relatively flat topography of the site, Petra assumes that earthwork is generally limited to minor cuts and fills to establish finished grade elevations. It should be noted, however, that remedial grading (i.e., excavation and re-compaction of any existing undocumented fill soils that are present on the site and loose native soils) will entail deeper cuts from exiting grades as recommended in subsequent sections of this report. No extensive subterranean construction is anticipated.

FIELD EXPLORATION AND TESTING

Subsurface Exploration

Our subsurface exploration was performed on June 7, 2024, and involved the following:

- Drilling and sampling of two relatively shallow borings (B-2 and B-3) to depths of 20 feet below the existing ground surface and one deep boring (B-1) to a depth of 66 feet below the existing ground surface. All of the borings were drilled utilizing a truck-mounted, hollow-stem auger drill rig.

- Drilling one boring to a depth of 10 feet (Boring P-1) and performing a percolation test to observe infiltration characteristics of subsurface materials for stormwater retention design.

Earth materials encountered in each of the exploratory borings were field classified and logged in accordance with Unified Soil Classification System, USCS, procedures. In addition, our subsurface exploration included the collection of bulk and relatively undisturbed samples of the subsurface soils for laboratory testing purposes. Bulk samples consisted of selected earth materials obtained at various depth intervals from selected borings. Relatively undisturbed samples were collected using a 3-inch, outside-diameter, modified California split-spoon soil sampler lined with 1-inch-high brass or stainless-steel rings. The modified sampler was driven with successive 30-inch drops of a hydraulically operated 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the field logs. The central portions of the driven core samples were placed in sealed containers and transported to our laboratory for testing. The approximate locations of the exploratory borings are shown on the attached Boring Location Map, Figure 2, and descriptive exploration logs are presented in Appendix A.

In addition to the above sampling method, Standard Penetration Tests (SPT's) were also performed at selected depth intervals in accordance with the American Society for Testing Materials (ASTM) Standard Procedure D 1586. This method consists of mechanically driving an unlined standard split-barrel sampler 18 inches into the soil with successive 30-inch drops of the 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the exploration logs. The number of blows required to drive the standard split-spoon sampler for the last 12 of the 18 inches was identified as the uncorrected standard penetration resistance (N). Disturbed soil samples from the unlined standard split-spoon samplers were placed in plastic bags and transported to our laboratory for testing.

Laboratory Testing

In order to evaluate the engineering properties of onsite soils, a number of laboratory tests were performed on selected samples considered representative of the materials encountered within the study area. These

laboratory tests were performed shortly after completion of our field investigation and included determination of in-place dry density and moisture content, maximum dry density and optimum moisture content, sieve analysis, collapse potential, remolded shear strength, as well as chemical and electrical corrosivity potential (soluble sulfate and chloride content, pH, and minimum resistivity). A description of laboratory test methods is provided in the Laboratory Test Procedures section of this report (Appendix B). Summaries of the test data are presented on the exploration logs (Appendix A) and in Appendix B of this report.

Percolation Testing

Percolation testing was conducted in Exploratory Boring P-1 in accordance with County of Riverside Department of Environmental Health (RCDEH) test procedures and the guidelines presented in Appendix VII of the County of Orange Technical Guidance Document for WQMPs. The Orange County Manual references the RCDEH percolation test methods as an acceptable method of obtaining site infiltration data. The "percolation rates" determined in accordance with the RCDEH test procedures are based on both horizontal (lateral) and vertical percolation. Therefore, to consider vertical percolation only, the "percolation rates" were converted to a reasonable estimate of the "infiltration rate" using the Porchet Method presented in Appendix VII of the referenced County of Orange Technical Guidance Document.

Boring P-1 was converted to a percolation test hole following drilling by placing a two-inch (I.D.) perforated PVC pipe in the test hole. The annular space around the pipe was filled with open-graded gravel, approximately ¾-inch, within the annular space between the pipe and boring walls and a 3-inch-thick layer of gravel below the pipe. The remainder of the annular space was backfilled with boring cuttings. Clean water was then added to the boring to pre-soak the adjacent soils prior to performing the percolation test.

The percolation test was conducted in eolian sand that exists from the near surface to below the base of the percolation tests. Boring P-1 was drilled to a total depth of approximately 10 feet. The test hole was filled with clean water to approximately 5 feet from the ground surface. The drop in water level was measured at 10-minute intervals. From these readings, the percolation characteristics of the underlying eolian sand deposits was estimated. Percolation test results are presented in Appendix E and are summarized in Table 1. We note that the calculated infiltration rate presented in this table has a factor of safety of 1 and the project engineer should use an appropriate factor of safety per project Specifications.

TABLE 1

Unfactored Percolation Test Results

Test No.	Soil Type[1] (USCS)	Depth of Hole (Feet)	Measured [2] Percolation Rate (Minutes/Inch)	Infiltration Rate (I_t) [3] per Porchet Method (Inches/Hour) (F.S – 1)
P-1	SP	10	0.57	12.0

[1] Interbedded Strata – see Boring Logs, Appendix A
[2] RCDEH Test Procedure
[3] Minutes/inch converted to inches/hour per Porchet Method

FINDINGS

Regional Geologic Setting

The proposed development is located in the Coachella Valley, which is part of the Salton Trough geomorphic province of California. The Salton Trough geomorphic province encompasses the Coachella, Imperial and Mexicali Valleys, which extend from northeast of Palm Springs near San Gorgonio Pass to the Gulf of California. The geologic structure of the trough is a result of extensional forces within the earth's crust. The Coachella Valley is generally bounded by the San Jacinto and Santa Rosa Mountains on the west, the San Bernardino and the Little San Bernardino Mountains on the north, the Cottonwood Mountains and the Mecca Hills on the east, and the Salton Sea to the south. Alluvial (Streams), aeolian (wind-blown), and lacustrine (lake) sediments are the dominant geologic units of the Coachella Valley.

The watershed of the Coachella Valley empties into the Salton Sea at the lowest part of the basin. This basin was periodically filled with water to form the ancient Lake Cahuilla, depending on which side of its delta the Colorado River would drain. The sediments of the delta form a topographic high that separates the Salton basin, which is below sea level, from the Gulf of California (Sea of Cortez).

Local Geology and Subsurface Soil Conditions

In general, the soil materials underlying the site as encountered in our borings were noted to consist of very loose to very dense, poorly graded eolian sand to the maximum depth explored of 66 feet. The upper 3 to 4 feet of the soil was found to be dry and very loose to loose. Soils become medium dense to dense and finer grained with depth. The moisture content of these native soils is very low and on the order of less than 0.5 percent. Laboratory testing of relatively undisturbed samples of eolian sand yielded in-place dry densities ranging from 98 to 109 pounds per cubic foot.

Groundwater

Free groundwater was not encountered within any of the exploratory borings advanced onsite to the maximum depth explored of 66 feet below grades. According to a monitoring well located approximately 0.5 miles to the north, groundwater is located approximately 160 feet below the ground surface as of July 18, 2023 (CDWR Station 338086N1163878W001).

Faulting

The Coachella Valley is a seismically active area and numerous northwest-trending active faults have been documented within the area. The San Andreas fault zone is the most prominent fault within the Coachella Valley and is considered to be "active". An "active" fault is defined as a fault that has had displacement within the Holocene epoch, or last ±11,000 years. Based on our review, the site is not located within a *Fault Hazard Zone* (Bryant and Hart, 2007), as defined by the state of California in the Alquist-Priolo Earthquake Fault Zoning Act and no evidence for faulting was observed within the site during our study.

Secondary Seismic Hazards

Seismically Induced Landsliding

The site exhibits a generally flat topography, and no landslides exist within or near the site. Based on the topography across the site, the potential for landsliding is considered negligible.

Seismically Induced Flooding

The types of seismically induced flooding that are generally considered as potential hazards to a particular site normally include flooding due to a tsunami (seismic sea wave), a seiche, or failure of a major reservoir or other water retention structure upstream of the site. The Salton Sea is situated approximately 25 miles southeast of the site with an elevation approximately 500 feet lower than the subject site. In addition, no major reservoir is located near or upstream of the site. Therefore, the potential for seiche or inundation is considered negligible. Because of the inland location of the site, flooding due to a tsunami is also considered negligible at the site.

Liquefaction and Seismically Induced Settlement

Liquefaction

Liquefaction is a soil softening dynamic response, by which an increase in the excess pore water pressure results in partial to full loss of soil shear strength and post-liquefaction dissipation of this pore water pressure results in ground settlement shortly after the earthquake. In order for liquefaction to occur, the

following four factors are required: 1) saturated soil or soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels. SP117A (CGS, 2008) discusses preliminary screening methods sufficient to evaluate liquefaction potential without requiring a comprehensive liquefaction analysis; one of the considerations is the depth to groundwater. Sites with groundwater depth of around 50 feet below ground surface and deeper (including historic high ground water, current conditions, and future expectations), are considered unlikely to experience liquefaction within the upper 50 feet of the soil profile. Due to a very deep ground water table at the subject property (+160 feet) the potential for liquefaction at this site is considered negligible.

Dry Sand

Dry sand settlement can occur during moderate and large earthquakes when loose, natural or fill sandy soils are densified and settle, often unevenly across a site. In order for dry sand settlement to occur, the following four factors are required: 1) Relatively dry soil or soil situated above the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands. Structures situated above seismically densifying dry sandy soils may experience settlement or tilting of superstructures, or both.

Seismically Induced Settlement Parameters

Assessment of liquefaction or dry sand settlement potential for a particular site requires knowledge of a number of regional as well as site-specific parameters, including the estimated design earthquake magnitude, and the associated probable peak horizontal ground acceleration at the site, subsurface stratigraphy and soil characteristics. Parameters such as estimated probable peak horizontal ground acceleration can readily be determined using published references, or by utilizing a commercially available computer program specifically designed to perform a probabilistic analysis. In contrast, stratigraphy and soil characteristics can only be accurately determined by means of a site-specific subsurface investigation combined with appropriate laboratory analysis of representative samples of onsite soils.

Seismically Induced ‘Dry Sand’ Settlement

Propagating earthquake waves induces shearing stresses and strains in soil materials during strong ground shaking. This process rearranges the structure of granular soils such that there is an increase in density, with a corresponding decrease in volume, which results in vertical settlement. Seismically induced settlement has been well documented in wet, sandy deposits undergoing liquefaction (see Tokimatsu and Seed, 1987)

and in relatively dry sediments as well (Stewart et al, 1996). Specific methods to analyze potential wet and dry dynamic settlement are reported in Tokimatsu and Seed (1987), Pradel (1998), and Stewart et al. (2001; 2002). Most of the referenced papers focus on the seismic effects on dry, clean sands of a uniform grain size, though several reports extend the literature to fine-grained soils (Stewart et al., 2001 & 2002). State guidelines for evaluating dynamic settlement are provided in the California Geological Survey Special Publication 117A (CGS, 2008).

To evaluate the potential for earthquake-induced dry sand settlement at the site and its impact on the proposed improvements, we performed a settlement analysis of the data from our 66 feet deep boring B-1 using LiqSVs program (Geologismiki, Version 2.3.2.11). LiqSVs is a software that evaluates liquefaction potential and calculates the settlement of soil deposits due to seismic loads. For the purpose of dry sand settlement analyses, we considered a design groundwater level at a depth of 160 feet below the existing ground surface, peak ground acceleration for maximum considered earthquake (PGA_M) in the site vicinity to be approximately 0.868g, and a predominant earthquake magnitude of 7.49 Mw.

The results of our analysis indicate that the loose and medium dense poorly graded eolian sand encountered below the ground surface to the depth of approximately 10 feet in our borings appear to be prone to dry sand settlement during seismic shaking. Assuming that the upper 4 feet of soil will be replaced with an engineered fill soil not susceptible to dynamic settlement, we estimate that total dynamic settlement up to about 1½ to 2-inches is possible at the ground surface due to dry sand settlement from the MCE level earthquake. In our opinion, differential dry sand settlement of up to about 1½ -inch over a horizontal distance of approximately 100 feet may occur across the proposed improvements at the ground surface. A summary of our dry sand settlement analysis is presented in Appendix D. The estimated dry sand settlement should be considered during the structural design of the foundation system of the proposed improvements.

It should be noted that in the literature, prediction of the seismic settlement for unsaturated sandy soils, referred to as 'dry sand' settlement, is based on observation of performance of 5 sites that were comprised of clean sands, i.e. sands with 5 percent fines or less. However, the shallow site soils, above the assumed historic high groundwater level, are comprised of sands with substantial amounts of fines. The presence of fines influences (reduces) the settlement potential under a seismic event. To overcome this, the measured resistance parameters of soils with fines are first converted to that of clean sand values and then are used in the predictive routines. This is an indirect approach and, therefore, lacks the performance-based verification requirements. In addition, sandy deposits, especially within vadose zones, contain certain amount of pore water that, because of surface tension properties of water molecules, create tensile intra-particle forces, albeit, very weak, that are expected to reduce the particle rearrangement tendencies of sandy deposits during

ground shaking. Further, sometimes the 'dry sand' seismic settlement calculation results are multiplied by factor of 2 to account for bidirectional nature of seismic waves propagations. That is, the investigators are provided with an optional factor of 2 to multiply the results of their seismic 'dry sand' calculations. It is our professional opinion that for the reasons cited herein dry sand settlement calculations are less reliable compared to that of the liquefaction settlement. It is perhaps for these and potentially other reasons that some review agencies do not require 'dry sand' settlement calculations as a part of their approval process.

CONCLUSIONS AND RECOMMENDATIONS

General Feasibility

Although the detailed development plans are not fully available, from a soils engineering and engineering geologic point of view and based on our current knowledge of the project, the subject property is considered suitable for the proposed development. It is our opinion that the proposed construction will not adversely affect the geologic stability of adjoining properties in an adverse manner provided grading and construction are performed in accordance with current standards of practice, all applicable grading ordinances and the recommendations presented in this report.

Earthwork and Grading

General Specifications

All earthwork and grading should be performed in accordance with all applicable requirements of the grading and excavation codes of the County of Riverside, and in compliance with all applicable provisions of the 2022 California Building Code (2022 CBC). Grading should also be performed in accordance with the recommendations provided in this report.

Geotechnical Observations and Testing

Prior to the start of earthwork, a meeting should be held at the site with the owner's representative, contractor and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Earthwork, which in this instance will generally entail removal and re-compaction of the near surface soils, should be accomplished under full-time observation and testing by the geotechnical consultant. A representative of the project geotechnical consultant should be present onsite during all earthwork operations to document placement and compaction of fills, as well as to document compliance with the other recommendations presented herein.

Demolition, Clearing and Grubbing

Following any demolition, clearing operations should also include the removal of any remaining trash, debris, vegetation and similar deleterious materials including the root balls from any trees. Any cavities or excavations created upon removal of any unknown subsurface structures or inclusions should be cleared of loose soil, shaped to provide access for backfilling and compaction equipment and then backfilled with engineered fill. Note that buried deleterious materials may be encountered within the site (i.e., buried organics or debris) due to the past site usage and may need to be removed by hand (i.e., root pickers), during grading operations.

The project geotechnical consultant should provide periodic observation and testing services during final clearing and grubbing operations to document compliance with the above recommendations. In addition, should unusual or adverse soil conditions or buried structures be encountered during grading that are not described herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

Unsuitable Soil Removals and Bottom Processing

Any existing undocumented fill and near surface native soils are considered unsuitable for support of proposed structures and should be removed to underlying competent alluvial materials as approved by the project geotechnical consultant. As such, the estimated depth of removal is recommended to be approximately 4 feet below the existing ground surface, or 3 feet below the bottom of the deepest footing, whichever is deeper. Consideration should be given to locally deepening the excavation at the location of tree roots, any underground structures, or proposed subterranean features (if any), including swimming pools if proposed, in order to provide a uniform depth of compacted fill in all areas. Soil removals could be locally deeper depending upon the actual exposed conditions encountered during grading. At a minimum, the over-excavation should extend a distance beyond the perimeter of the supported structure equal to the depth of the over-excavation. The actual depths and horizontal limits of removals and over-excavations should be evaluated upon availability of the site grading plan and during grading on the basis of observations and testing performed by the project geotechnical consultant. Excavated soils, if found free of deleterious materials, are considered acceptable for use as compacted fill.

Prior to placing engineered fill, the exposed bottom surfaces in the removal areas should be approved by a representative of project geotechnical consultant. The exposed bottom(s) should be scarified to a minimum depth of 12 inches, moisture-conditioned or air-dried to achieve approximately two percent above optimum moisture content and then compacted with a heavy construction equipment prior to placement of fill. The

minimum compaction of the upper 12 inches of the removal bottom should meet or exceed 90 percent relative compaction. The laboratory maximum dry density, the standard for determining relative compaction, and optimum moisture content for each change in soil type should be determined in accordance with Test Method ASTM D 1557.

Grading at Site Boundaries

Average remedial removals within the building pad areas, extending horizontally beyond the limits of the proposed structures a distance equal to the depth of the overexcavation, are anticipated to be on the order of 4 feet below the existing ground surface, although locally deeper over-excavation is possible. A vertical cut at the perimeter of any overexcavation area along the property lines is not expected to remain stable. As such, vertical cuts immediately adjacent to existing structures (if any) are not acceptable from geotechnical standpoint. Specific recommendations for protection of any existing structures or improvements adjacent to the recommended overexcavation, either interior or at the perimeter of the site can be provided following review of site development plans. Recommendations may include shoring and slot-cutting for areas adjacent to property boundaries and underpinning, or other methods intended to prevent settlement or distress to existing improvements.

Excavation Characteristics

Based on the observed soil types in our borings, shallow excavation of soils within the site are expected to be readily excavatable with conventional earthmoving equipment.

Fill Placement

All fill materials should be placed in approximately 6- to 8-inch-thick loose lifts, watered or air-dried as necessary to achieve a minimum moisture content at least 2 percent above the optimum moisture condition, and then compacted in-place to a minimum relative compaction of 90 percent. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with ASTM D 1557.

Imported Soils

If imported soils are required to complete the planned grading, these soils should consist of clean materials devoid of rock exceeding a maximum dimension of 4 inches, organics, trash and other deleterious materials. To avoid making revisions to the foundation design, imported soils should also be granular and exhibit a very low expansion potential (Expansion Index 0-20). Prospective import soils should be observed at the source, tested and approved by the geotechnical consultant prior to importing the soils to the site. It is

recommended that the project environmental consultant should also be notified so that they can confirm the suitability of the proposed import material from an environmental standpoint.

Volumetric Changes - Bulking, Shrinkage and Subsidence

An average shrinkage factor estimated at 10 to 15 percent is anticipated when excavated on-site soils are replaced as properly compacted fill. A subsidence, estimated at 0.15 to 0.25 feet may also occur when exposed bottom surfaces in removal areas are scarified and re-compacted as recommended herein. These estimates of shrinkage and subsidence are intended for use by project planners in estimating earthwork quantities and should not be considered absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that will occur during grading.

Temporary Excavations

Temporary excavations up to a depth of up to roughly four feet below existing grades may be required to accomplish the recommended over-excavation of existing soils. Based on the physical properties of the onsite soils, any temporary excavations exceeding 4 feet in height should be cut back to an inclination of 1.5:1 (h:v) or flatter for the duration of the over-excavation of unsuitable soil material and replacement as compacted fill, as well as placement of underground utilities. During remedial grading the estimated 1.5:1 (h:v) recommendation may possibly be flattened or steepened, depending on conditions observed by a representative of the project geotechnical consultant. Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and/or storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures adjacent to the excavation and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, OSHA, of 1970 and the Construction Safety Act should also be followed.

Expansive Soil Conditions

Based on available data, including the non-plastic, granular nature of the soils encountered in the subsurface exploration and the Expansion Index equal to zero in the tested representative sample, near-surface soils are considered Very Low in expansion potential (Expansion Index less than 20). Additional sampling and testing should be performed during site grading for determining actual expansion potential of the supporting building pad soils.

PRELIMINARY FOUNDATION DESIGN CONSIDERATIONS

Seismic Design Parameters

Earthquake loads on earthen structures and buildings are a function of ground acceleration which may be determined from the site-specific ground motion analysis. Alternatively, a design response spectrum can be developed for certain sites based on the code guidelines. To provide the design team with the parameters necessary to construct the design acceleration response spectrum for this project, we used two computer applications. Specifically, the first computer application, which was jointly developed by Structural Engineering Association of California (SEAOC) and California's Office of Statewide Health Planning and Development (OSHPD), the SEA/OSHPD Seismic Design Maps Tool website, https://seismicmaps.org, is used to calculate the ground motion parameters. The second computer application, the United Stated Geological Survey (USGS) Unified Hazard Tool website, https://earthquake.usgs.gov/hazards/interactive/, is used to estimate the earthquake magnitude and the distance to surface projection of the fault. The results obtained from these websites are presented in Appendix C.

To run the above computer applications, site latitude and longitude, seismic risk category and knowledge of site class are required. The site class definition depends on the direct measurement of certain soil properties and the ASCE 7-16 recommended procedure for calculating the average shear wave velocity within the upper 30 meters (approximately 100 feet) of site soils. Several methods exist to determine the shear wave velocity, including correlation with SPT blow counts. Based on the blow counts obtained in boring B-1 (including converting California Modified Sampler blow counts to SPT after Burmister (1948)) and Petra's knowledge of site geologic conditions, Site Class D (D – Stiff Soil as per the SEA/OSHPD software) has been assigned to the subject site.

Petra has assumed that the proposed structures should be categorized as Risk Category II pursuant to 2022 CBC Table 1604.5. If the specifics of the proposed project warrant a different Risk Category, the members of the design team responsible for this determination may assign the appropriate Risk Category. Seismic design parameters provided below are not impacted by the assumed Risk Category.

The following table, Table 2, provides parameters required to construct the seismic response coefficient, Cs, curve based on ASCE 7-16, Article 12.8 guidelines. A printout of the computer output is attached in Appendix C. The results of conversion of blow count data to small-strain shear wave velocity are also provided in Appendix C.

TABLE 2

Seismic Design Parameters

Ground Motion Parameters	Specific Reference	Parameter Value	Unit
Site Latitude (North)	-	33.796486	°
Site Longitude (West)	-	-116.394338	°
Site Class Definition	Section 1613.2.2 (1), Chapter 20 (2)	D-Stiff (4)	-
Assumed Risk Category	Table 1604A.5 (1)	II	-
M_w - Earthquake Magnitude	USGS Unified Hazard Tool (3)	7.49 (3)	-
R – Distance to Surface Projection of Fault	USGS Unified Hazard Tool (3)	6.61 (3)	km
S_s - Mapped Spectral Response Acceleration Short Period (0.2 second)	Figure 1613.2.1(1) (1)	1.819 (4)	g
S_1 - Mapped Spectral Response Acceleration Long Period (1.0 second)	Figure 1613.2.1(2) (1)	0.757 (4)	g
F_a – Short Period (0.2 second) Site Coefficient	Table 1613A.2.3(1) (1)	1.0 (4)	-
F_v – Long Period (1.0 second) Site Coefficient	Table 1613A.2.3(2) (1)	Null (4)	-
S_{MS} – MCE_R Spectral Response Acceleration Parameter Adjusted for Site Class Effect (0.2 second)	Equation 16-36 (1)	1.819 (4)	g
S_{M1} - MCE_R Spectral Response Acceleration Parameter Adjusted for Site Class Effect (1.0 second)	Equation 16-37 (1)	Null (4)	g
S_{DS} - Design Spectral Response Acceleration at 0.2-s	Equation 16-38 (1)	1.213 (4)	g
S_{D1} - Design Spectral Response Acceleration at 1-s	Equation 16-39 (1)	Null (4)	g
$T_o = 0.2\ S_{D1}/\ S_{DS}$	Section 11.4.6 (2)	Null	s
$T_s = S_{D1}/\ S_{DS}$	Section 11.4.6 (2)	Null	s
T_L - Long Period Transition Period	Figure 22-14 (2)	8 (4)	s
PGA - Peak Ground Acceleration at MCE_G (*)	Figure 22-9 (2)	0.789 (4)	g
F_{PGA} - Site Coefficient Adjusted for Site Class Effect (2)	Table 11.8-1 (2)	1.1 (4)	-
PGA_M –Peak Ground Acceleration (2) Adjusted for Site Class Effect	Equation 11.8-1 (2)	0.868 (4)	g
Design PGA ≈ (⅔ PGA_M) - Slope Stability (†)	Similar to Eqs. 16-38 & 16-39 (2)	0.58	g
Design PGA ≈ (0.4 S_{DS}) – Short Retaining Walls (‡)	Equation 11.4-5 (2)	0.49	g
C_{RS} - Short Period Risk Coefficient	Figure 22-18A (2)	0.893 (4)	-
C_{R1} - Long Period Risk Coefficient	Figure 22-19A (2)	0.879 (4)	-
SDC - Seismic Design Category (§)	Section 1613.2.5 (1)	Null (4)	-

References:

(1) California Building Code (CBC), 2022, California Code of Regulations, Title 24, Part 2, Volume I and II.

(2) American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI), 2016, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, Standards 7-16.

(3) USGS Unified Hazard Tool - https://earthquake.usgs.gov/hazards/interactive/

(4) SEI/OSHPD Seismic Design Map Application – https://seismicmaps.org

Related References:

Federal Emergency Management Agency (FEMA), 2015, NEHERP (National Earthquake Hazards Reduction Program) Recommended Seismic Provision for New Building and Other Structures (FEMA P-1050).

Notes:

* PGA Calculated at the MCE return period of 2475 years (2 percent chance of exceedance in 50 years).

† PGA Calculated at the Design Level of ⅔ of MCE; approximately equivalent to a return period of 475 years (10 percent chance of exceedance in 50 years).

‡ PGA Calculated for short, stubby retaining walls with an infinitesimal (zero) fundamental period.

§ The designation provided herein may be superseded by the structural engineer in accordance with Section 1613.2.5.1, if applicable.

Discussion

General

Owing to the characteristics of the subsurface soils, as defined by Site Class D-Stiff Soil designation, and proximity of the site to the sources of major ground shaking, the site is expected to experience strong ground shaking during its anticipated life span. Under these circumstances, where the code-specified design response spectrum may not adequately characterize site response, the 2022 CBC typically requires a site-specific seismic response analysis to be performed. This requirement is signified/identified by the "null" values that are output using SEA/OSHPD software in determination of short period, but mostly, in determination of long period seismic parameters, see Table 2.

For conditions where a "null" value is reported for the site, a variety of design approaches are permitted by 2022 CBC and ASCE 7-16 in lieu of a site-specific seismic hazard analysis. For any specific site, these alternative design approaches, which include Equivalent Lateral Force (ELF) procedure, Modal Response Spectrum Analysis (MRSA) procedure, Linear Response History Analysis (LRHA) procedure and Simplified Design procedure, among other methods, are expected to provide results that may or may not be more economical than those that are obtained if a site-specific seismic hazards analysis is performed. These design approaches and their limitations should be evaluated by the project structural engineer.

Seismic Design Category

Please note that the Seismic Design Category, SDC, is also designated as "null" in Table 2. For Risk Category is I, II, or III structures, where the mapped spectral response acceleration parameter at 1 – second period, S_1, is greater than or equal to 0.75, the 2022 CBC, Section 1613.2.5 requires the assignment to Seismic Design Category E.

Equivalent Lateral Force Method

Should the Equivalent Lateral Force (ELF) method be used for seismic design of structural elements, the value of Constant Velocity Domain Transition Period, T_s, is estimated to be 0.71 seconds and the value of Long Period Transition Period, T_L, is provided in Table 2 for construction of Seismic Response Coefficient – Period (C_s -T) curve that is used in the ELF procedure.

As stated herein, the subject site is considered to be within a Site Class D-Stiff Soil. A site-specific ground motion hazard analysis is not required for structures on Site Class D-Stiff Soil with S1 > 0.2 provided that the Seismic Response Coefficient, Cs, is determined in accordance with ASCE 7-16, Article 12.8 and structural design is performed in accordance with Equivalent Lateral Force (ELF) procedure.

Foundation System

In consideration of the existing surficial soils and the recommended remedial grading herein, conventional shallow foundations, consisting of isolated column footings interconnected with tie beams and continuous footings, may be used for support of the proposed structures. Structural foundation loads are currently unknown but are assumed to be typical for two-story light-framed construction.

Eccentrically loaded footings should be avoided if possible. In the event that the design requires eccentric loading, the design should consider the effective footing dimensions rather than actual dimensions. Pad footings located closer than 2 x B (where B is the footing width) to an adjacent footing should be designed as a single footing. Allowable bearing capacity for square footings apply as long as L/B is less than 5 (where L is the footing length).

Allowable Soil Bearing Capacity, Anticipated Settlement and Lateral Resistance

Pad Footings

Based on the test results (ultimate friction angle of 26.4 degrees and negligible cohesion), an allowable soil bearing capacity of 2,000 pounds per square foot, including dead and live loads, may be utilized for design of 24-inch-square pad footings that are a part of the slab system and embedded a minimum of 12 inches below the lowest adjacent compacted final grade. This value may be increased by 20 percent for each foot of embedment and by 10 percent for each additional foot of width, to a maximum value of 3,000 pounds per square foot. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces.

Continuous Footings

An allowable soil bearing capacity of 1,500 pounds per square foot may be utilized for design of continuous footings founded at a minimum depth of 18 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional foot of depth and by 10 percent for each additional foot of width, to a maximum value of 3,000 pounds per square foot. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces.

Estimated Static Settlement

Based on the allowable bearing values provided above, total static settlement of the footings under the anticipated loads is expected to be on the order of 1 inch. Differential settlement is expected to be less than ¾ inch over a horizontal span of 30 feet. The majority of settlement is likely to take place as footing loads are applied or shortly thereafter.

Seismically Induced Settlement

As previously noted, if remedial grading removes and replaces the upper 4 feet of existing soils as compacted fill, the total seismic settlement is estimated at approximately 2 inches. Differential seismic settlement is estimated to be around 1 ½ inches over a span of 100 feet.

Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth, to a maximum value of 2,500 pounds per square foot, may be used to determine lateral bearing resistance for footings. In addition, a coefficient of friction of 0.30 times the dead load forces may be used between concrete and the supporting soils to determine lateral sliding resistance. The above values may be increased by one-third when designing for transient wind or seismic forces. It should be noted that the above values are based on the condition where footings are cast in direct contact with compacted fill or competent native soils. In cases where the footing sides are formed, all backfill placed against the footings upon removal of forms should be compacted to at least 90 percent of the applicable maximum dry density.

Guidelines for Footings and Slabs on-Grade Design and Construction

Based on the sandy nature of the material encountered in the borings and Petra's experience in the area, the site soils have expansive indices less than 20. As indicated in Section 1803.5.3 of 2022 California Building Code (2022 CBC), these soils are considered non-expansive and, as such, the design of slabs on-grade is considered to be exempt from the procedures outlined in Sections 1808.6.2 of the 2022 CBC and may be performed using any method deemed rational and appropriate by the project structural engineer. However, the following minimum recommendations are presented herein for conditions where the project design team may require geotechnical engineering guidelines for design and construction of footings and slabs on-grade the project site.

> *The design and construction guidelines that follow are based on the above soil conditions and may be considered for reducing the effects of variability in fabric, composition and, therefore, the detrimental behavior of the site soils such as excessive short- and long-term total and differential heave or settlement. These guidelines have been developed on the basis of the previous experience of this firm on projects with similar soil conditions. Although construction performed in accordance with these guidelines has been found to reduce post-construction movement and/or distress, they generally do not positively eliminate all potential effects of variability in soils characteristics and future heave or settlement.*

It should also be noted that the suggestions for dimension and reinforcement provided herein are performance-based and intended only as preliminary guidelines to achieve adequate performance under the anticipated soil conditions. However, they should not be construed as replacement for structural engineering analyses, experience and judgment. The project structural engineer, architect and/or civil engineer should make appropriate adjustments to slab and footing dimensions, and reinforcement type, size and spacing to account for internal concrete forces (e.g., thermal, shrinkage and expansion), as well as external forces (e.g., applied loads) as deemed necessary. Consideration should also be given to minimum design criteria as dictated by local building code requirements.

Conventional Slabs on-Grade System

Considering an expansion index of less than 20, we recommend that footings and floor slabs be designed and constructed in accordance with the following minimum criteria.

Footings

1. Exterior continuous footings supporting one- and two-story structures should be founded at a minimum depth of 18 inches below the lowest adjacent final grade, respectively. Interior continuous footings may be founded at a minimum depth of 12 inches below the top of the adjacent finish floor slabs.

2. In accordance with Table 1809.7 of 2022 CBC for light-frame construction, all continuous footings should have minimum widths of 12 inches for one- and two-story structures. We recommend all continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

3. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across garage entrances or similar openings (such as large doors or bay windows). The grade beam should be reinforced in a similar manner as provided above.

4. Interior isolated pad footings, if required, should be a minimum of 24 inches square and founded at a minimum depth of 12 inches below the bottoms of the adjacent floor slabs for one- and two-story structures. Pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings.

5. Exterior isolated pad footings intended for support of roof overhangs such as second-story decks, patio covers, and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

6. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Building Floor Slabs

1. Concrete floor slabs should be a minimum of 4 inches thick and reinforced with No. 3 bars spaced a maximum of 24 inches on centers, both ways. Alternatively, the structural engineer may recommend the use of prefabricated welded wire mesh for slab reinforcement. For this condition, the welded wire mesh should be of sheet type (not rolled) and should consist of 6x6/W2.9xW2.9 (per the Wire Reinforcement Institute, WRI, designation) or stronger. All slab reinforcement should be supported on concrete chairs or brick to ensure the desired placement near mid-depth. Care should be exercised to prevent warping of the welded wire mesh between the chairs in order to ensure its placement at the desired mid-slab position.

   Slab dimension, reinforcement type, size and spacing need to account for internal concrete forces (e.g., thermal, shrinkage and expansion) as well as external forces (e.g., applied loads), as deemed necessary. Consideration should also be given to using a control joint spacing on the order of 2 feet in each direction for each inch of slab thickness.

   It should be noted that some of the non-climatic site parameters, which may impact slabs on-grade performance, are not known at this time, as it is the case for many projects at the design stage. Some of these site parameters include unsaturated soils diffusion conditions pre- and post-construction (e.g., casting the slabs at the end of long, dry or wet periods, maintenance during long, dry and wet periods, etc.), landscaping, alterations in site surface gradient, irrigation, trees, etc. While the effects of any or a combination of these parameters on slab performance cannot be accurately predicted, maintaining moisture content equilibrium within the soils mass and planting trees at a distance greater than half of their mature height away from the edge of foundation may reduce the potential for the adverse impact of these site parameters on slabs on-grade performance.

2. Living area concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete.

   In general, to reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.. Foot traffic on the membrane should be reduced to a minimum. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

   To comply with Section 1907.1.1 of the 2022 CBC, the living area concrete floor slab should also be underlain with capillary break consisting of a minimum of 4 inches of gravel or crushed stone containing not more than 10 percent of material that passes through a No. 4 sieve. The capillary break should be placed below the 10-mil moisture vapor retarder and may be considered as the structural fill recommended above.

At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer or contractor with experience in slab design, construction, and curing should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

3. Garage floor slabs should be a minimum 4 inches thick and reinforced in a similar manner as living area floor slabs. Garage slabs should also be poured separately from adjacent wall footings with a positive separation maintained using ¾-inch-minimum felt expansion joint material. To control the propagation of shrinkage cracks, garage floor slabs should be quartered with weakened plane joints. Consideration should be given to placement of a moisture vapor retarder below the garage slab, similar to that provided in Item 2 above, should the garage slab be overlain with moisture sensitive floor covering.

4. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

5. The minimum dimensions and reinforcement recommended herein for building floor slabs may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Post-Tensioned Slabs on-Grade System

In consideration of the expansion index of less than 20, as predominantly exhibited by onsite soils, any rational and appropriate procedure may be chosen by the project structural engineer for the design of post-tensioned slabs on-grade. Should the design engineer choose to follow the latest Code-adopted edition of the procedure published by the Post-Tensioning Institute (PTI DC 10.5), the following minimum design criteria are provided Table 3, below.

TABLE 3

Presumptive Post-Tensioned Slab on-Grade Design Parameters for PTI Procedure

Soil Information	
Approximate Depth of Constant Suction, feet	9
Approximate Soil Suction, pF	3.9
Inferred Thornthwaite Index:	-20
Average Edge Moisture Variation Distance, e_m in feet: Center Lift Edge Lift	 9.0 4.7
Anticipated Swell, y_m in inches: Center Lift Edge Lift	 0.25 0.45

Modulus of Subgrade Reaction

The modulus of subgrade reaction for design of load bearing elements depends on the size of the element and soil-structure interaction. However, as a first level of approximation, this value may be assumed to be 125 pounds per cubic inch.

Minimum Design Recommendations

The soil values provided above may be utilized by the project structural engineer to design post-tensioned slabs on-ground in accordance with Section 1808.6.2 of the 2022 CBC and the PTI publication. Thicker floor slabs and larger footing sizes may be required for structural reasons and should govern the design if more restrictive than the minimum recommendations provided below:

1. Exterior continuous footings for one- and two-story structures should be founded at a minimum depth of 12 inches below the lowest adjacent finished ground surface. Interior footings may be founded at a minimum depth of 10 inches below the tops of the adjacent finish floor slabs.

2. In accordance with Table 1809.7 of 2022 CBC for light-frame construction, all continuous footings should have minimum widths of 12 inches for one- and two-story construction. We recommend all continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. Alternatively, post-tensioned tendons may be utilized in the perimeter continuous footings in lieu of the reinforcement bars.

3. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across the large entrances or similar openings (such as warehouse doors or bay windows). The grade beam should be reinforced in a similar manner as provided above.

4. Interior isolated pad footings, if required, should be a minimum of 24 inches square and founded at a minimum depth of 12 inches below the bottoms of the adjacent floor slabs for one- and two-story buildings. Pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings.

5. Exterior isolated pad footings intended for support of roof overhangs such as second-story decks, patio covers, and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

6. The thickness of the floor slabs should be determined by the project structural engineer with consideration given to the expansion index of the onsite soils; however, we recommend that a minimum slab thickness of 4 inches be considered.

7. As an alternative to designing 4-inch-thick post-tensioned slabs with perimeter footings as described in Items 1 and 2 above, the structural engineer may design the foundation system using a thickened slab design. The minimum thickness of this uniformly thick slab should be 7.5 inches. The engineer in charge of post-tensioned slab design may also opt to use any combination of slab thickness and footing embedment depth as deemed appropriate based on their engineering experience and judgment.

8. Concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.

   At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer with experience in slab design and construction should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

9. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

10. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Foundation Excavation Observations

All footing trenches should be observed by a representative of the project geotechnical consultant to document that they have been excavated into competent bearing soils prior to the placement of forms, reinforcement or concrete. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture-softened soils and/or any construction debris should be removed prior to the placing of concrete. Excavated soils derived from footing and/or utility trenches should not be placed in building slab-on-grade areas or exterior concrete flatwork areas unless the soils are compacted to at least 90 percent of maximum dry density.

General Corrosivity Screening

As a screening level study, very limited chemical and electrical tests were performed on samples considered representative of the onsite soils to identify potential corrosive characteristics of these soils. The common indicators associated with soil corrosivity include water-soluble sulfate and chloride levels, pH (a measure of acidity), and minimum electrical resistivity. Test results are presented in Table 4 below.

> *It should be noted that Petra does not practice corrosion engineering; therefore, the test results, opinion and engineering judgment provided herein should be considered as general guidelines only. Additional analyses would be warranted, especially for cases where buried metallic building materials (such as copper and cast or ductile iron pipes) in contact with site soils are planned for the project. In many cases, the project geotechnical engineer may not be informed of these choices. Therefore, for conditions where such elements are considered, we recommend that other, relevant project design professionals (e.g., the architect, landscape architect, civil and/or structural engineer) also consider recommending a qualified corrosion engineer to conduct additional sampling and testing of near-surface soils during the final stages of site grading to provide a complete assessment of soil corrosivity. Recommendations to mitigate the detrimental effects of corrosive soils on buried metallic and other building materials that may be exposed to corrosive soils should be provided by the corrosion engineer as deemed appropriate.*

In general, a soil's water-soluble sulfate levels and pH relate to the potential for concrete degradation; water-soluble chlorides in soils impact ferrous metals embedded or encased in concrete, e.g., reinforcing steel; and electrical resistivity is a measure of a soil's corrosion potential to a variety of buried metals used in the building industry, such as copper tubing and cast or ductile iron pipes. Table 4, below, presents test results. with an interpretation of current code indicators and guidelines that are commonly used in this industry. The table includes the classifications of the soils as they relate to the various tests, as well as a general recommendation for possible mitigation measures in view of the potential adverse impact on

various components of the proposed structures in direct contact with site soils. The guidelines provided herein should be evaluated and confirmed, or modified, in their entirety by the project structural engineer, corrosion engineer and/or the contractor responsible for concrete placement for structural concrete used in exterior and interior footings, interior slabs on-ground, garage slabs, wall foundations and concrete exposed to weather such as driveways, patios, porches, walkways, ramps, steps, curbs, etc.

TABLE 4

Soil Corrosivity Screening Results

Test	Test Results	Classification	General Recommendations
Soluble Sulfates (Cal 417)	0.0018 percent	S0[1] Not Applicable	No cement type restrictions; no water/cement ratio restrictions; min. f'_c = 2,500 psi
pH (Cal 643)	7.5	Slightly Alkaline	No special recommendations
Soluble Chloride (Cal 422)	330 ppm	C1[2] Moderate C2[4] Severe	Residence: No special recommendations, f'_c should not be less than 2,500 psi. Pools & Decking: Water/cement ratio should not exceed 0.40; min. f'_c = 5,000 psi
Resistivity (Cal 643)	20,000 ohm-cm	Mildly Corrosive[3]	A corrosion engineer should be consulted for long term protection of metallic elements in contact with site soils

Notes:
1. ACI 318-14, Section 19.3
2. ACI 318-14, Section 19.3
3. Pierre R. Roberge, "Handbook of Corrosion Engineering"
4. Exposure classification C2 applies specifically to swimming pools and appurtenant concrete elements

Post-Grading Considerations

Utility Trenches

All utility trenches backfill should be compacted to a minimum relative compaction of 90 percent. Due to the nature of the upper onsite earth materials, flooding and jetting techniques should be avoided. Therefore, trench backfill materials should be placed in lifts no greater than approximately 12 inches in thickness, watered or air-dried as necessary to achieve near optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. A representative of the project geotechnical consultant should probe and test the backfills to verify adequate compaction.

As an alternative for shallow trenches where pipe or utility lines may be damaged by mechanical compaction equipment, such as under building floor slabs, imported clean sand having a sand equivalent

(SE) value of 30 or greater may be utilized. The sand backfill materials should be watered to achieve near optimum moisture conditions and then tamped into place. No specific relative compaction will be required; however, observation, probing, and if deemed necessary, testing should be performed by a representative of the project geotechnical consultant to verify an adequate degree of compaction.

If clean, imported sand is to be used for backfill of exterior utility trenches, it is recommended that the upper 12 inches of trench backfill materials consist of properly compacted onsite soil materials. This is to mitigate infiltration of irrigation and rainwater into granular trench backfill materials.

Where an exterior and/or interior utility trench is proposed in a direction parallel to a building footing, the bottom of the trench should not extend below a 1:1 (horizontal to vertical) plane projected downward from the bottom edge of the adjacent footing. Where this condition occurs, the adjacent footing should be deepened, or the utility constructed and the trench backfilled and compacted prior to footing construction. Where utility trenches cross under a building footing, these trenches should be backfilled with on-site soils at the point where the trench crosses under the footing to reduce the potential for water to migrate under the floor slabs.

Site Drainage

Positive surface drainage systems consisting of a combination of sloped concrete flatwork/asphalt pavement, sheet flow gradients, swales and surface area drains (where needed) should be provided around the building and within any planter areas to collect and direct all surface waters to an appropriate drainage facility as determined by the project civil engineer. The ground surfaces of planter and landscape areas that are located within 10 feet of building foundations should be sloped at a minimum gradient of 5 percent away from the foundations and towards the nearest area drains. The ground surface of planter and landscape areas that are located more than 10 feet away from building foundations may be sloped at a minimum gradient of 2 percent away from the foundations and towards the nearest area drains.

Concrete flatwork surfaces that are located within 10 feet of building foundations should be inclined at a minimum gradient of one percent away from the building foundations and towards the nearest area drains. Concrete flatwork surfaces that are located more than 10 feet away from building foundations may be sloped at a minimum gradient of 1 percent towards the nearest area drains. Surface waters should not be allowed to collect or pond against building foundations and within the level areas of the site. All drainage devices should be properly maintained throughout the lifetime of the development. Future changes to site improvements, or planting and watering practices, should not be allowed to cause over-saturation of site soil adjacent to the structures.

Bottomless Trench Drains

When gravel filled bottomless infiltration systems are constructed near foundations, a potential exists for oversaturation of the foundation soils which conflicts with the intended purpose of onsite drainage facilities. In addition, it has been our experience that a leading cause of distress to buildings and foundations is due to poor management of water next to building foundations. Petra recommends a setback of at least 15 feet between any infiltration system and building foundations. If this setback distance cannot be maintained, then a modified foundation system may be required to alleviate any distress that could be caused by infiltration of water near the footing. A modified foundation system could consist of constructing deepened footings within 15 feet of the infiltration system and installing extra reinforcement. Design of a modified foundation system is referred to the project structural engineer.

Retaining Walls

Due to the relatively flat and level site, it is anticipated that tall retaining walls will not be necessary for this project. Shorter retaining walls may be utilized for grading and landscaping purposes. Petra should be afforded the opportunity to review all proposed retaining wall design. Retaining walls retaining less than 6 feet of soil and without additional surcharge may be designed according to the following recommendations.

Allowable Bearing Values

Proposed retaining walls should be supported on spread footings using the design criteria recommended previously for building footings; however, when calculating passive resistance, the passive earth pressure for retaining walls supported by descending slopes should be reduced to 150 pounds per square foot, per foot of depth, to a maximum value of 1,500 pounds per square foot.

Active and At-Rest Earth Pressures

1. On-Site Soils Used for Backfill
   On-site soil and bedrock materials have predominant very low expansion potentials. Therefore, for this condition, active earth pressures equivalent to fluids having densities of 35 and 51 pounds per cubic foot should be used for design of cantilevered walls retaining a level backfill and ascending 2:1 backfill, respectively. For walls that are restrained at the top, at-rest earth pressures of 53 and 78 pounds per cubic foot (equivalent fluid pressures) should be used. The above values are for retaining walls that have been supplied with a proper subdrain system (see Figure RW-1). All walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings in addition to the above-recommended active and at-rest earth pressures.

2. Imported Sand, Pea Gravel, or Rock Used for Wall Backfill

   Imported clean sand exhibiting a sand equivalent value (SE) of 30 or greater, pea gravel, or crushed rock may be used for wall backfill to reduce the lateral earth pressures provided these granular backfill materials extend behind the walls to a minimum horizontal distance equal to one-half the wall height.

> In addition, the sand, pea gravel, or rock backfill materials should extend behind the walls to a minimum horizontal distance of 2 feet at the base of the wall or to a horizontal distance equal to the heel width of the footing, whichever is greater (see Figures RW-2 and RW-3). For the above conditions, cantilevered walls retaining a level backfill and ascending 2:1 backfill may be designed to resist active earth pressures equivalent to fluids having densities of 30 and 41 pounds per cubic foot, respectively. For walls that are restrained at the top, at-rest earth pressures equivalent to fluids having densities of 45 and 62 pounds per cubic foot are recommended for design of restrained walls supporting a level backfill and ascending 2:1 backfill, respectively. These values are also for retaining walls supplied with a proper subdrain system.

Furthermore, as with existing soil backfill, the walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings in addition to the recommended active and at-rest earth pressures. All structural calculations and details should be provided to this firm for verification purposes prior to grading and construction phases.

Earthquake Loads Retaining Walls

Note 1 of Section 1803.5.12 of the 2022 CBC indicates that the dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet of backfill height due to design earthquake ground motions be determined. It is unlikely that any wall retaining 6 or more feet of backfill will be constructed onsite. Accordingly, dynamic seismic lateral earth pressures are not considered necessary for this project.

Subdrainage

Perforated pipe and gravel subdrains should be installed behind all retaining walls to prevent entrapment of water in the backfill (see Figures RW-1 through RW-3). Perforated pipe should consist of 4-inch-minimum diameter PVC Schedule 40, or SDR-35, with the perforations laid down. The pipe should be encased in a 1-foot-wide column of ¾-inch to 1½-inch open-graded gravel. If on-site soils are used as backfill, the open-graded gravel should extend above the wall footings to a minimum height equal to one-third the wall height or to a minimum height of 1.5 feet above the footing, whichever is greater. If imported sand, pea gravel, or crushed rock is used as backfill, subdrain details shown on Figures RW-2 and RW-3 should be utilized. The open-graded gravel should be completely wrapped in filter fabric consisting of Mirafi 140N or equivalent. Solid outlet pipes should be connected to the subdrains and then routed to a suitable area for discharge of accumulated water.

If a limited area exists behind the walls for installation of a pipe and gravel subdrain, a geotextile drain mat such as Mirafi Miradrain, or equivalent, can be used in lieu of drainage gravel. The drain mat should extend the full height and lengths of the walls and the filter fabric side of the drain mat should be placed up against

the backcut. The perforated pipe drain line placed at the bottom of the drain mat should consist of 4-inch minimum diameter PVC Schedule 40 or SDR-35. The filter fabric on the drain mat should be peeled back and then wrapped around the drain line.

Waterproofing

The portions of retaining walls supporting backfill should be coated with an approved waterproofing compound or covered with a similar material to inhibit infiltration of moisture through the walls.

Wall Backfill

Where imported sand (with a Sand Equivalent of 30 or greater) or the onsite soils materials are used as backfill behind the proposed retaining walls, the backfill materials should be placed in approximately 6- to 8-inch-thick maximum lifts, watered as necessary to achieve above optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. Flooding or jetting of the backfill materials should be avoided. A representative of the project geotechnical consultant should observe the backfill procedures and test the wall backfill to verify adequate compaction.

If imported pea gravel or rock is used for backfill, the gravel should be placed in approximately 2- to 3-foot-thick lifts, thoroughly wetted but not flooded, and then mechanically tamped or vibrated into place. A representative of the project geotechnical consultant should observe the backfill procedures and probe the backfill to determine that an adequate degree of compaction is achieved.

To reduce the potential for the direct infiltration of surface water into the backfill, imported sand, gravel, or rock backfill should be capped with at least 12 inches of on-site soil. Filter fabric such as Mirafi 140N or equivalent, should be placed between the soil and the imported gravel or rock to prevent fines from penetrating into the backfill.

Geotechnical Observation and Testing

All grading and construction phases associated with retaining wall construction, including backcut excavations, footing trenches, installation of the subdrainage systems, and placement of backfill should be observed and tested by a representative of the project geotechnical consultant.

Masonry Block Walls

Footings for free-standing masonry block walls and other rigid structures should be designed and reinforced utilizing the criteria recommended for conventional building foundations. Where existing surface soils are not removed and re-compacted as recommended herein, the footings should be extended through these

loose surface soils and founded in underlying competent materials. Positive separations in walls should also be provided at corners and at horizontal spacing of approximately 25 feet to permit relative movement. The separations should be provided in the blocks and not extend through the footings. The footings should be poured monolithically with continuous rebars to serve as effective "grade beams" below the walls.

Where remedial grading cannot be performed due to site constraints, a reduced bearing value of 1,200 pounds per square foot should be used for 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. No increase in bearing value may be used for wider or deeper footings for this condition. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces. In addition, a reduced passive earth pressure of 175 pounds per square foot per foot of depth, to a maximum value of 1,750 pounds per square foot, should be used to resist lateral loads. A coefficient of friction of 0.3 times the dead load forces may still 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 or seismic forces.

Exterior Concrete Flatwork

General

Near-surface compacted fill soils within the site are expected to exhibit an expansion index of 0 to 20, i.e. non-expansive. Subgrade preparation for areas not supported by the compacted fill supporting building structures should follow the guidelines presented below for pavement design and construction. We recommend that all exterior concrete flatwork such as sidewalks, patio slabs, large decorative slabs, concrete subslabs that will be covered with decorative pavers, vehicular driveways and/or access roads within and adjacent to the site be designed by the project architect and/or structural engineer with consideration given to mitigating the potential cracking and uplift that can develop in soils exhibiting expansion index values that fall in the very low category. The guidelines that follow should be considered as minimums and are subject to review and revision by the project architect, structural engineer and/or landscape consultant as deemed appropriate.

Thickness and Joint Spacing

To reduce the potential of unsightly cracking, concrete walkways, patio-type slabs, large decorative slabs and concrete subslabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less. Private driveways that will be designed for the use of passenger cars for access to private garages should also be at least 4 inches thick and provided

with construction joints or expansion joints every 10 feet or less. Concrete pavement that will be designed based on an unlimited number of applications of an 18-kip single-axle load in public access areas, segments of road that will be paved with concrete (such as bus stops and cross-walks) or access roads that will be subject to heavy truck loadings should have a minimum thickness of 5 inches and be provided with control joints spaced at maximum 10-foot intervals. A modulus of subgrade reaction of 125 pounds per cubic foot may be used for design of the public and access roads.

Reinforcement

All concrete flatwork having their largest plan-view panel dimension exceeding 10 feet should be reinforced with a minimum of No. 3 bars spaced 24 inches on centers, both ways. Alternatively, the slab reinforcement may consist of welded wire mesh of the sheet type (not rolled) with 6x6/W1.4xW1.4 designation in accordance with the Wire Reinforcement Institute (WRI). The reinforcement should be properly positioned near the middle of the slabs.

> *The reinforcement recommendations provided herein are intended as guidelines to achieve adequate performance for anticipated soil conditions. The project architect, civil and/or structural engineer should make appropriate adjustments in reinforcement type, size and spacing to account for concrete internal (e.g., shrinkage and thermal) and external (e.g., applied loads) forces as deemed necessary.*

Edge Beams (Optional)

Where the outer edges of concrete flatwork are to be bordered by landscaping, it is recommended that consideration be given to the use of edge beams (thickened edges) to prevent excessive infiltration and accumulation of water under the slabs. Edge beams, if used, should be 6 to 8 inches wide, extend 8 inches below the tops of the finish slab surfaces. Edge beams are not mandatory; however, their inclusion in flatwork construction adjacent to landscaped areas is intended to reduce the potential for vertical and horizontal movement and subsequent cracking of the flatwork related to uplift forces that can develop in expansive soils.

Subgrade Preparation

Compaction

To reduce the potential for distress to concrete flatwork, the subgrade soils below concrete flatwork areas to a minimum depth of 12 inches (or deeper, as either prescribed elsewhere in this report or determined in the field) should be moisture conditioned to at least equal to, or slightly greater than, the optimum moisture content and then compacted to a minimum relative compaction of 90 percent. Where concrete public roads,

concrete segments of roads and/or concrete access driveways are proposed, the upper 6 inches of subgrade soil should be compacted to a minimum 95 percent relative compaction.

Pre-Moistening

As a further measure to reduce the potential for concrete flatwork cracking, subgrade soils should be thoroughly moistened prior to placing concrete. The moisture content of the soils should be at least the optimum moisture content to a minimum depth of 12 inches into the subgrade. Flooding or ponding of the subgrade is not considered feasible to achieve the above moisture conditions since this method would likely require construction of numerous earth berms to contain the water. Therefore, moisture conditioning should be achieved with sprinklers, or a light spray applied to the subgrade over a period of few to several days just prior to pouring concrete. Pre-watering of the soils is intended to promote uniform curing of the concrete, reduce the development of shrinkage cracks and reduce the potential for differential expansion pressure on freshly poured flatwork. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soils, and the depth of moisture penetration prior to placing concrete.

Drainage

Drainage from patios and other flatwork areas should be directed to local area drains and/or graded earth swales designed to carry runoff water to the adjacent streets or other approved drainage structures. The concrete flatwork should be sloped at a minimum gradient of one percent, or as prescribed by project civil engineer or local codes, away from building foundations, retaining walls, masonry garden walls and slope areas.

Tree Wells

Tree wells are not recommended in concrete flatwork areas since they introduce excessive water into the subgrade soils and allow root invasion, both of which can cause heaving and cracking of the flatwork.

Swimming Pool and Spa

Allowable Bearing and Settlement

Plans for the proposed project were not made available to Petra at the time this report was prepared, but it is common to include one (or more) pools in a multi-unit apartment complex. If a pool is proposed for the project, the pool may be designed as a conventional pool shell founded on natural, medium dense eolian sand. Any loose sand below the pool shell should be removed and replaced with engineered fill. Therefore, the pool shell may be designed using an allowable bearing value of 1,500 pounds per square foot. A

potential for seismic differential settlement on the order of one inch to occur across the pool/spa shells should be considered in the design. Petra should review final plans when available to verify there are no additional geotechnical concerns related to the construction of a pool.

Lateral Earth Pressures

The pool walls should be designed assuming that an earth pressure equivalent to a fluid having a density of 90 pounds per cubic foot is acting on the outer surface of the pool walls. For this long-term condition, the walls should be designed using a lateral earth pressure of 62.4H pounds per square foot (where "H" equals the vertical depth in feet below the ground surface) that is acting on the inner surface of the pool walls. Pool walls should also be designed to resist lateral surcharge pressures imposed by any adjacent footings or structures in addition to the above lateral earth pressures.

Stability of Temporary Excavation

The pool excavation is expected to expose loose to medium dense eolian sand soil. Based on the anticipated physical characteristics of these materials, the pool excavation sidewalls will not remain stable at a vertical gradient during construction of the pool. Therefore, the temporary excavation sidewalls should be sloped at a slope ratio of 2:1 (horizontal to vertical) or flatter before forming of the pool walls.

Temporary Access Ramps

It is essential that all backfill placed within temporary access ramps extending into the pool excavation be properly compacted and tested. This will reduce the potential for excessive settlement of the backfill and subsequent damage to pool decking or other structures placed on the backfill.

Pool Bottom

It is expected that the swimming pool bottom will rest entirely on medium dense to dense eolian sand deposits. Therefore, care should be taken while excavating these structures to prevent disturbance of subgrade soils exposed at grade in the pool bottom.

Pool Decking

Pool decking should be constructed in accordance with the recommendations presented in the "Exterior Concrete Flatwork" section of this report.

Plumbing Fixtures

Leakage from the swimming pool or from any of the appurtenant plumbing could create adverse saturated conditions of the surrounding subgrade soils. Localized areas of oversaturation can lead to differential expansion (heave) of the subgrade soils and subsequent raising and shifting of concrete flatwork. Therefore, it is essential that all plumbing and pool fixtures be absolutely leak-free. For similar reasons, drainage from pool deck areas should be directed to local area drains and/or graded earth swales designed to carry runoff water to a suitable discharge point.

ACCESS ROADS

Asphalt Pavement

The proposed site improvements may include construction of new asphalt-paved roads, as well as improvements to the existing nearby access roads. We have developed the following preliminary recommendations for flexible pavement design based on an assumed R-value of 40 and using Traffic Index (TI) values of 5.0 and 6.0. The pavement design presented herein is based on the assumption that the pavement will be placed directly over engineered, compacted fill placed as specified above in the section for *Subgrade Preparation* of *Exterior Concrete Flatwork*.

R-value and traffic index parameters presented herein have been assumed. We recommend that bulk samples of the actual subgrade materials be collected and R-Value tested after rough grading is completed. Additionally, the project civil engineer should be consulted to determine appropriate or required TI values. Once actual as-graded testing is complete and traffic loads are confirmed, additional or modified design recommendations may be presented.

The pavement section thicknesses presented in Table 5 are considered as minimums for the subject site under the assumed conditions and may be superseded by the project requirements or jurisdictional agency specifications if more stringent.

TABLE 5

Suggested Minimum Flexible Pavement Thickness

Traffic Index	R-Value	Hot Mix Asphalt (alternative) (inches)	Aggregate Base (inches)
5.0 (Light Traffic)	40	3	4
6.0 (Truck Traffic)	40	3	6.5

Subgrade soils should be properly compacted, smooth, and non-yielding prior to pavement construction. The subgrade soils should be compacted to at least 90 percent of ASTM D 1557-07. Subgrade preparation recommendations are provided below.

Aggregate base materials may consist of Crushed Aggregate Base, Crushed Miscellaneous Base, or Processed Miscellaneous Base conforming to Section 200-2 of the Standard Specifications for Public Works Construction (Greenbook). It should be noted that base thicknesses recommended above are based on the use of Crushed Aggregate base material. For conditions where either Crushed Miscellaneous Base or Processed Miscellaneous Base Materials are used, a 10 percent increase in base section thickness should be incorporated in the design and construction of the structural pavement section.

The base materials should be brought to a uniform moisture near optimum moisture then compacted to at least 95 percent of ASTM D 1557. Asphaltic concrete materials and construction should conform to Section 203 of the Greenbook.

Subgrade drainage is an important factor that enhances pavement performance. Subgrade surfaces below the flexible pavement structural section should be sloped to direct run-off to suitable collection points and to prevent ponding. The roadways should be raised above the surrounding ground surface to facilitate drainage from the roadway.

PLAN REVIEW

This report is based on certain assumptions related to the proposed development, since no plans were available for Petra's review at the time this report was prepared. We recommend that our firm be engaged to review the final design drawings, specifications and grading plan prior to any new construction. If we are not provided the opportunity to review these documents with respect to the geotechnical aspects of new construction and grading, it should not be assumed that the recommendations provided herein are wholly or in part applicable to the proposed construction.

REPORT LIMITATIONS

This report is based on Petra's understanding of the proposed project and geotechnical data as described herein. The materials encountered on the project site, described in other literature, and utilized in our laboratory investigation are believed representative of the project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect 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. To provide the greatest degree of continuity between the design and construction phases, consideration should be given to retaining Petra Geosciences, Inc., as geotechnical engineer of record for construction services.

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 guarantee or warranty.

This report should be reviewed and updated after a period of one year or if the project concept changes from that described herein.

The information contained herein 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 authorities for this project. Should you have any questions, please do not hesitate to call.

Respectfully submitted,

PETRA GEOSCIENCES, INC.

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GE 2024

KTM/KB/AP/SJ/lv

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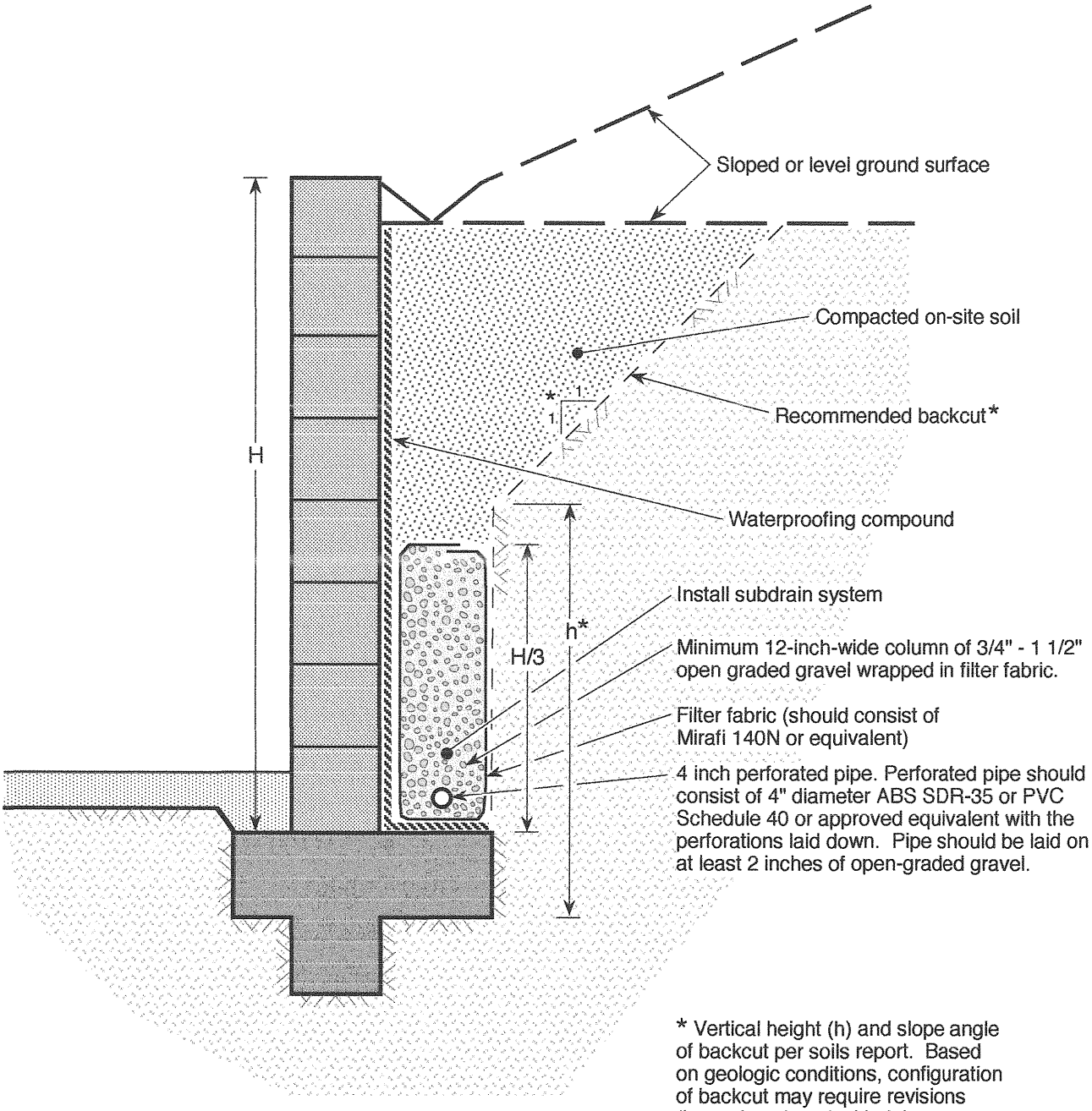
FIGURES

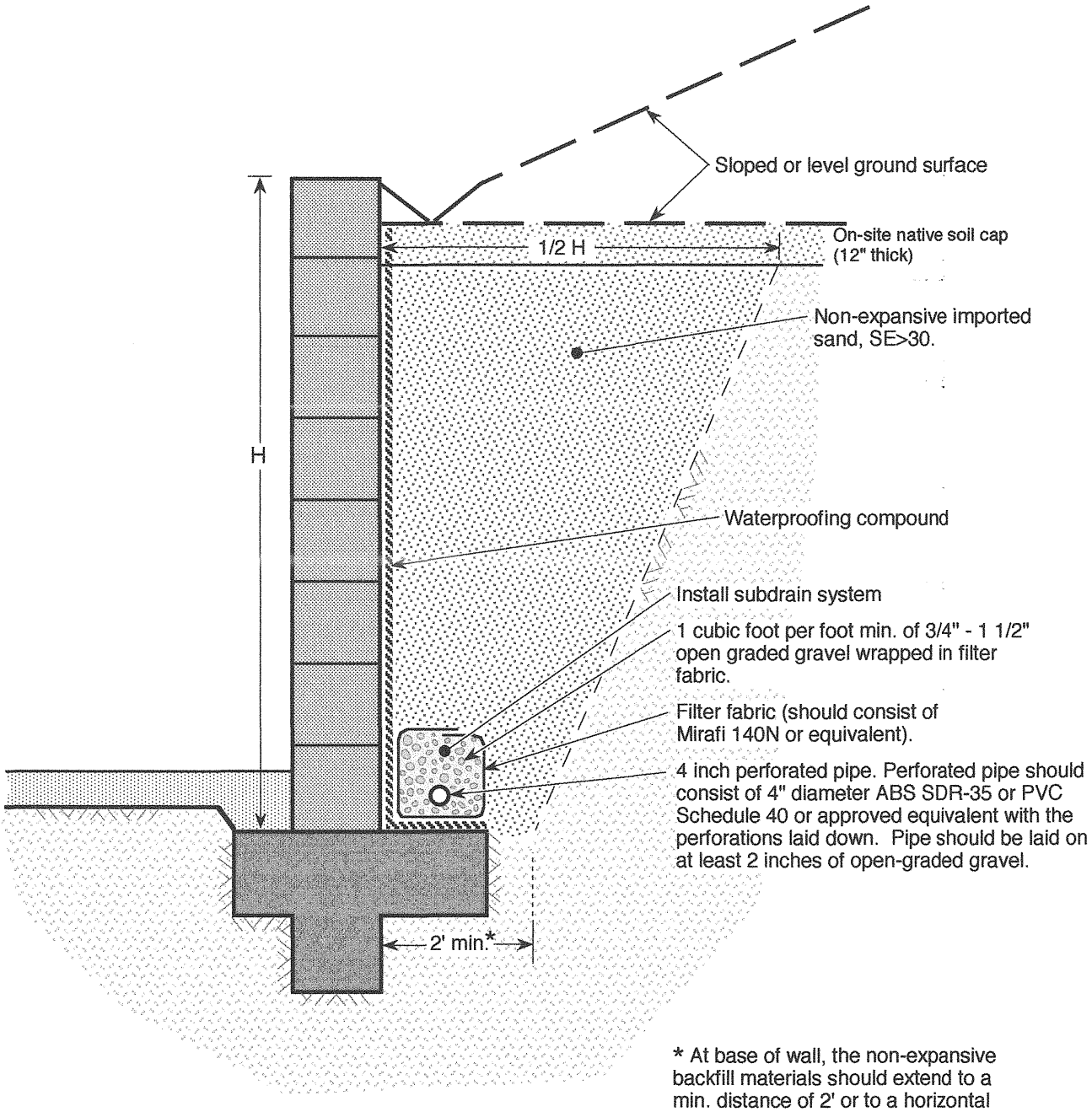
NATIVE SOIL BACKFILL



* Vertical height (h) and slope angle of backcut per soils report. Based on geologic conditions, configuration of backcut may require revisions (i.e. reduced vertical height, revised slope angle, etc.)

PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-1

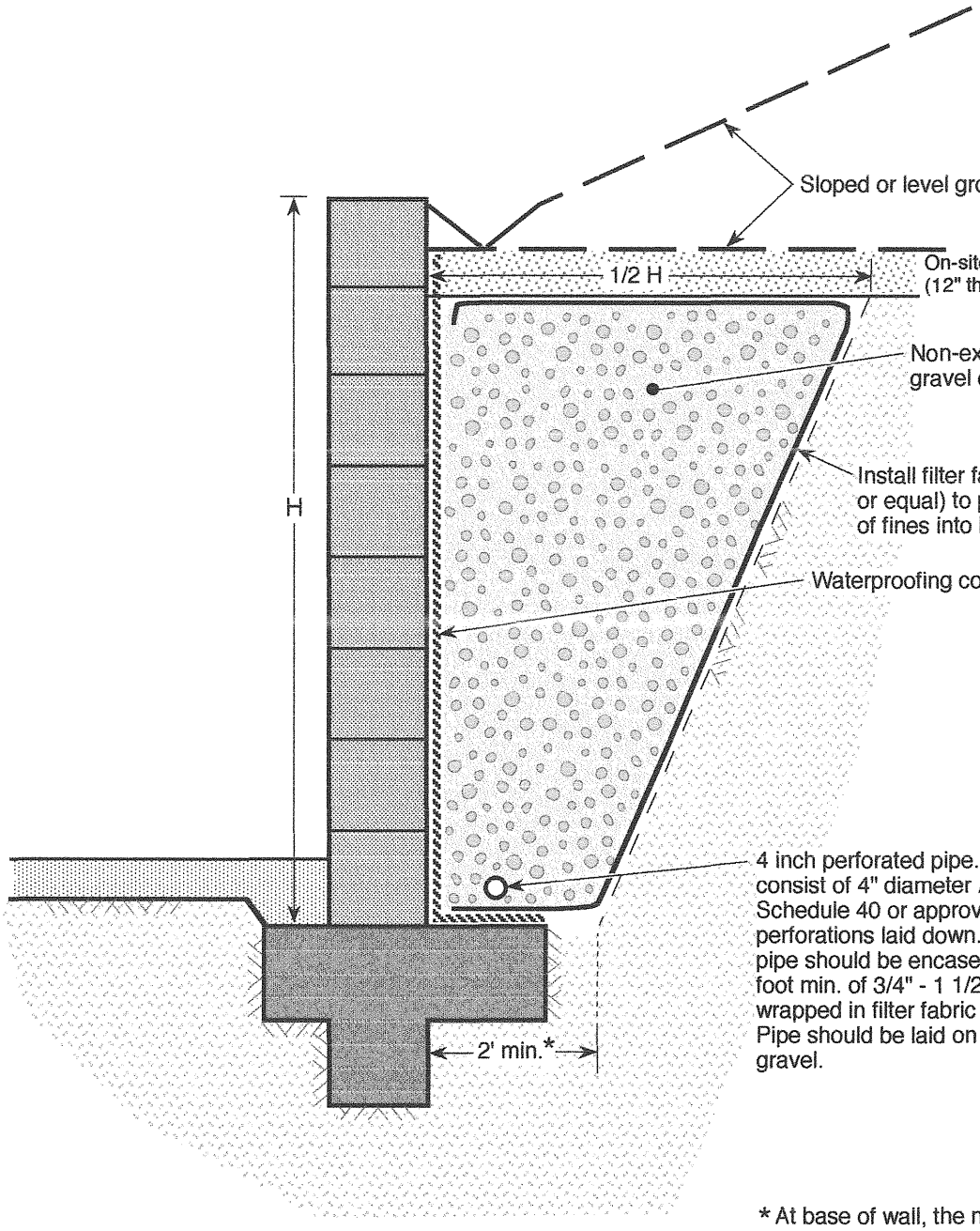
IMPORTED SAND BACKFILL



* At base of wall, the non-expansive backfill materials should extend to a min. distance of 2' or to a horizontal distance equal to the heel width of the footing, whichever is greater.

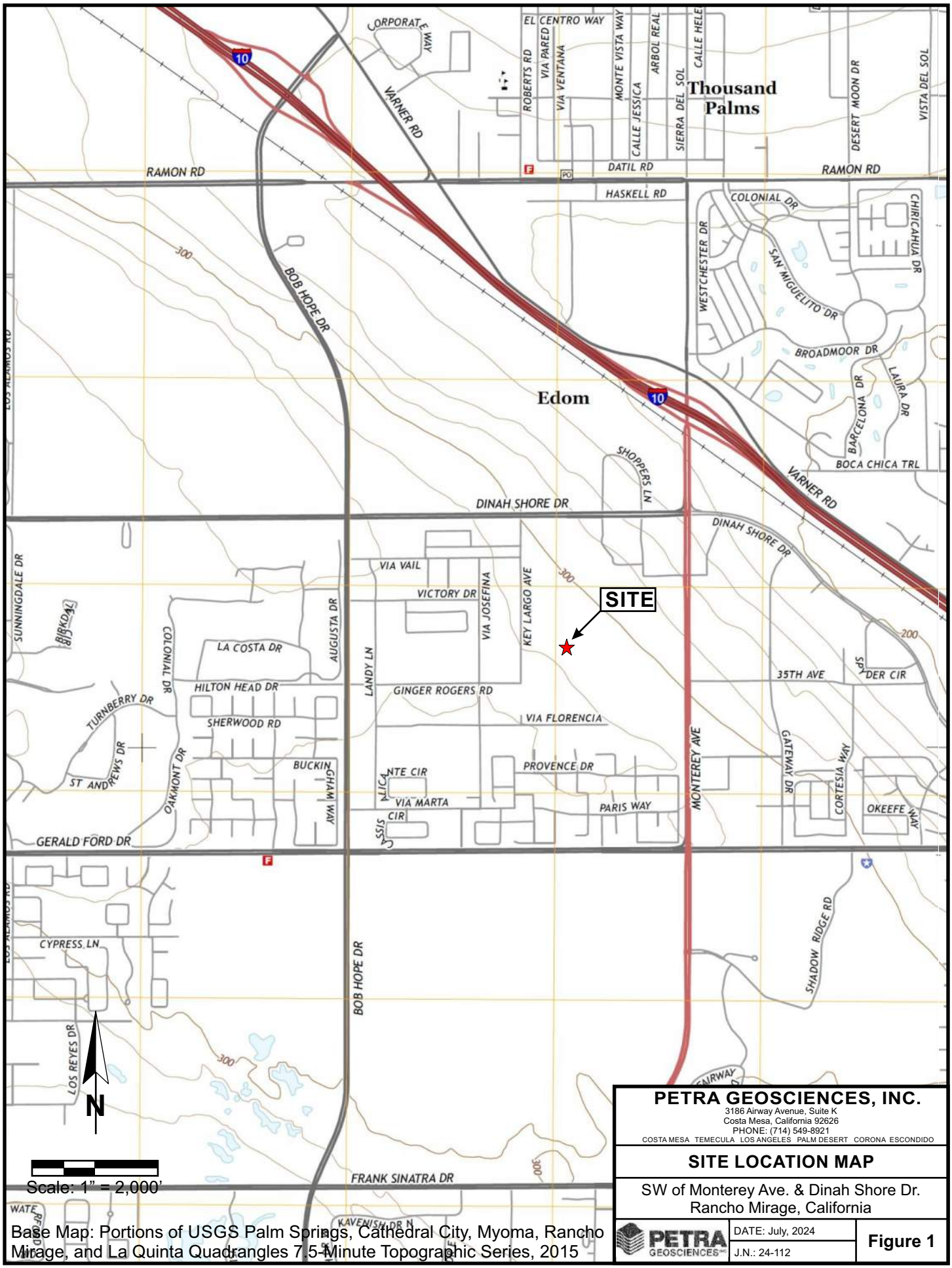
PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-2

IMPORTED GRAVEL OR CRUSHED ROCK BACKFILL



* At base of wall, the non-expansive backfill materials should extend to a min. distance of 2' or to a horizontal distance equal to the heel width of the footing, whichever is greater.

PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-3



Base Map: Portions of USGS Palm Springs, Cathedral City, Myoma, Rancho Mirage, and La Quinta Quadrangles 7.5-Minute Topographic Series, 2015

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COSTA MESA TEMECULA LOS ANGELES PALM DESERT CORONA ESCONDIDO

SITE LOCATION MAP

SW of Monterey Ave. & Dinah Shore Dr.
Rancho Mirage, California

PETRA GEOSCIENCES

DATE: July, 2024

J.N.: 24-112

Figure 1

Base Map: Google Earth, 2024.

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BORING LOCATION MAP

SW of Monterey Ave. & Dinah Shores Dr.
Rancho Mirage, California

PETRA GEOSCIENCES INC

DATE: July, 2024

J.N.: 24-112

Figure 2

APPENDIX A

BORING LOGS

Key to Soil and Bedrock Symbols and Terms

PETRA

Unified Soil Classification System

Coarse-grained Soils > 1/2 of materials is larger than #200 sieve	The No. 200 U.S. Standard Sieve is about the smallest particle visible to the naked eye	**GRAVELS** more than half of coarse fraction is larger than #4 sieve	Clean Gravels (less than 5% fines)	**GW**	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
			Gravels with fines	**GM**	Silty Gravels, poorly-graded gravel-sand-silt mixtures
				GC	Clayey Gravels, poorly-graded gravel-sand-clay mixtures
		SANDS more than half of coarse fraction is smaller than #4 sieve	Clean Sands (less than 5% fines)	**SW**	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
			Sands with fines	**SM**	Silty Sands, poorly-graded sand-gravel-silt mixtures
				SC	Clayey Sands, poorly-graded sand-gravel-clay mixtures
Fine-grained Soils > 1/2 of materials is smaller than #200 sieve		**SILTS & CLAYS** Liquid Limit Less Than 50		**ML**	Inorganic silts & very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts & clays of low plasticity
		SILTS & CLAYS Liquid Limit Greater Than 50		**MH**	Inorganic silts, micaceous or diatomaceous fine sand or silt
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic silts and clays of medium-to-high plasticity
Highly Organic Soils				**PT**	Peat, humus swamp soils with high organic content

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		>12"	>12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19"	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock salt-sized
	fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized to
Fines		Passing #200	<0.0029"	Flour-sized and smaller

Modifiers

Trace	< 1 %
Few	1 - 5%
Some	5 - 12 %
Numerous	12 - 20 %

Laboratory Test Abbreviations

MAX	Maximum Dry Density	MA	Mechanical (Particle Size) Analysis
EXP	Expansion Potential	AT	Atterberg Limits
SO4	Soluble Sulfate Content	#200	#200 Screen Wash
RES	Resistivity	DSU	Direct Shear (Undisturbed Sample)
pH	Acidity	DSR	Direct Shear (Remolded Sample)
CON	Consolidation	HYD	Hydrometer Analysis
SW	Swell	SE	Sand Equivalent
CL	Chloride Content	OC	Organic Content
RV	R-Value	COMP	Mortar Cylinder Compression

Bedrock Hardness

Soft	Can be crushed and granulated by hand; "soil like" and structureless
Moderately Hard	Can be grooved with fingernails; gouged easily with butter knife; crumbles under light hammer blows
Hard	Cannot break by hand; can be grooved with a sharp knife; breaks with a moderate hammer blow
Very Hard	Sharp knife leaves scratch; chips with repeated hammer blows

Sampler and Symbol Descriptions


Approximate Depth of Groundwater Encountered


Approximate Depth of Standing Groundwater


Modified California Split Spoon Sample


No Recovery in Mod. Calif. Split Spoon Sample


Standard Penetration Test


Shelby Tube Sample


Bulk Sample


No Recovery in SPT Sampler


No Recovery in Shelby Tube

Notes:
Blows Per Foot: Number of blows required to advance sampler 1 foot (unless a lesser distance is specified). Samplers in general were driven into the soil or bedrock at the bottom of the hole with a standard (140 lb.) hammer dropping a standard 30 inches unless noted otherwise in Log Notes. Drive samples collected in bucket auger borings may be obtained by dropping non-standard weight from variable heights. When a SPT sampler is used the blow count conforms to ASTM D-1586

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-1**
Location:	**Rancho Mirage**		Elevation: **±307'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		@2': Becomes medium-dense.		6 8 13			0.6	102.8	MAX, EI, pH, RES, CL, S04, DSR
5		Sand (SP): Off-white to gray, dry, medium-dense, fine- to medium-grained sand.		6 10 11					
				4 5 8			0.7	98.7	COL
10		Sand with Silt (SP-SM): Gray to off-white, dry, medium-dense, fine- to medium-grained sand.		5 10 15			0.8		
15				12 22 31			0.6		
20		@20': Becomes dense.		13 25 41			0.6		
25				8 14 20			0.6		
30				9 16 21			0.8		

PLATE A-1

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-1**
Location:	**Rancho Mirage**		Elevation: **±307'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
35				9 20 27	■		0.4		
40				10 16 17	■		0.6		
45				5 10 13	■		0.4		
50		@50': Becomes dense.		10 17 26	■		0.4		
55				10 17 24	■		0.5		
60		@60': Becomes medium-dense.		4 7 9	■		0.3		
65		@65': Becomes dense.		18 28 34	■		0.5		
		Total Depth= 66.5' No groundwater encountered Boring backfilled with cuttings.							

PLATE A-1

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-2**
Location:	**Rancho Mirage**		Elevation: **±313'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		Sand (SP): Gray, dry, merdium-dense, fine- to medium-grained sand.		6 9 14	■		2.0	105.1	
5				3 5 6	◪		1.9		
		@7.5': Becomes dry.		9 9 13	■		1.6	107.3	
10				2 4 6	◪		0.3		
15		@15': Becomes gray to off-white.		11 17 30	■		0.3		
20		@20': No recovery.		7 10 14	▨				
		Total Depth= 21.5' No groundwater encountered Boring backfilled with cuttings.							
25									
30									

PLATE A-2

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-3**
Location:	**Rancho Mirage**		Elevation: **±308'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)**							
		Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		@2': Becomes medium-dense.		4 5 6			1.2		
5		Sand (SP): Gray to off-white, dry, medium-dense, fine-grained sand.		6 10 11			1.0	105.0	
		@7.5': Becomes gray with fine- to medium-grained sand.		2 5 5			0.7		
10				6 9 16			0.5		
15				6 9 13			0.3		
20		@20': Becomes very dense.		22 43 50/4"			0.4		
		Total Depth= 21.5' No groundwater encountered Boring backfilled with cuttings.							
25									
30									

PLATE A-3

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **P-1**
Location:	**Rancho Mirage**		Elevation: **±308'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand. @2': Becomes medium-dense.							
5		Sand (SP): Gray to off-white, dry, medium-dense, fine-grained sand. @7.5': Becomes gray with fine- to medium-grained sand.							
10		Total Depth= 10' No groundwater encountered Perc test installed within boring utilizing a 2" perforated pipe and gravel.		7 9 17					MA
15									
20									
25									
30									

PLATE A-4

Petra Geosciences, Inc.

APPENDIX B

LABORATORY TEST PROCEDURES

LABORATORY DATA SUMMARY

LABORATORY TESTING

Associated with the subsurface exploration was the collection of bulk and relatively undisturbed samples of soil materials for laboratory testing. The relatively undisturbed samples were obtained using a 2.4-inch, outside-diameter, modified California split-spoon soil sampler lined with 1-inch-high stainless-steel rings. The driven ring samples were placed in sealed containers and transported to our laboratory located at 1251 W. Pomona Road, Unit #103, Corona, CA 92882, for testing.

Our laboratory testing capabilities include Soil Classifications, Moisture Content and In-Situ Moisture Content and Dry Unit Weight, Grain Size Distribution, Remolded Direct Shear, Consolidation; all in accordance with the latest procedures of American Society for Testing and Materials (ASTM) and California Department of Transportation (Caltrans).

To evaluate the engineering properties of site soils, laboratory testing was performed on selected samples of soil considered representative of those encountered. Appropriate tests were assigned by the project engineer and geologist based on project plans and specifications including the level of anticipated loads, when available, and subsurface stratigraphy. Test results were reviewed by the laboratory manager and engineer-in-charge of the laboratory or his qualified designee for completeness and accuracy. A description of laboratory test procedures and summaries of the test data are presented in the following pages.

LABORATORY TEST PROCEDURES

Soil Classification

Soil materials encountered within the property were classified and described in accordance with the Unified Soil Classification System and in general accordance with the current version of Test Method ASTM D 2488. The assigned group symbols are presented in the exploration logs, Appendix A.

Moisture Content and In Situ Moisture Content and Dry Unit Weight

Moisture content of selected bulk samples and in- place moisture content and dry unit weight of selected, relatively undisturbed soil samples were determined in accordance with the current version of Test Method ASTM D 2435 and Test Method ASTM D 2216, respectively. Test data are presented in the exploration logs, Appendix A.

Laboratory Maximum Dry Unit Weight and Optimum Moisture Content

The maximum dry unit weight and optimum moisture content of the on-site soils were determined for selected bulk samples in accordance with current version of Method A of ASTM D 1557. The result of this test is presented on Plate B-1.

Corrosivity Screening

Chemical and electrical analyses were performed on selected bulk samples of onsite soils to determine their soluble sulfate content, chloride content, pH (acidity) and minimum electrical resistivity. These tests were performed in accordance with the current versions of California Test Method Nos. CTM 417 (sulfate), CTM 422 (chloride), and CTM 643 (pH and resistivity) respectively. The results of these tests are included on Plate B-1.

Direct Shear

The Coulomb shear strength parameters, i.e., angle of internal friction and cohesion, were determined for selected, relatively undisturbed and/or reconstituted-bulk samples of onsite soil. This test was performed in general accordance with the current version of Test Method ASTM D 3080. Three specimens were prepared for each test. The test specimens were inundated and then sheared under various normal loads at a constant strain rate of 0.005 inch per minute. The results of the direct shear test are graphically presented on Plate B-2.

Grain Size Distribution

Grain size analysis was performed on selected bulk samples of onsite soils in accordance with the latest versions of Test Method ASTM D 136 and/or ASTM C 117, or Test Method ASTM D 422 and/or ASTM D 6913. The test result is graphically presented on Plate B-3.

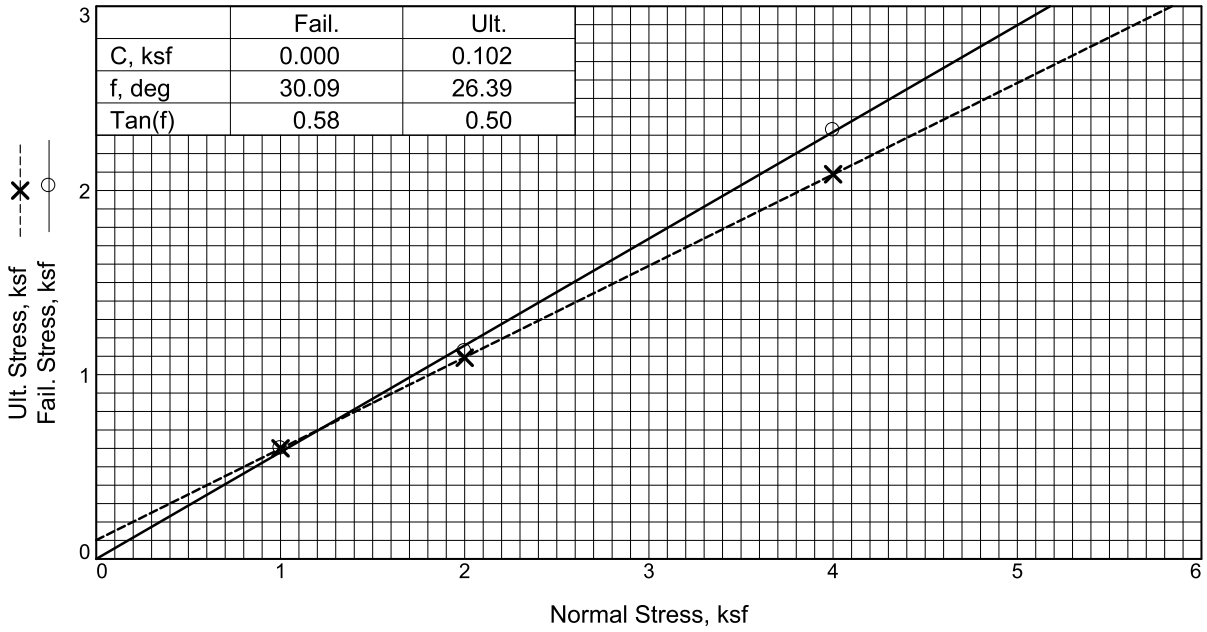
Single-Point Collapse

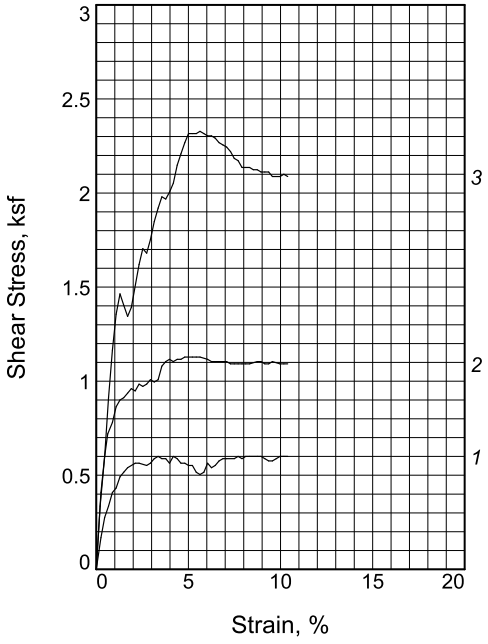
Volume change (collapse) characteristics of selected undisturbed soil samples were determined by one-dimensional single-point collapse test. This test was performed in general accordance with the latest version of the Test Method ASTM D 5333. Axial loads were applied to laterally restrained 1-inch-high samples. The resulting deformation was recorded at selected time intervals. At a load approximately corresponding to the existing overburden pressure or the anticipated future load, the test samples were inundated in order to evaluate the effect of an increase in moisture content, e.g., hydro-consolidation potential (or heave). The results of this test are graphically presented on Plate B-4.

LABORATORY DATA SUMMARY										
Boring/ Test Pit/ Sample/ Number	Sample Depth (ft.)	Soil/ Bedrock Description[1]	Compaction[2]		Corrosivity Screening				Expansion[4]	
			Maximum Dry Unit Weight (pcf)	Optimum Moisture (%)	Soluble Sulfate Content[3] (%)	Chloride Content[4] (ppm)	pH[5] (Acidity)	Minimum Resistivity[5] (Ohm-cm)	Index	Potential
B-1	0-5	SP	115.5	11.5	0.0018	330	7.5	20,000	-0	Very Low

Test Procedures:

[1] Per Test Method ASTM D 2488
[2] Per Test Method ASTM D 1557
[3] Per California Test Method CTM 417
[4] Per California Test Method CTM 422
[5] Per California Test Method CTM 643
[6] Per Test Method ASTM C 117





Sample No.		1	2	3
Initial	Water Content, %	11.5	11.5	11.5
	Dry Density, pcf	103.4	103.5	103.5
	Saturation, %	50.8	50.8	50.9
	Void Ratio	0.5994	0.5990	0.5979
	Diameter, in.	2.416	2.416	2.416
	Height, in.	1.001	1.000	1.000
At Test	Water Content, %	20.5	20.3	19.8
	Dry Density, pcf	104.6	105.9	107.3
	Saturation, %	93.3	95.9	96.9
	Void Ratio	0.5820	0.5617	0.5424
	Diameter, in.	2.416	2.416	2.416
	Height, in.	0.990	0.977	0.965
Normal Stress, ksf		1.000	2.000	4.000
Fail. Stress, ksf		0.600	1.128	2.328
Strain, %		4.2	5.6	5.6
Ult. Stress, ksf		0.600	1.092	2.088
Strain, %		8.7	10.4	10.4
Strain rate, in./min.		0.040	0.040	0.040

Sample Type: Remolded
Description: Gray Fine to Medium Sand

Specific Gravity= 2.65
Remarks:

Figure B-2

Client:

Project:

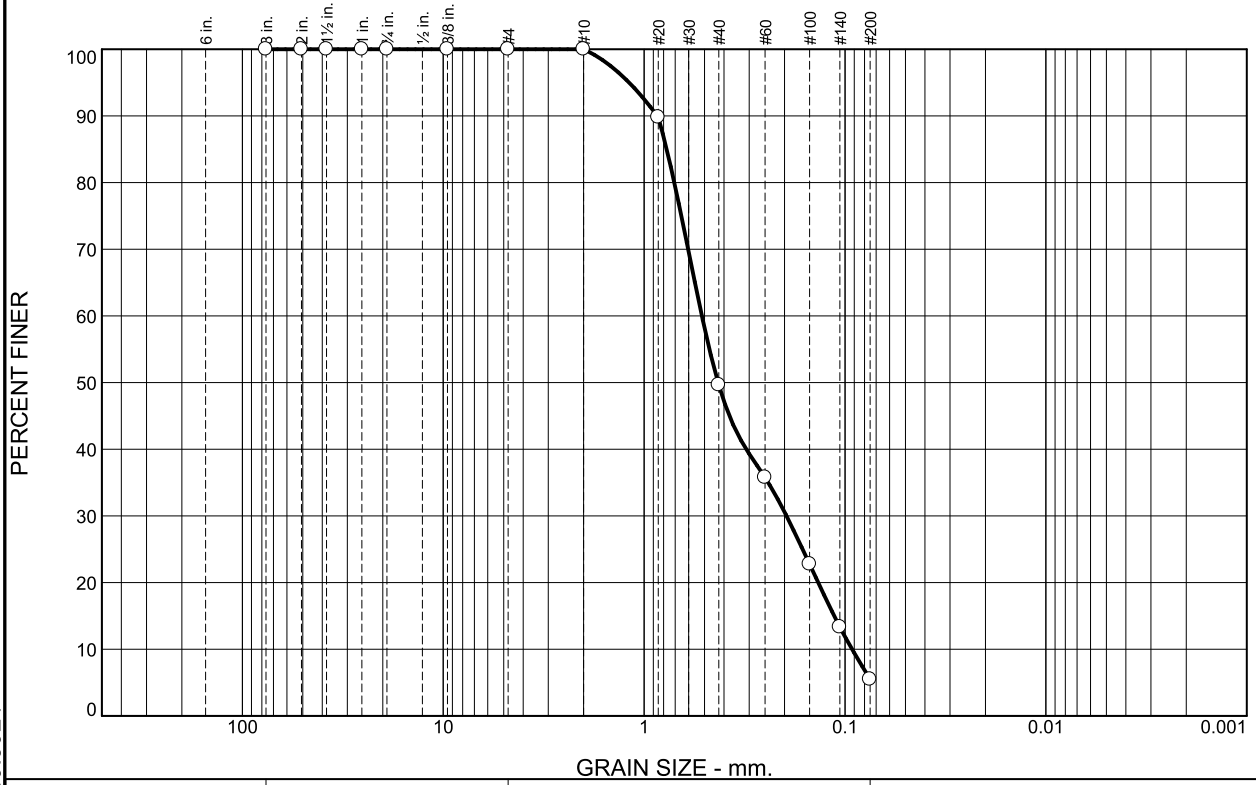
Source of Sample: 24L130 **Depth:** 0-5
Sample Number: B-1
Proj. No.: 24-112 **Date Sampled:**

PETRA GEOSCIENCES INC.

Tested By: DI

Laboratory:
1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	50.4	44.1	5.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	89.8		
#40	49.6		
#60	35.8		
#100	22.8		
#140	13.3		
#200	5.5		

* (no specification provided)

Soil Description

Gray Fine to Medium Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8599 D_{85}= 0.7714 D_{60}= 0.5156
D_{50}= 0.4286 D_{30}= 0.1956 D_{15}= 0.1132
D_{10}= 0.0922 C_u= 5.59 C_c= 0.81

Classification

USCS= AASHTO=

Remarks

Source of Sample: 24L130 **Depth:** 9
Sample Number: P-1

Date: 7/19/2024

Laboratory:
1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

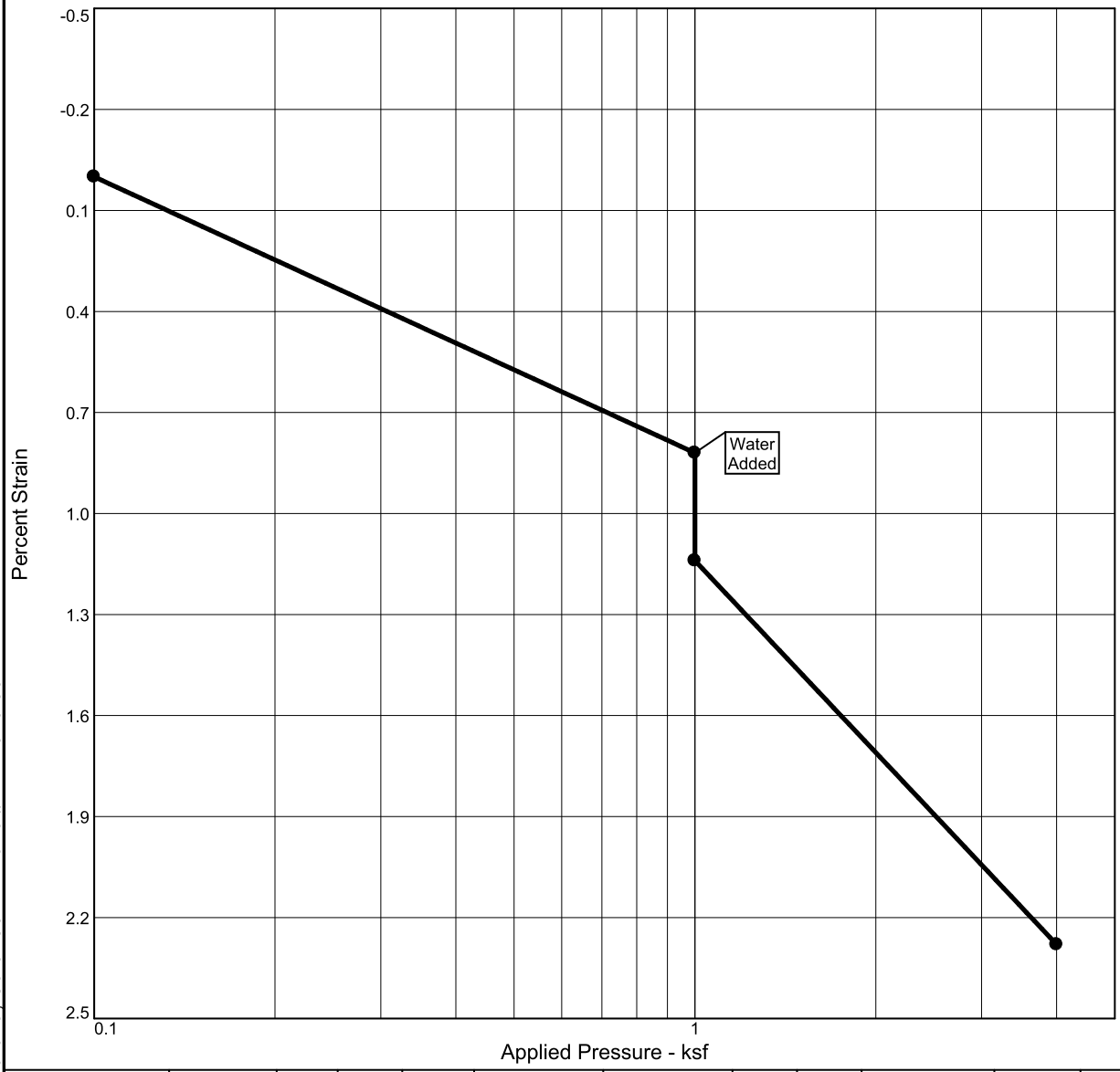
PETRA GEOSCIENCES INC.

Client:
Project:

Project No: 24-112 **Figure** B-3

Tested By: DI

COLLAPSE TEST REPORT



Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
2.5 %	0.7 %	129.8			2.65						0.3	0.737

MATERIAL DESCRIPTION	USCS	AASHTO
Gray Fine to Medium Sand		

Project No. 24-112 **Client:**

Project:

Source of Sample: 24L130 **Depth:** 7.5 **Sample Number:** B-1

Remarks:

PETRA GEOSCIENCES INC.

Figure B-4

Laboratory: 1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

Tested By: DI

APPENDIX C

SEISMIC HAZARD ANALYSIS

PETRA GEOSCIENCES INC.

SITE CLASSIFICATION DETERMINATION BASED ON BLOW COUNT, N-SPT, FOR SEISMIC DESIGN

Per Table 20.3-1 and Section 20.4.2 of ASCE 7-16

J.N: 24-112 **Project:** National Core Apartments **Date:** 7/20/2024

Boring: B-1 Total Depth of Boring: 65 feet SPT Test Interval: every 5 feet

Layer No. (i)	Depth to Soil/Rock Layer		Layer Thickness (d_i)	$\sum_{i=1}^{n} d_i$	Mod. Cal. Sampler Blow Counts[1]	Equivalent N-SPT[2] (N_i)	N-SPT[3] (N_i)	$\sum_{i=1}^{n} \frac{d_i}{N_i}$
	Top	Bottom						
	ft	ft	ft	ft	blows/ft	blows/ft	blows/ft	
1	0	2.5	2.5	2.5	21	14		0.18
2	2.5	5	2.5	5.0	21	14		0.36
3	5	7.5	2.5	7.5	13	8		0.67
4	7.5	10	2.5	10.0	23	15		0.84
5	10	15	5	15.0	53	35		0.98
6	15	20	5	20.0	66	43		1.10
7	20	25	5	25.0		0	34	1.24
8	25	30	5	30.0		0	37	1.38
9	30	35	5	35.0		0	47	1.48
10	35	40	5	40.0		0	33	1.64
11	40	45	5	45.0		0	23	1.85
12	45	50	5	50.0		0	43	1.97
13	50	55	5	55.0		0	41	2.09
14	55	60	5	60.0		0	16	2.40
15	60	65	5	65.0		0	62	2.48

Average Field Standard Penetration Resistance (blows/ft)		Site Classification Per Table 20.3-1
$\bar{N} = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{N_i}}$	= 26	D

1 Modified California sampler blow counts as directly measured in the field without corrections.

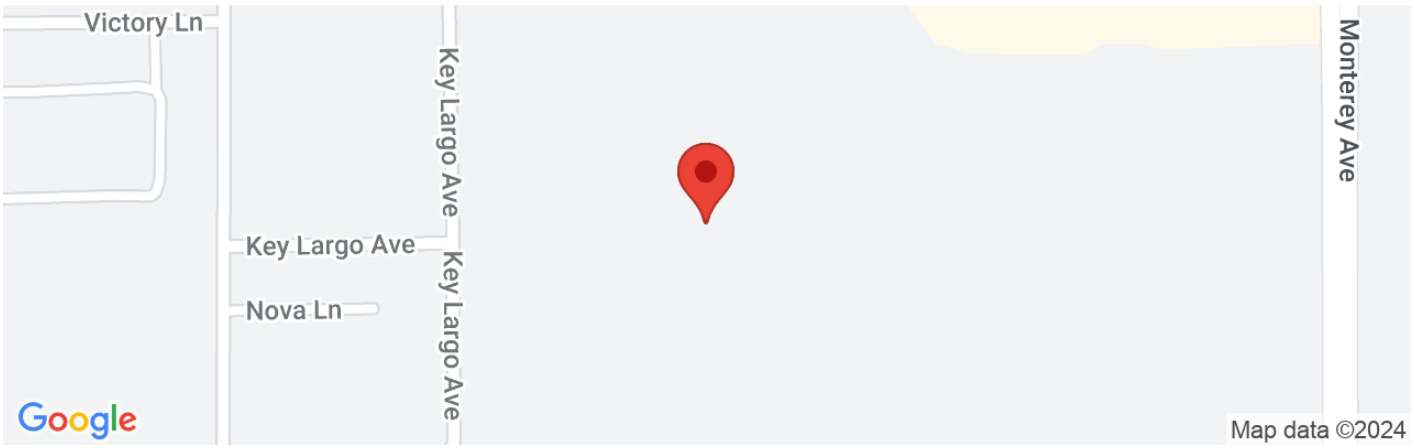
2 Equivalent SPT blow counts are calculated from field measured Modified California sampler blow counts using the standard Burmister formula (Burmister, 1948).
Eq. N-SPT = 0.651 x (Mod. Cal. Sampler Blow Counts)

3 Standard penetration resistance (ASTM D1586) not to exceed 100 blows /ft (305 blows /m) as directly measured in the field without corrections. When Refusal is met for a rock layer, this value shall be taken as 100 blows /ft (305 blows /m).

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

24-112 National Core Apartments

Latitude, Longitude: 33.796486, -116.394338



Date	7/21/2024, 11:06:57 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.819	MCE_R ground motion. (for 0.2 second period)
S_1	0.757	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.819	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.213	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.789	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.868	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.146	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.404	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.819	Factored deterministic acceleration value. (0.2 second)
S1RT	0.846	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.963	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.

Type	Value	Description
S1D	0.757	Factored deterministic acceleration value. (1.0 second)
PGAd	0.789	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.941	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.893	Mapped value of the risk coefficient at short periods
C_{R1}	0.879	Mapped value of the risk coefficient at a period of 1 s
C_V	1.464	Vertical coefficient

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U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Please also see the new USGS Earthquake Hazard Toolbox for access to the most recent NSHMs for the conterminous U.S. and Hawaii.

Input

Edition

Dynamic: Conterminous U.S. 2014 (…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.796486

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

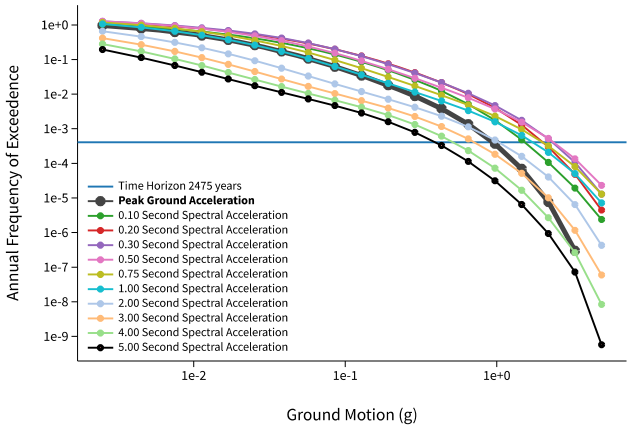
-116.394338

Site Class

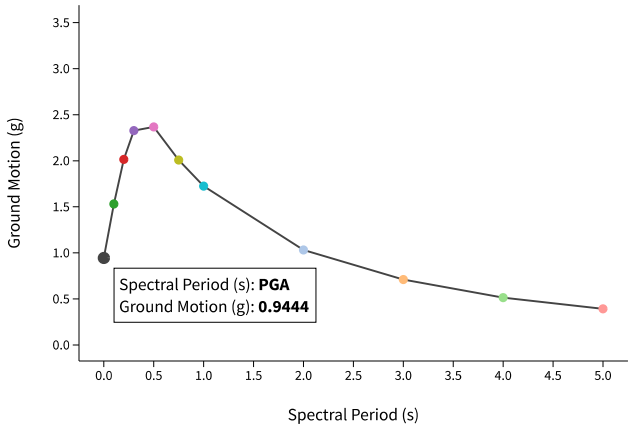
259 m/s (Site class D)

Hazard Curve

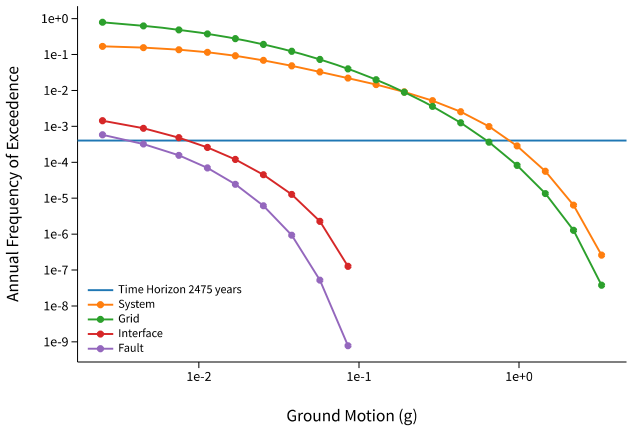
Hazard Curves



Uniform Hazard Response Spectrum



Component Curves for Peak Ground Acceleration

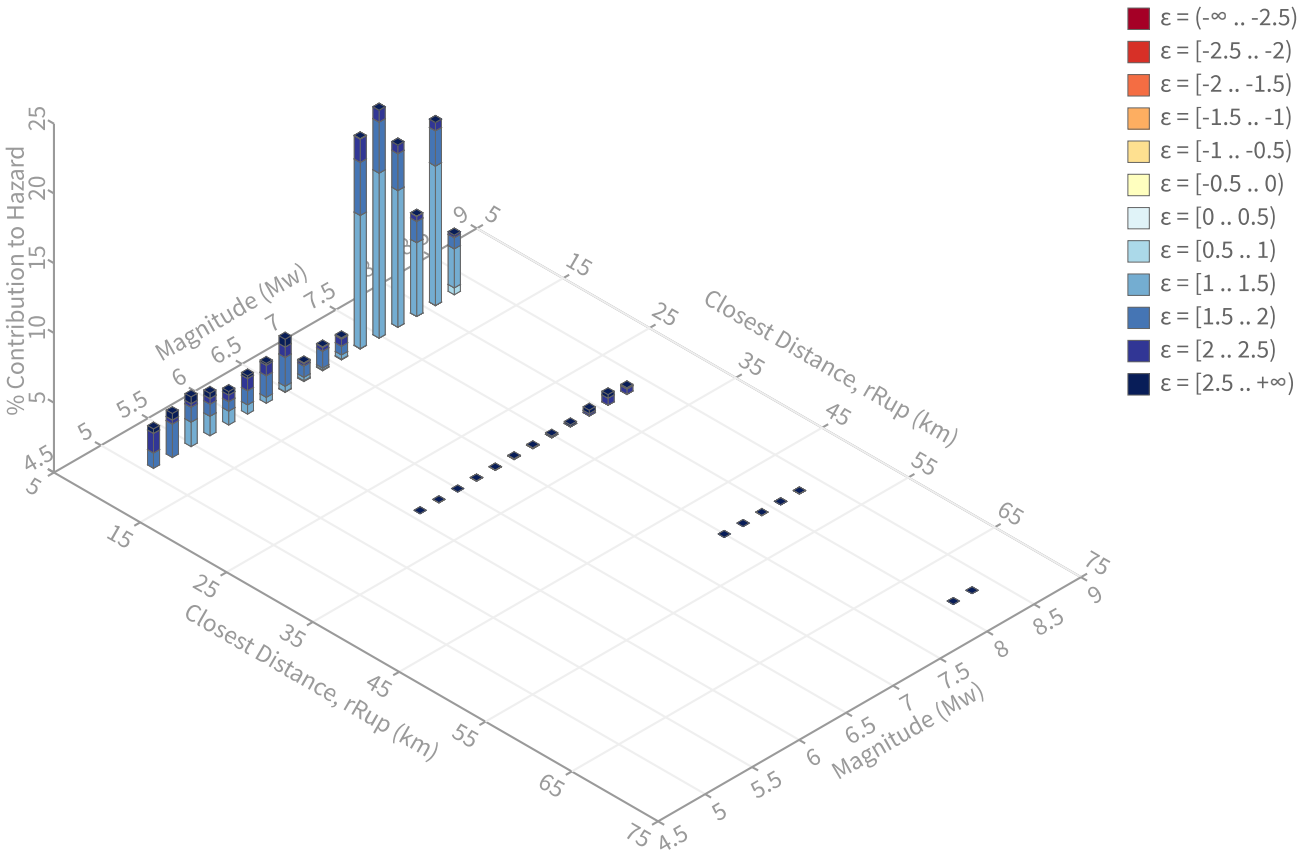


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.94442438 g

Recovered targets

Return period: 3248.499 yrs
Exceedance rate: 0.00030783448 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.06 %

Mean (over all sources)

m: 7.21
r: 7.52 km
ε_0: 1.58 σ

Mode (largest m-r bin)

m: 7.49
r: 6.65 km
ε_0: 1.5 σ
Contribution: 16.34 %

Mode (largest m-r-ε_0 bin)

m: 7.49
r: 6.61 km
ε_0: 1.39 σ
Contribution: 11.82 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							38.53
San Andreas (San Gorgonio Pass-Garnet HIll) [1]		6.54	7.61	1.48	116.358°W	33.846°N	31.71	31.12
San Andreas (North Branch Mill Creek) [10]		8.28	7.88	1.31	116.344°W	33.853°N	36.36	3.95
UC33brAvg_FM32	System							38.48
San Andreas (San Gorgonio Pass-Garnet HIll) [1]		6.54	7.60	1.48	116.358°W	33.846°N	31.71	30.96
San Andreas (North Branch Mill Creek) [10]		8.28	7.85	1.32	116.344°W	33.853°N	36.36	4.16
UC33brAvg_FM31 (opt)	Grid							11.50
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
UC33brAvg_FM32 (opt)	Grid							11.49
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82

*** Deaggregation of Seismic Hazard at One Period of Spectral Acceleration ***
*** Data from Dynamic: Conterminous U.S. 2014 (update) (unknown) ****
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Total
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 100 %
  Residual: 0 %
  Trace: 0.06 %
Mean (over all sources):
  m: 7.21
  r: 7.52 km
  ε_0: 1.58 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.5 σ
  Contribution: 16.34 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 1.39 σ
  Contribution: 11.82 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
50	8.1	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.005
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.7	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	6.9	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.014
30	7.1	0.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.049

30	7.3	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.054
30	7.5	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.099
30	7.7	0.143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.125
30	7.9	0.418	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.166	0.252
30	8.1	0.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.493	0.253
30	8.3	0.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.375	0.089
10	5.1	2.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.104	1.403	0.309
10	5.3	3.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.397	0.289	0.456
10	5.5	3.553	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	1.059	0.256	0.474
10	5.7	3.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.866	0.398	0.372
10	5.9	2.387	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.677	0.475	0.242
10	6.1	2.727	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	1.011	0.877	0.177
10	6.3	2.847	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	1.544	0.744	0.130
10	6.5	3.811	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.403	2.063	0.749	0.562
10	6.7	1.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.237	0.805	0.176	0.051
10	6.9	1.699	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.136	1.204	0.264	0.039
10	7.1	1.569	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.310	0.618	0.518	0.080
10	7.3	15.066	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	9.549	3.804	1.666	0.025
10	7.5	16.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	11.818	3.664	0.848	0.001
10	7.7	13.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	9.799	2.633	0.625	0.000
10	7.9	7.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	5.286	1.523	0.368	0.002
10	8.1	13.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	9.984	2.531	0.589	0.001
10	8.3	4.263	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	2.796	0.795	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution

UC33brAvg_FM31:
  Percent Contributed: 38.53
  Distance (km): 7.7522696
  Magnitude: 7.6290489
  Epsilon (mean values): 1.5183046

San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 31.12
  Distance (km): 6.5353046
  Magnitude: 7.6050927
  Epsilon (mean values): 1.4767216
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 3.95
  Distance (km): 8.2781536
  Magnitude: 7.8816596
  Epsilon (mean values): 1.3120476
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417

UC33brAvg_FM32:
  Percent Contributed: 38.48
  Distance (km): 7.7441979
  Magnitude: 7.6245993
  Epsilon (mean values): 1.5185216

San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 30.96
  Distance (km): 6.5353046
  Magnitude: 7.6018745
  Epsilon (mean values): 1.478169
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 4.16
  Distance (km): 8.2781536
  Magnitude: 7.8512625
  Epsilon (mean values): 1.3196983
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417

UC33brAvg_FM31 (opt):
  Percent Contributed: 11.5
  Distance (km): 6.7410744
  Magnitude: 5.807404

  Epsilon (mean values): 1.8045724
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
UC33brAvg_FM32 (opt):
  Percent Contributed: 11.49
  Distance (km): 6.740285
  Magnitude: 5.806952
  Epsilon (mean values): 1.8046318
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Abrahamson, Silva & Kamai (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 22.08 %
  Residual: 0 %
  Trace: 0.05 %
Mean (over all sources):
  m: 7.11
  r: 7.89 km
  ε_0: 1.82 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.64 km
  ε_0: 1.67 σ
  Contribution: 3.51 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km

  ε_0: 1.67 σ
  Contribution: 3.49 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.1	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
50	8.3	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
30	6.3	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.5	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.7	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
30	6.9	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	7.1	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
30	7.3	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
30	7.5	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036
30	7.7	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.047
30	7.9	0.133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033	0.100
30	8.1	0.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.130
30	8.3	0.148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.148	0.000
10	5.1	1.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.568	0.338	0.261
10	5.3	0.920	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.681	0.000	0.239
10	5.5	0.731	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.516	0.038	0.178
10	5.7	0.608	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.412	0.067	0.130
10	5.9	0.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.318	0.084	0.089
10	6.1	0.604	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.255	0.290	0.059
10	6.3	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.305	0.329	0.033
10	6.5	1.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.081	0.507	0.121	0.293
10	6.7	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070	0.178	0.053	0.018
10	6.9	0.398	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.287	0.053	0.019
10	7.1	0.380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.205	0.143	0.014
10	7.3	3.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	3.058	0.308	0.000
10	7.5	3.506	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	3.493	0.011	0.000
10	7.7	2.621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.618	0.003	0.000
10	7.9	1.386	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.356	0.030	0.000
10	8.1	2.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.453	0.013	0.000
10	8.3	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.783	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 8.17
  Distance (km): 8.1838797
  Magnitude: 7.5998188
  Epsilon (mean values): 1.7365455
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 6.58
  Distance (km): 6.5353046
  Magnitude: 7.5831569
  Epsilon (mean values): 1.661708
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

UC33brAvg_FM32:
  Percent Contributed: 8.14
  Distance (km): 8.1708632
  Magnitude: 7.5947826
  Epsilon (mean values): 1.7381942
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 6.54
  Distance (km): 6.5353046
  Magnitude: 7.5792035
  Epsilon (mean values): 1.6632409
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
UC33brAvg_FM31 (opt):
  Percent Contributed: 2.89
  Distance (km): 7.0774363
  Magnitude: 5.730687
  Epsilon (mean values): 2.051394
UC33brAvg_FM32 (opt):
  Percent Contributed: 2.89
  Distance (km): 7.076764
  Magnitude: 5.7302345
  Epsilon (mean values): 2.0514829
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Boore, Stewart, Seyhan & Atkinson (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 43.34 %
  Residual: 0 %
  Trace: 0.09 %
Mean (over all sources):
  m: 7.14
  r: 7.7 km
  ε_0: 1.45 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.69 km
  ε_0: 1.37 σ
  Contribution: 6.38 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.36 σ
  Contribution: 6.35 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)

ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
50	8.1	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
50	8.3	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	6.5	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	6.7	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.006
30	6.9	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	7.1	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.030
30	7.3	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.032
30	7.5	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.058
30	7.7	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.073
30	7.9	0.219	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.106
30	8.1	0.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.372	0.004
30	8.3	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.224	0.000
10	5.1	0.991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.536	0.446	0.010
10	5.3	1.514	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.392	0.000	0.122
10	5.5	2.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	0.001	0.218	0.152
10	5.7	1.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.000	0.290	0.114
10	5.9	1.361	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.000	0.309	0.058
10	6.1	1.421	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	0.439	0.276	0.044
10	6.3	1.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.409	0.788	0.129	0.053
10	6.5	1.789	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.228	0.999	0.371	0.191
10	6.7	0.546	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.382	0.040	0.012
10	6.9	0.701	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.078	0.526	0.095	0.002
10	7.1	0.656	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.279	0.118	0.254	0.000
10	7.3	5.880	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	5.354	0.212	0.306	0.000
10	7.5	6.383	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	6.348	0.018	0.015	0.000
10	7.7	5.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.382	0.008	0.000	0.000
10	7.9	2.976	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.917	0.059	0.000	0.000
10	8.1	5.508	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	5.462	0.034	0.000	0.000
10	8.3	1.822	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	1.319	0.007	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM32:
  Percent Contributed: 15.91
  Distance (km): 8.056292
  Magnitude: 7.623832
  Epsilon (mean values): 1.3878356
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 12.14
  Distance (km): 6.5353046
  Magnitude: 7.6010797
  Epsilon (mean values): 1.3457294
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 2.13
  Distance (km): 8.2781536
  Magnitude: 7.8467268
  Epsilon (mean values): 1.0820297
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31:
  Percent Contributed: 15.88
  Distance (km): 8.0622881
  Magnitude: 7.6287094

```
  Epsilon (mean values): 1.3887459
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 12.19
  Distance (km): 6.5353046
  Magnitude: 7.6037953
  Epsilon (mean values): 1.3448949
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 2.02
  Distance (km): 8.2781536
  Magnitude: 7.8788431
  Epsilon (mean values): 1.0744497
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31 (opt):
  Percent Contributed: 5.78
  Distance (km): 6.709053
  Magnitude: 5.8000703
  Epsilon (mean values): 1.6039007
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908756
  Magnitude: 5.6523822
  Epsilon (mean values): 1.3913807
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908756
  Magnitude: 5.6523822
  Epsilon (mean values): 1.3913807
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
UC33brAvg_FM32 (opt):
  Percent Contributed: 5.78
  Distance (km): 6.7081391
  Magnitude: 5.7996854
  Epsilon (mean values): 1.6039164
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908925
  Magnitude: 5.6521468
  Epsilon (mean values): 1.3914648
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908925
  Magnitude: 5.6521468
  Epsilon (mean values): 1.3914648
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Campbell & Bozorgnia (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
```

  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 4.02 %
  Residual: 0 %
  Trace: 0.02 %
Mean (over all sources):
  m: 7.46
  r: 6.7 km
  ε_0: 2.26 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.61 km
  ε_0: 2.25 σ
  Contribution: 0.81 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 2.25 σ
  Contribution: 0.81 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
30	7.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	5.3	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
10	5.5	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
10	5.7	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
10	5.9	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.029
10	6.1	0.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.022
10	6.3	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.108	0.027
10	6.5	0.215	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.151	0.025
10	6.7	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.053	0.009
10	6.9	0.101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.080	0.006
10	7.1	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.053	0.005
10	7.3	0.748	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.723	0.022
10	7.5	0.812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.811	0.001
10	7.7	0.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.619	0.000
10	7.9	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.330	0.002
10	8.1	0.578	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.576	0.001
10	8.3	0.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM32:
  Percent Contributed: 1.79
  Distance (km): 6.7784225

  Magnitude: 7.5903583
  Epsilon (mean values): 2.2502599
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 1.57
  Distance (km): 6.5353046
  Magnitude: 7.5636338
  Epsilon (mean values): 2.2415974
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
UC33brAvg_FM31:
  Percent Contributed: 1.79
  Distance (km): 6.7745372
  Magnitude: 7.5940581
  Epsilon (mean values): 2.2503848
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 1.58
  Distance (km): 6.5353046
  Magnitude: 7.567265
  Epsilon (mean values): 2.2411248
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Chiou & Youngs (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 30.56 %
  Residual: 0 %
  Trace: 0.05 %
Mean (over all sources):
  m: 7.35
  r: 7.1 km
  ε_0: 1.52 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.63 km
  ε_0: 1.43 σ
  Contribution: 5.64 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.56 km
  ε_0: 1.43 σ
  Contribution: 5.47 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)

ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	8.3	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.9	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	7.1	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003
30	7.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004
30	7.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004
30	7.7	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.006
30	7.9	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.046
30	8.1	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.119
30	8.3	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.089
10	5.1	0.658	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.620	0.038
10	5.3	0.704	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.324	0.289	0.091
10	5.5	0.672	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.543	0.000	0.129
10	5.7	0.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.454	0.042	0.103
10	5.9	0.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.359	0.076	0.066
10	6.1	0.634	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.317	0.264	0.053
10	6.3	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.452	0.177	0.018
10	6.5	0.805	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.093	0.518	0.107	0.053
10	6.7	0.379	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.055	0.218	0.030	0.012
10	6.9	0.499	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.019	0.376	0.036	0.012
10	7.1	0.467	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036	0.013	0.289	0.069	0.061
10	7.3	5.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	4.187	0.531	0.328	0.003
10	7.5	5.635	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	5.468	0.153	0.011	0.000
10	7.7	4.429	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.417	0.008	0.003	0.000
10	7.9	2.485	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.369	0.107	0.008	0.000
10	8.1	4.565	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.521	0.044	0.000	0.000
10	8.3	1.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.477	0.005	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 12.69
  Distance (km): 7.2244671
  Magnitude: 7.6532072
  Epsilon (mean values): 1.4368664
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 10.77
  Distance (km): 6.5353046
  Magnitude: 7.6254958
  Epsilon (mean values): 1.4010122
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 1.14
  Distance (km): 8.2781536
  Magnitude: 7.8911321
  Epsilon (mean values): 1.3969631
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM32:
  Percent Contributed: 12.65
  Distance (km): 7.2138514
  Magnitude: 7.6495929
  Epsilon (mean values): 1.438004
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 10.7
  Distance (km): 6.5353046
  Magnitude: 7.6222483
  Epsilon (mean values): 1.403131

  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 1.2
  Distance (km): 8.2781536
  Magnitude: 7.8644919
  Epsilon (mean values): 1.405447
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31 (opt):
  Percent Contributed: 2.61
  Distance (km): 6.4949545
  Magnitude: 5.8623336
  Epsilon (mean values): 1.9321758
UC33brAvg_FM32 (opt):
  Percent Contributed: 2.61
  Distance (km): 6.4941944
  Magnitude: 5.8617784
  Epsilon (mean values): 1.9323608
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Source Type: System
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 77.01 %
  Residual: 0 %
  Trace: 0.04 %
Mean (over all sources):
  m: 7.63
  r: 7.75 km
  ε_0: 1.52 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.5 σ
  Contribution: 16.3 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 1.39 σ
  Contribution: 11.81 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)

ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
50	8.1	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.005
30	6.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.9	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	7.1	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
30	7.3	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.049
30	7.5	0.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.097
30	7.7	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.125
30	7.9	0.418	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.166	0.252
30	8.1	0.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.493	0.253
30	8.3	0.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.375	0.089
10	6.1	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
10	6.3	0.834	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.519	0.277	0.038
10	6.5	2.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	1.387	0.497	0.495
10	6.7	0.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.438	0.042	0.017
10	6.9	1.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.970	0.159	0.023
10	7.1	1.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.231	0.506	0.455	0.075
10	7.3	14.930	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.507	3.762	1.637	0.024
10	7.5	16.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.806	3.651	0.842	0.000
10	7.7	13.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.798	2.632	0.624	0.000
10	7.9	7.178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.286	1.522	0.368	0.002
10	8.1	13.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	9.984	2.531	0.589	0.001
10	8.3	4.263	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	2.796	0.795	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 38.53
  Distance (km): 7.7522696
  Magnitude: 7.6290489
  Epsilon (mean values): 1.5183046
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 31.12
  Distance (km): 6.5353046
  Magnitude: 7.6050927
  Epsilon (mean values): 1.4767216
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 3.95
  Distance (km): 8.2781536
  Magnitude: 7.8816596
  Epsilon (mean values): 1.3120476
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM32:
  Percent Contributed: 38.48
  Distance (km): 7.7441979
  Magnitude: 7.6245993
  Epsilon (mean values): 1.5185216
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 30.96
  Distance (km): 6.5353046
  Magnitude: 7.6018745
  Epsilon (mean values): 1.478169
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 4.16
  Distance (km): 8.2781536
  Magnitude: 7.8512625
  Epsilon (mean values): 1.3196983
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Source Type: Grid
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 22.99 %
  Residual: 0 %
  Trace: 0.06 %
Mean (over all sources):
  m: 5.81
  r: 6.74 km
  ε_0: 1.8 σ
Mode (largest m-r bin):
  m: 5.5
  r: 6.19 km
  ε_0: 1.75 σ
  Contribution: 3.55 %
Mode (largest m-r-ε_0 bin):
  m: 5.3
  r: 4.87 km
  ε_0: 1.76 σ
  Contribution: 2.4 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.7	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.008

30	6.9	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	7.1	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.006
30	7.3	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.004
30	7.5	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001
30	7.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	5.1	2.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.104	1.403	0.309
10	5.3	3.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.397	0.289	0.456
10	5.5	3.553	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	1.059	0.256	0.474
10	5.7	3.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.866	0.398	0.372
10	5.9	2.387	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.677	0.475	0.242
10	6.1	2.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	1.011	0.877	0.162
10	6.3	2.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	1.025	0.466	0.092
10	6.5	1.429	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.399	0.675	0.253	0.068
10	6.7	0.832	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.233	0.367	0.134	0.033
10	6.9	0.539	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.128	0.234	0.105	0.017
10	7.1	0.303	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.080	0.112	0.064	0.005
10	7.3	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.042	0.042	0.029	0.002
10	7.5	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.012	0.013	0.006	0.000
10	7.7	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.000
10	7.9	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution

UC33brAvg_FM31 (opt):
  Percent Contributed: 11.5
  Distance (km): 6.7410744
  Magnitude: 5.807404
  Epsilon (mean values): 1.8045724

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

UC33brAvg_FM32 (opt):
  Percent Contributed: 11.49
  Distance (km): 6.740285
  Magnitude: 5.806952
  Epsilon (mean values): 1.8046318

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

APPENDIX D

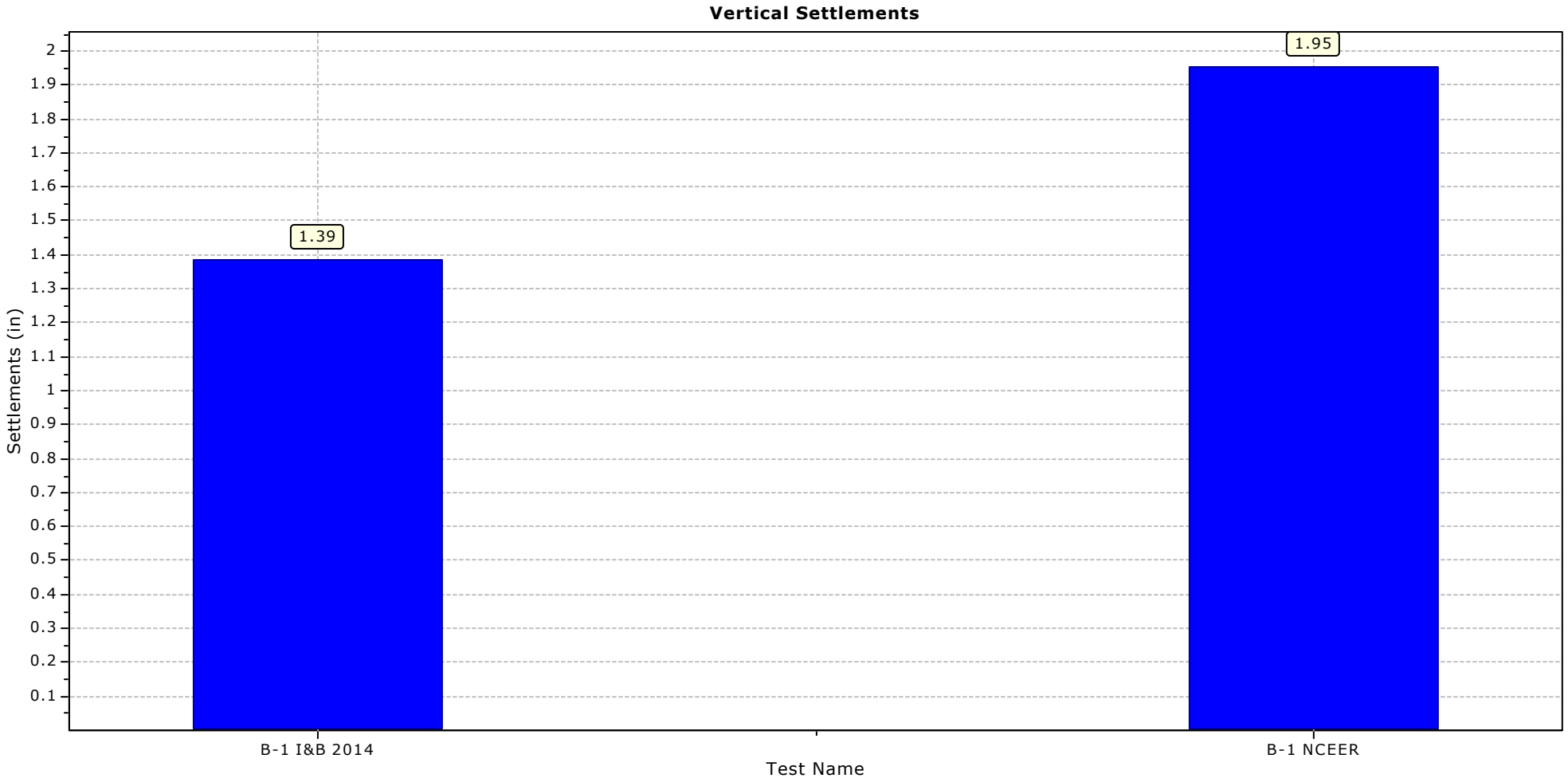
DRY SAND SETTLEMENT

Petra Geosciences, Inc.
Orange County Office
3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
www.petra-inc.com

SUMMARY CALCULATION REPORT

Project title : 24-112 National Core Apartments

Location : Rancho Mirage



Petra Geosciences, Inc.
Orange County Office
3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
www.petra-inc.com

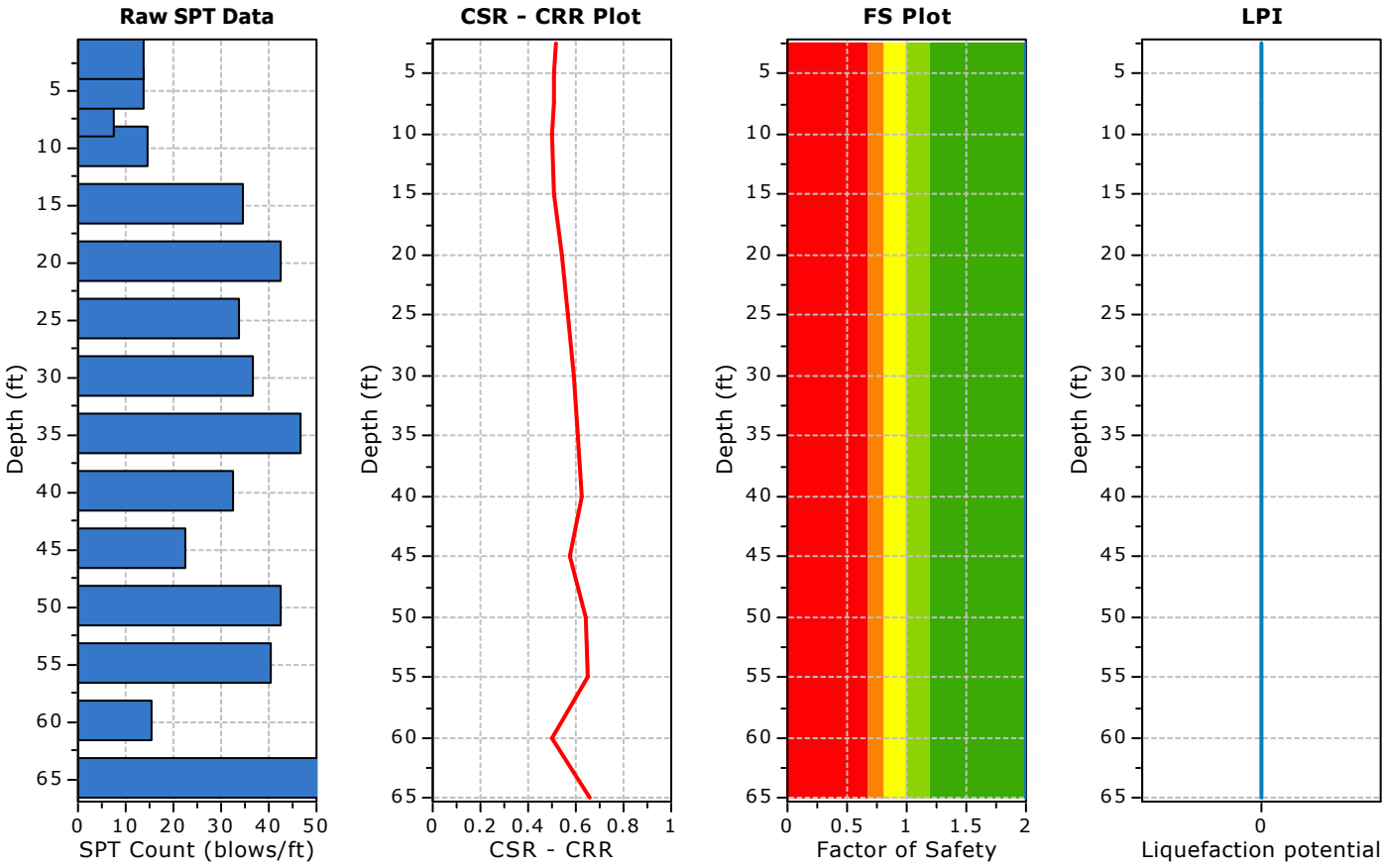
SPT BASED LIQUEFACTION ANALYSIS REPORT

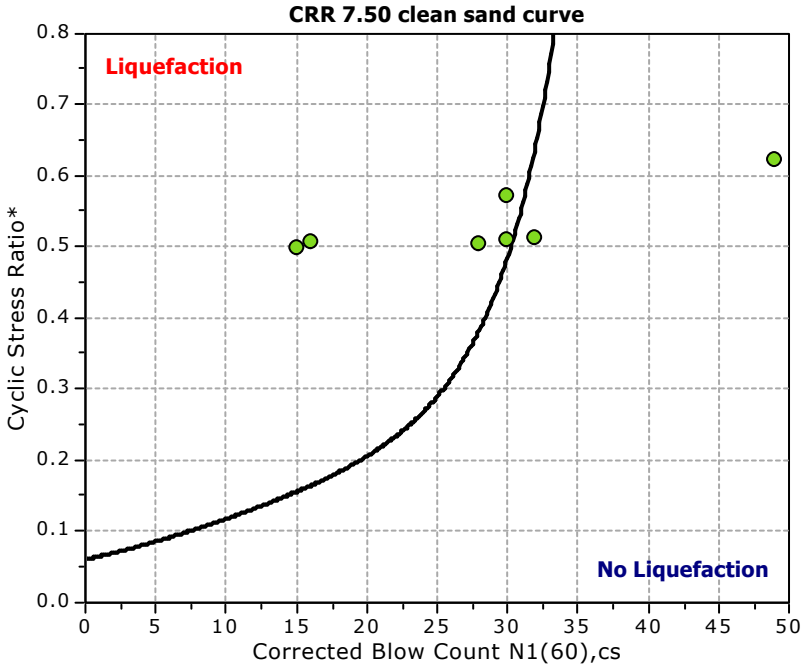
Project title : 24-112 National Core Apartments **SPT Name: B-1 I&B 2014**

Location : Rancho Mirage

:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	160.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	160.00 ft
Sampling method:	Sampler wo liners	Earthquake magnitude M_w:	7.49
Borehole diameter:	200mm	Peak ground acceleration:	0.87 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.20		

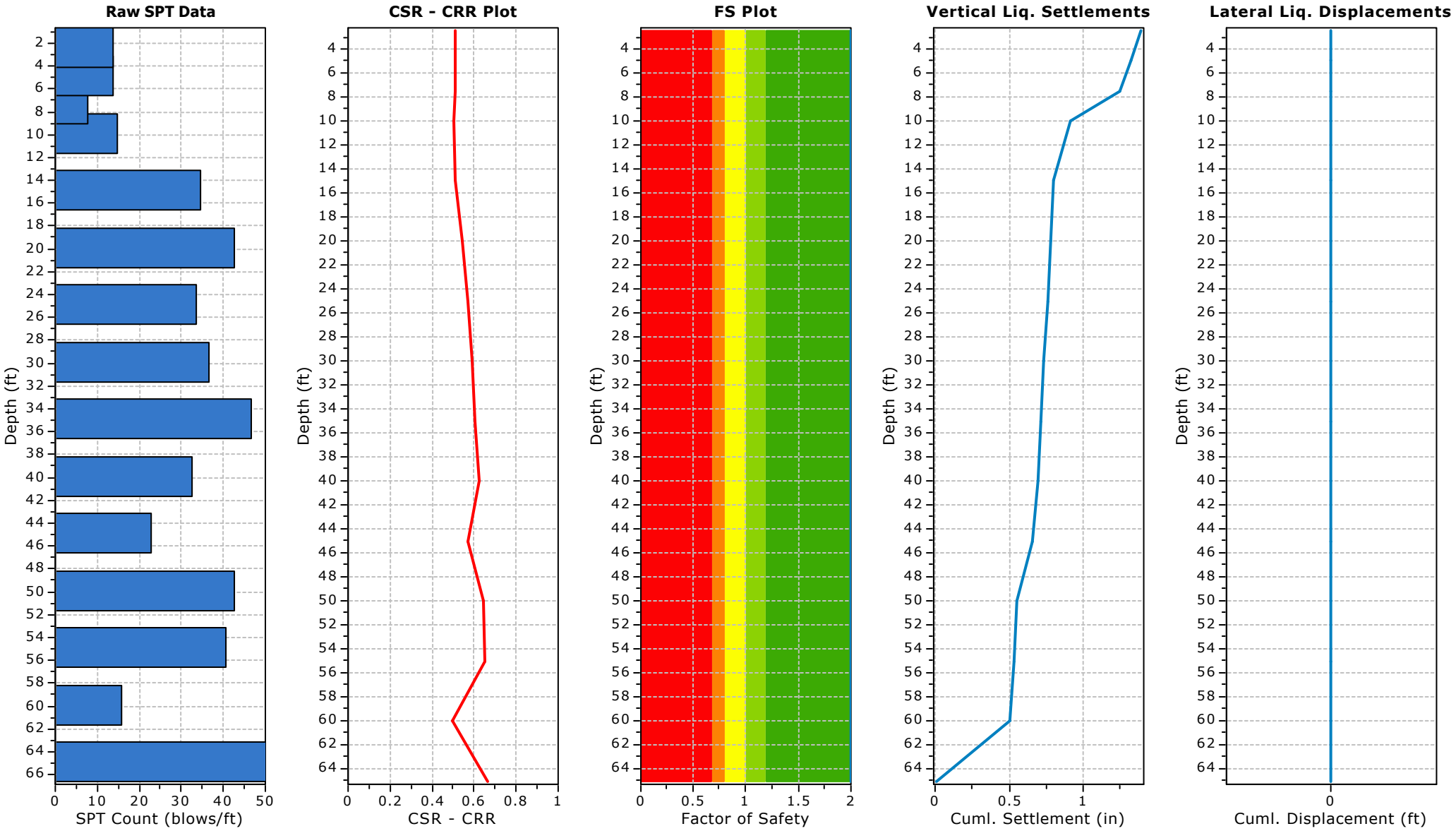




F.S. color scheme
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme
- Very high risk
- High risk
- Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::

Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
2.50	14	0.00	115.00	3.75	Yes
5.00	14	0.00	115.00	3.00	Yes
7.50	8	0.00	110.00	2.00	Yes
10.00	15	0.00	110.00	3.75	Yes
15.00	35	0.00	110.00	5.00	Yes
20.00	43	0.00	110.00	5.00	Yes
25.00	34	0.00	110.00	5.00	Yes
30.00	37	0.00	110.00	5.00	Yes
35.00	47	0.00	110.00	5.00	Yes
40.00	33	0.00	110.00	5.00	Yes
45.00	23	0.00	110.00	5.00	Yes
50.00	43	0.00	110.00	5.00	Yes
55.00	41	0.00	110.00	5.00	Yes
60.00	16	0.00	110.00	5.00	Yes
65.00	62	0.00	110.00	5.00	Yes

Abbreviations

Depth: Depth at which test was performed (ft)
SPT Field Value: Number of blows per foot
Fines Content: Fines content at test depth (%)
Unit Weight: Unit weight at test depth (pcf)
Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	$CRR_{7.5}$
2.50	14	115.00	0.14	0.00	0.14	0.37	1.70	1.20	1.15	0.75	1.30	32	0.00	0.00	32	4.000
5.00	14	115.00	0.29	0.00	0.29	0.36	1.60	1.20	1.15	0.75	1.30	30	0.00	0.00	30	4.000
7.50	8	110.00	0.42	0.00	0.42	0.46	1.53	1.20	1.15	0.80	1.18	16	0.00	0.00	16	4.000
10.00	15	110.00	0.56	0.00	0.56	0.39	1.28	1.20	1.15	0.85	1.26	28	0.00	0.00	28	4.000
15.00	35	110.00	0.84	0.00	0.84	0.26	1.06	1.20	1.15	0.85	1.30	57	0.00	0.00	57	4.000
20.00	43	110.00	1.11	0.00	1.11	0.26	0.99	1.20	1.15	0.95	1.30	72	0.00	0.00	72	4.000
25.00	34	110.00	1.39	0.00	1.39	0.26	0.93	1.20	1.15	0.95	1.30	54	0.00	0.00	54	4.000
30.00	37	110.00	1.66	0.00	1.66	0.26	0.89	1.20	1.15	1.00	1.30	59	0.00	0.00	59	4.000
35.00	47	110.00	1.94	0.00	1.94	0.26	0.85	1.20	1.15	1.00	1.30	72	0.00	0.00	72	4.000
40.00	33	110.00	2.21	0.00	2.21	0.26	0.82	1.20	1.15	1.00	1.30	49	0.00	0.00	49	4.000
45.00	23	110.00	2.49	0.00	2.49	0.36	0.73	1.20	1.15	1.00	1.30	30	0.00	0.00	30	4.000
50.00	43	110.00	2.76	0.00	2.76	0.26	0.78	1.20	1.15	1.00	1.30	60	0.00	0.00	60	4.000
55.00	41	110.00	3.04	0.00	3.04	0.26	0.76	1.20	1.15	1.00	1.30	56	0.00	0.00	56	4.000
60.00	16	110.00	3.31	0.00	3.31	0.47	0.59	1.20	1.15	1.00	1.17	15	0.00	0.00	15	4.000
65.00	62	110.00	3.59	0.00	3.59	0.26	0.73	1.20	1.15	1.00	1.30	81	0.00	0.00	81	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	$CRR_{7.5}$

Abbreviations

σ_v: Total stress during SPT test (tsf)
u_o: Water pore pressure during SPT test (tsf)
σ'_{vo}: Effective overburden pressure during SPT test (tsf)
m: Stress exponent normalization factor
C_N: Overburden corretion factor
C_E: Energy correction factor
C_B: Borehole diameter correction factor
C_R: Rod length correction factor
C_S: Liner correction factor
$N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
$\Delta(N_1)_{60}$ Equivalent clean sand adjustment
$N_{1(60)cs}$: Corected $N_{1(60)}$ value for fines content
$CRR_{7.5}$: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF_{max}	$(N_1)_{60cs}$	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR^*	FS	
2.50	115.00	0.14	0.00	0.14	1.00	1.00	0.566	2.12	32	1.00	0.564	1.10	0.513	2.000	●
5.00	115.00	0.29	0.00	0.29	0.99	1.00	0.563	2.00	30	1.00	0.561	1.10	0.510	2.000	●
7.50	110.00	0.42	0.00	0.42	0.99	1.00	0.559	1.35	16	1.00	0.558	1.10	0.508	2.000	●
10.00	110.00	0.56	0.00	0.56	0.98	1.00	0.555	1.88	28	1.00	0.553	1.10	0.503	2.000	●
15.00	110.00	0.84	0.00	0.84	0.97	1.00	0.546	2.20	57	1.00	0.544	1.07	0.509	2.000	●
20.00	110.00	1.11	0.00	1.11	0.95	1.00	0.536	2.20	72	1.00	0.534	0.99	0.542	2.000	●
25.00	110.00	1.39	0.00	1.39	0.93	1.00	0.525	2.20	54	1.00	0.523	0.92	0.568	2.000	●
30.00	110.00	1.66	0.00	1.66	0.91	1.00	0.513	2.20	59	1.00	0.511	0.87	0.590	2.000	●
35.00	110.00	1.94	0.00	1.94	0.89	1.00	0.501	2.20	72	1.00	0.499	0.82	0.607	2.000	●
40.00	110.00	2.21	0.00	2.21	0.86	1.00	0.488	2.20	49	1.00	0.486	0.78	0.622	2.000	●
45.00	110.00	2.49	0.00	2.49	0.84	1.00	0.475	2.00	30	1.00	0.474	0.83	0.573	2.000	●
50.00	110.00	2.76	0.00	2.76	0.82	1.00	0.462	2.20	60	1.00	0.461	0.72	0.643	2.000	●
55.00	110.00	3.04	0.00	3.04	0.80	1.00	0.450	2.20	56	1.00	0.448	0.69	0.650	2.000	●
60.00	110.00	3.31	0.00	3.31	0.77	1.00	0.437	1.32	15	1.00	0.437	0.87	0.500	2.000	●
65.00	110.00	3.59	0.00	3.59	0.75	1.00	0.425	2.20	81	1.00	0.423	0.64	0.662	2.000	●

Abbreviations

$\sigma_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
$u_{o,eq}$: Water pressure at test point, during earthquake (tsf)
$\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
r_d: Nonlinear shear mass factor
α: Improvement factor due to stone columns
CSR : Cyclic Stress Ratio
MSF : Magnitude Scaling Factor
$CSR_{eq,M=7.5}$: CSR adjusted for M=7.5
K_{sigma}: Effective overburden stress factor
CSR^*: CSR fully adjusted (user FS applied)***
FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
2.50	2.000	0.00	9.62	2.50	0.00
5.00	2.000	0.00	9.24	2.50	0.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
7.50	2.000	0.00	8.86	2.50	0.00
10.00	2.000	0.00	8.48	2.50	0.00
15.00	2.000	0.00	7.71	5.00	0.00
20.00	2.000	0.00	6.95	5.00	0.00
25.00	2.000	0.00	6.19	5.00	0.00
30.00	2.000	0.00	5.43	5.00	0.00
35.00	2.000	0.00	4.67	5.00	0.00
40.00	2.000	0.00	3.90	5.00	0.00
45.00	2.000	0.00	3.14	5.00	0.00
50.00	2.000	0.00	2.38	5.00	0.00
55.00	2.000	0.00	1.62	5.00	0.00
60.00	2.000	0.00	0.86	5.00	0.00
65.00	2.000	0.00	0.09	5.00	0.00

Overall potential I_L : 0.00

I_L = 0.00 - No liquefaction
I_L between 0.00 and 5 - Liquefaction not probable
I_L between 5 and 15 - Liquefaction probable
I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	α	b	γ	ε_{15}	N_c	ε_{Nc} weight factor	ε_{Nc} (%)	Δh (ft)	ΔS (in)
2.50	32	0.08	0.10	440.42	0.13	26059.76	0.00	0.00	15.06	0.95	0.16	3.75	0.070
5.00	30	0.16	0.19	609.59	0.13	17193.03	0.00	0.00	15.06	0.90	0.20	3.00	0.071
7.50	16	0.24	0.28	601.05	0.14	13598.84	0.01	0.01	15.06	0.85	1.38	2.00	0.330
10.00	28	0.31	0.38	833.28	0.14	11493.75	0.00	0.00	15.06	0.80	0.25	3.75	0.112
15.00	57	0.46	0.56	1288.63	0.15	9051.99	0.00	0.00	15.06	0.70	0.04	5.00	0.024
20.00	72	0.60	0.75	1605.48	0.15	7634.05	0.00	0.00	15.06	0.60	0.03	5.00	0.015
25.00	54	0.73	0.93	1629.02	0.16	6686.45	0.00	0.00	15.06	0.50	0.05	5.00	0.029
30.00	59	0.85	1.11	1836.58	0.17	5998.99	0.00	0.00	15.06	0.40	0.04	5.00	0.024
35.00	72	0.97	1.30	2118.73	0.17	5472.55	0.00	0.00	15.06	0.30	0.03	5.00	0.016
40.00	49	1.08	1.48	1991.52	0.18	5053.65	0.00	0.00	15.06	0.20	0.06	5.00	0.036
45.00	30	1.18	1.67	1793.08	0.19	4710.61	0.00	0.00	15.06	0.10	0.18	5.00	0.107
50.00	60	1.28	1.85	2380.75	0.20	4423.37	0.00	0.00	15.06	0.00	0.04	5.00	0.022
55.00	56	1.37	2.04	2439.68	0.20	4178.55	0.00	0.00	15.06	0.00	0.04	5.00	0.025
60.00	15	1.45	2.22	1642.30	0.21	3966.81	0.01	0.01	15.06	0.00	0.82	5.00	0.491
65.00	81	1.52	2.40	2998.49	0.22	3781.46	0.00	0.00	15.06	0.00	0.02	5.00	0.012

Cumulative settlemetns: 1.385

Abbreviations

τ_{av}: Average cyclic shear stress
p: Average stress
G_{max}: Maximum shear modulus (tsf)
α, b: Shear strain formula variables
γ: Average shear strain
ε_{15}: Volumetric strain after 15 cycles
N_c: Number of cycles
ε_{Nc}: Volumetric strain for number of cycles N_c (%)
Δh: Thickness of soil layer (in)
ΔS: Settlement of soil layer (in)

Petra Geosciences, Inc.
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3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
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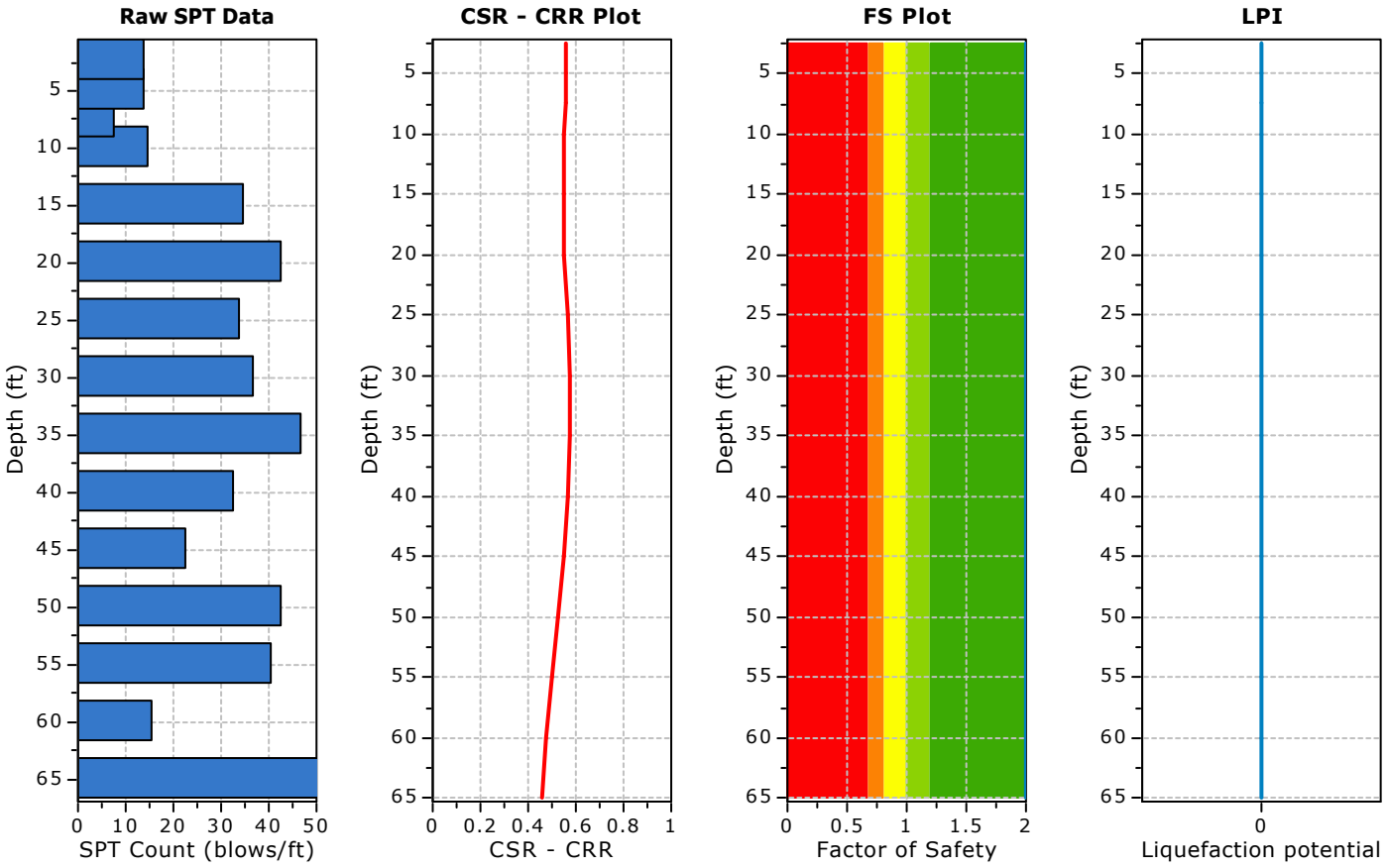
SPT BASED LIQUEFACTION ANALYSIS REPORT

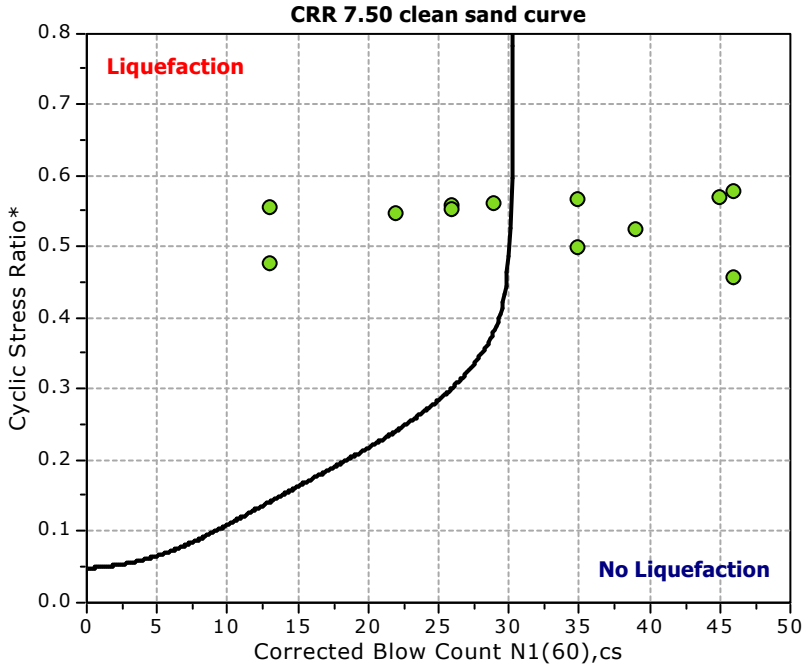
Project title : 24-112 National Core Apartments **SPT Name: B-1 NCEER**

Location : Rancho Mirage

:: Input parameters and analysis properties ::

Analysis method:	NCEER 1998	G.W.T. (in-situ):	160.00 ft
Fines correction method:	NCEER 1998	G.W.T. (earthq.):	160.00 ft
Sampling method:	Sampler wo liners	Earthquake magnitude M_w:	7.49
Borehole diameter:	200mm	Peak ground acceleration:	0.87 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.20		





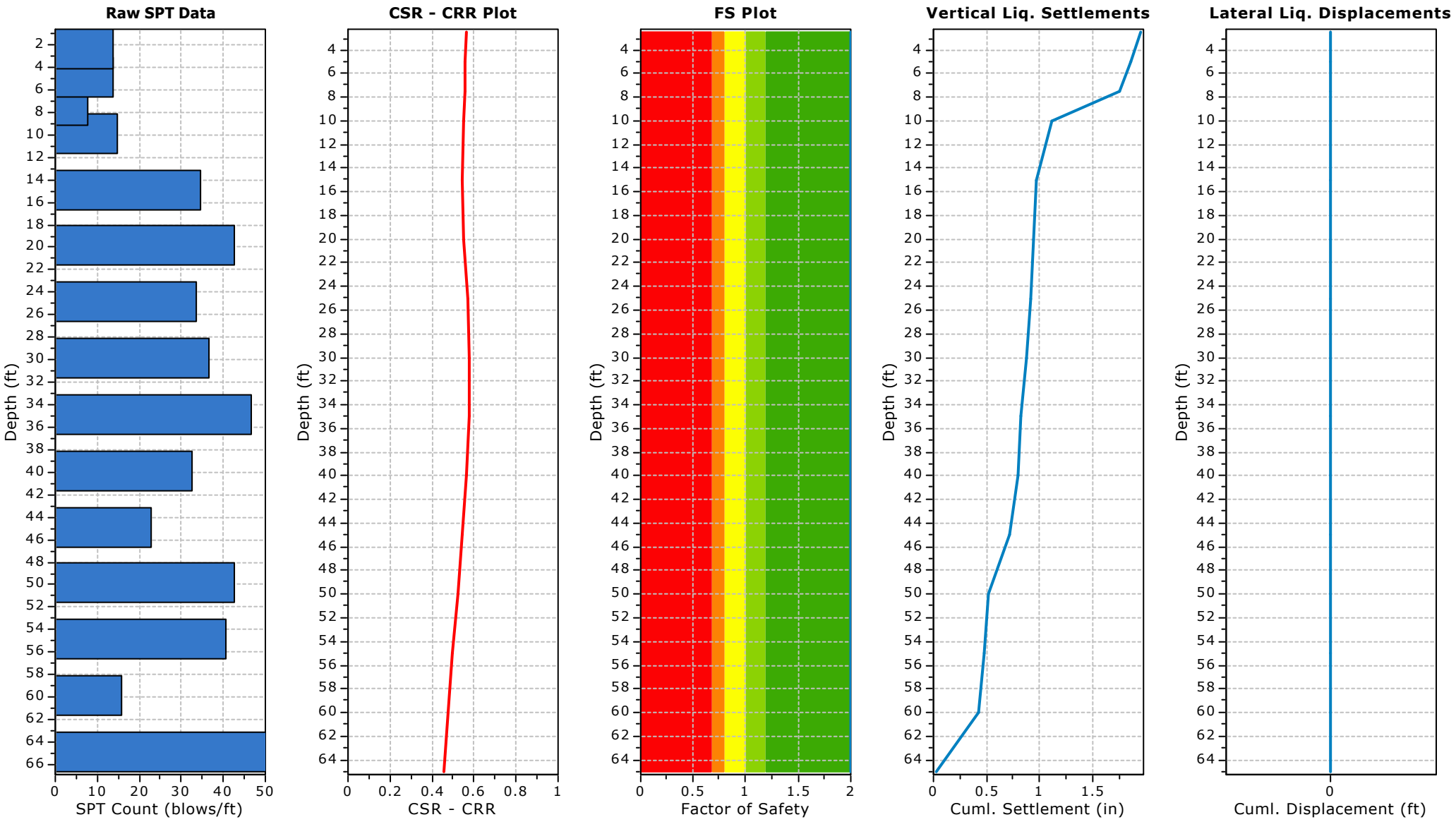
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::

Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
2.50	14	0.00	120.00	3.75	Yes
5.00	14	0.00	120.00	3.00	Yes
7.50	8	0.00	120.00	2.00	Yes
10.00	15	0.00	120.00	3.75	Yes
15.00	35	0.00	120.00	5.00	Yes
20.00	43	0.00	120.00	5.00	Yes
25.00	34	0.00	120.00	5.00	Yes
30.00	37	0.00	120.00	5.00	Yes
35.00	47	0.00	120.00	5.00	Yes
40.00	33	0.00	120.00	5.00	Yes
45.00	23	0.00	120.00	5.00	Yes
50.00	43	0.00	120.00	5.00	Yes
55.00	41	0.00	120.00	5.00	Yes
60.00	16	0.00	120.00	5.00	Yes
65.00	62	0.00	120.00	5.00	Yes

Abbreviations

Depth: Depth at which test was performed (ft)
SPT Field Value: Number of blows per foot
Fines Content: Fines content at test depth (%)
Unit Weight: Unit weight at test depth (pcf)
Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	Fines Content (%)	α	β	$(N_1)_{60cs}$	$CRR_{7.5}$
2.50	14	120.00	0.15	0.00	0.15	1.64	1.20	1.15	0.75	1.20	29	0.00	0.00	1.00	29	4.000
5.00	14	120.00	0.30	0.00	0.30	1.48	1.20	1.15	0.75	1.20	26	0.00	0.00	1.00	26	4.000
7.50	8	120.00	0.45	0.00	0.45	1.35	1.20	1.15	0.75	1.20	13	0.00	0.00	1.00	13	4.000
10.00	15	120.00	0.60	0.00	0.60	1.25	1.20	1.15	0.85	1.20	26	0.00	0.00	1.00	26	4.000
15.00	35	120.00	0.90	0.00	0.90	1.07	1.20	1.15	0.85	1.20	53	0.00	0.00	1.00	53	4.000
20.00	43	120.00	1.20	0.00	1.20	0.94	1.20	1.15	0.95	1.20	64	0.00	0.00	1.00	64	4.000
25.00	34	120.00	1.50	0.00	1.50	0.84	1.20	1.15	0.95	1.20	45	0.00	0.00	1.00	45	4.000
30.00	37	120.00	1.80	0.00	1.80	0.76	1.20	1.15	1.00	1.20	46	0.00	0.00	1.00	46	4.000
35.00	47	120.00	2.10	0.00	2.10	0.69	1.20	1.15	1.00	1.20	54	0.00	0.00	1.00	54	4.000
40.00	33	120.00	2.40	0.00	2.40	0.63	1.20	1.15	1.00	1.20	35	0.00	0.00	1.00	35	4.000
45.00	23	120.00	2.70	0.00	2.70	0.59	1.20	1.15	1.00	1.20	22	0.00	0.00	1.00	22	4.000
50.00	43	120.00	3.00	0.00	3.00	0.55	1.20	1.15	1.00	1.20	39	0.00	0.00	1.00	39	4.000
55.00	41	120.00	3.30	0.00	3.30	0.51	1.20	1.15	1.00	1.20	35	0.00	0.00	1.00	35	4.000
60.00	16	120.00	3.60	0.00	3.60	0.48	1.20	1.15	1.00	1.20	13	0.00	0.00	1.00	13	4.000
65.00	62	120.00	3.90	0.00	3.90	0.45	1.20	1.15	1.00	1.20	46	0.00	0.00	1.00	46	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	Fines Content (%)	α	β	$(N_1)_{60cs}$	$CRR_{7.5}$

Abbreviations

σ_v: Total stress during SPT test (tsf)
u_o: Water pore pressure during SPT test (tsf)
σ'_{vo}: Effective overburden pressure during SPT test (tsf)
C_N: Overburden corretion factor
C_E: Energy correction factor
C_B: Borehole diameter correction factor
C_R: Rod length correction factor
C_S: Liner correction factor
$N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
α, β: Clean sand equivalent clean sand formula coefficients
$N_{1(60)cs}$: Corected $N_{1(60)}$ value for fines content
$CRR_{7.5}$: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR^*	FS	
2.50	120.00	0.15	0.00	0.15	1.00	1.00	0.563	1.00	0.562	1.00	0.562	2.000	●
5.00	120.00	0.30	0.00	0.30	0.99	1.00	0.560	1.00	0.558	1.00	0.558	2.000	●
7.50	120.00	0.45	0.00	0.45	0.98	1.00	0.557	1.00	0.555	1.00	0.555	2.000	●
10.00	120.00	0.60	0.00	0.60	0.98	1.00	0.554	1.00	0.552	1.00	0.552	2.000	●
15.00	120.00	0.90	0.00	0.90	0.97	1.00	0.548	1.00	0.546	1.00	0.546	2.000	●
20.00	120.00	1.20	0.00	1.20	0.96	1.00	0.541	1.00	0.539	0.98	0.553	2.000	●
25.00	120.00	1.50	0.00	1.50	0.94	1.00	0.533	1.00	0.531	0.93	0.569	2.000	●
30.00	120.00	1.80	0.00	1.80	0.92	1.00	0.521	1.00	0.519	0.90	0.577	2.000	●
35.00	120.00	2.10	0.00	2.10	0.89	1.00	0.504	1.00	0.502	0.87	0.576	2.000	●
40.00	120.00	2.40	0.00	2.40	0.85	1.00	0.481	1.00	0.480	0.85	0.565	2.000	●
45.00	120.00	2.70	0.00	2.70	0.80	1.00	0.454	1.00	0.453	0.83	0.546	2.000	●
50.00	120.00	3.00	0.00	3.00	0.75	1.00	0.426	1.00	0.424	0.81	0.523	2.000	●
55.00	120.00	3.30	0.00	3.30	0.70	1.00	0.398	1.00	0.397	0.80	0.498	2.000	●
60.00	120.00	3.60	0.00	3.60	0.66	1.00	0.373	1.00	0.372	0.78	0.475	2.000	●
65.00	120.00	3.90	0.00	3.90	0.62	1.00	0.352	1.00	0.351	0.77	0.455	2.000	●

Abbreviations

$\sigma_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
$u_{o,eq}$: Water pressure at test point, during earthquake (tsf)
$\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
r_d : Nonlinear shear mass factor
α: Improvement factor due to stone columns
CSR : Cyclic Stress Ratio (adjusted for improvement)
MSF : Magnitude Scaling Factor
$CSR_{eq,M=7.5}$: CSR adjusted for M=7.5
K_{sigma}: Effective overburden stress factor
CSR^*: CSR fully adjusted (user FS applied)***
FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
2.50	2.000	0.00	9.62	2.50	0.00
5.00	2.000	0.00	9.24	2.50	0.00
7.50	2.000	0.00	8.86	2.50	0.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
10.00	2.000	0.00	8.48	2.50	0.00
15.00	2.000	0.00	7.71	5.00	0.00
20.00	2.000	0.00	6.95	5.00	0.00
25.00	2.000	0.00	6.19	5.00	0.00
30.00	2.000	0.00	5.43	5.00	0.00
35.00	2.000	0.00	4.67	5.00	0.00
40.00	2.000	0.00	3.90	5.00	0.00
45.00	2.000	0.00	3.14	5.00	0.00
50.00	2.000	0.00	2.38	5.00	0.00
55.00	2.000	0.00	1.62	5.00	0.00
60.00	2.000	0.00	0.86	5.00	0.00
65.00	2.000	0.00	0.09	5.00	0.00

Overall potential I_L : 0.00

I_L = 0.00 - No liquefaction
I_L between 0.00 and 5 - Liquefaction not probable
I_L between 5 and 15 - Liquefaction probable
I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	α	b	γ (%)	ε_{15}	N_c	ε_{Nc} (%)	Δh (ft)	ΔS (in)
2.50	29	0.08	0.10	435.37	0.13	25402.73	0.32	0.00	15.06	0.21	3.75	0.093
5.00	26	0.17	0.20	593.69	0.13	16759.55	0.40	0.00	15.06	0.29	3.00	0.106
7.50	13	0.25	0.30	577.12	0.14	13140.37	1.60	0.03	15.06	2.68	2.00	0.644
10.00	26	0.33	0.40	839.61	0.14	11057.18	0.42	0.00	15.06	0.31	3.75	0.138
15.00	53	0.49	0.60	1303.84	0.15	8669.41	0.16	0.00	15.06	0.05	5.00	0.030
20.00	64	0.65	0.80	1603.23	0.16	7295.02	0.14	0.00	15.06	0.03	5.00	0.021
25.00	45	0.80	1.00	1593.90	0.16	6380.88	0.22	0.00	15.06	0.08	5.00	0.049
30.00	46	0.94	1.21	1758.87	0.17	5719.68	0.21	0.00	15.06	0.08	5.00	0.046
35.00	54	1.06	1.41	2004.10	0.18	5214.39	0.17	0.00	15.06	0.05	5.00	0.031
40.00	35	1.16	1.61	1854.13	0.19	4812.92	0.25	0.00	15.06	0.13	5.00	0.076
45.00	22	1.23	1.81	1684.62	0.19	4484.53	0.37	0.00	15.06	0.33	5.00	0.199
50.00	39	1.28	2.01	2149.12	0.20	4209.81	0.17	0.00	15.06	0.08	5.00	0.046
55.00	35	1.31	2.21	2174.16	0.21	3975.82	0.17	0.00	15.06	0.08	5.00	0.051
60.00	13	1.34	2.41	1632.34	0.22	3773.58	0.39	0.01	15.06	0.66	5.00	0.398
65.00	46	1.37	2.61	2588.99	0.23	3596.63	0.11	0.00	15.06	0.04	5.00	0.024

Cumulative settlemetns: 1.953

Abbreviations

τ_{av}: Average cyclic shear stress
p: Average stress
G_{max}: Maximum shear modulus (tsf)
α, b: Shear strain formula variables
γ: Average shear strain (%)
ε_{15}: Volumetric strain after 15 cycles
N_c: Number of cycles
ε_{Nc}: Volumetric strain for number of cycles N_c (%)
Δh: Thickness of soil layer (in)
ΔS: Settlement of soil layer (in)

:: Lateral displacements estimation for saturated sands ::

Depth (ft)	$(N_1)_{60}$	D_r (%)	γ_{max} (%)	d_z (ft)	LDI	LD (ft)
2.50	29	75.39	0.00	3.75	0.000	0.00
5.00	26	71.39	0.00	3.00	0.000	0.00
7.50	13	50.48	0.00	2.00	0.000	0.00
10.00	26	71.39	0.00	3.75	0.000	0.00
15.00	53	100.00	0.00	5.00	0.000	0.00
20.00	64	100.00	0.00	5.00	0.000	0.00
25.00	45	100.00	0.00	5.00	0.000	0.00
30.00	46	100.00	0.00	5.00	0.000	0.00
35.00	54	100.00	0.00	5.00	0.000	0.00
40.00	35	82.83	0.00	5.00	0.000	0.00
45.00	22	65.67	0.00	5.00	0.000	0.00
50.00	39	87.43	0.00	5.00	0.000	0.00
55.00	35	82.83	0.00	5.00	0.000	0.00
60.00	13	50.48	0.00	5.00	0.000	0.00
65.00	46	100.00	0.00	5.00	0.000	0.00

Cumulative lateral displacements: 0.00

Abbreviations

D_r: Relative density (%)
γ_{max}: Maximum amplitude of cyclic shear strain (%)
d_z: Soil layer thickness (ft)
LDI: Lateral displacement index (ft)
LD: Actual estimated displacement (ft)

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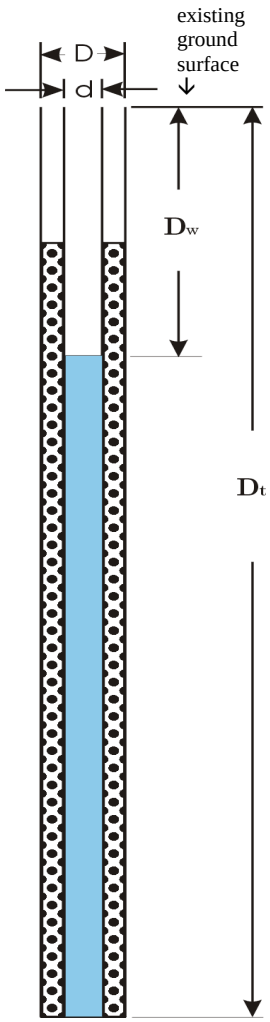
APPENDIX E

PERCOLATION / INFILTRATION

Boring/Test Number: P-1

Total Depth of Boring, D_T (ft):	10	**Test Date:**	6/7/2024
Diameter of Hole, D (in):	8	**Tested By:**	KTM
Diameter of Casing, d (in):	2	**USCS Soil Type:**	SP
Depth of Slotted Casing (ft):	5 to 10	**Depth to Groundwater (ft):**	?
Porosity of Annulus Material, *n* :	0.42	**Ground Elevation (msl ft):**	312
Depth from Existing Ground Surface to Bottom of Prop. Inflitration System (ft):			?



SANDY SOIL CRITERIA TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔD (in.)	Change in Height of Water Greater Than or Equal to 6"? (Yes/No)*
		Initial, D_o (ft.)	Final, D_f (ft.)		
1	25	9.1	10	10.8	yes
2	25	9.10	10	10.8	yes
Standard Time Interval Between Readings (min.), [* if yes = 10, if no = 30]:					30

PERCOLATION TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔH (in.)	Percolation Rate	
		Initial, D_o (ft.)	Final, D_f (ft.)		(min/in.)	(gal/day/ft^2)
1	10	8.60	10.00	16.80	0.60	132.32
2	10	8.60	10.00	16.80	0.60	132.32
3	10	8.55	10.00	17.40	0.57	133.20
4	10	8.60	10.00	16.80	0.60	132.32
5	10	8.55	10.00	17.40	0.57	133.20
6	10	8.55	10.00	17.40	0.57	133.20

TEST RESULTS**

Inflitration Rate [Porchet Method]# (inches/hour)	Percolation Rate	
	(min/in.)	(gal/day/ft^2)
12.00	**0.57**	**133.20**

**Raw Results. Does Not Include a Factor of Safety

FACTOR OF SAFETY

Testing Option	Testing Requirements	Factor of Safety per Reference
Option 2	**4 tests minimum with at least two borings per basin**	**3**

Where Infiltration Rate, It = ΔH (60r) / Δt (r + 2Havg)

r = D / 2

Ho = D_T - Do

$H_f = D_T - D_f$

$\Delta H = \Delta D = H_o - H_f$

$H_{avg} = (H_o + H_f) / 2$

Reference:

RCFCWCD, Design Handbook for LID, dated September, 2011

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COSTA MESA TEMECULA LOS ANGELES PALM DESERT CORONA ESCONDIDO

PERCOLATION TEST SUMMARY

Key Largo Avenue
Rancho Mirage, Riverside County, CA

PETRA GEOSCIENCES INC.

DATE: June , 2024

J.N.: 24-112

Appendix E

APPENDIX F

STANDARD GRADING SPECIFICATIONS

STANDARD GRADING SPECIFICATIONS

These specifications present the usual and minimum requirements for projects on which Petra Geosciences, Inc. (Petra) is the geotechnical consultant. No deviation from these specifications will be allowed, except where specifically superseded in the preliminary geology and soils report, or in other written communication signed by the Soils Engineer and Engineering Geologist of record (Geotechnical Consultant).

I. GENERAL

A. The Geotechnical Consultant is the Owner's or Builder's representative on the project. For the purpose of these specifications, participation by the Geotechnical Consultant includes that observation performed by any person or persons employed by, and responsible to, the licensed Soils Engineer and Engineering Geologist signing the soils report.

B. The contractor should prepare and submit to the Owner and Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" and the estimated quantities of daily earthwork to be performed prior to the commencement of grading. This work plan should be reviewed by the Geotechnical Consultant to schedule personnel to perform the appropriate level of observation, mapping, and compaction testing as necessary.

C. All clearing, site preparation, or earthwork performed on the project shall be conducted by the Contractor in accordance with the recommendations presented in the geotechnical report and under the observation of the Geotechnical Consultant.

D. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Geotechnical Consultant and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Geotechnical Consultant. The Contractor shall also remove all material considered unsatisfactory by the Geotechnical Consultant.

E. It is the Contractor's responsibility to have suitable and sufficient compaction equipment on the job site to handle the amount of fill being placed. If necessary, excavation equipment will be shut down to permit completion of compaction to project specifications. Sufficient watering apparatus will also be provided by the Contractor, with due consideration for the fill material, rate of placement, and time of year.

F. After completion of grading a report will be submitted by the Geotechnical Consultant.

II. SITE PREPARATION

A. Clearing and Grubbing

1. All vegetation such as trees, brush, grass, roots, and deleterious material shall be disposed of offsite. This removal shall be concluded prior to placing fill.

2. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipe lines, etc., are to be removed or treated in a manner prescribed by the Geotechnical Consultant.

III. FILL AREA PREPARATION

A. Remedial Removals/Overexcavations

1. Remedial removals, as well as overexcavation for remedial purposes, shall be evaluated by the Geotechnical Consultant. Remedial removal depths presented in the geotechnical report and shown on the geotechnical plans are estimates only. The actual extent of removal should be determined by the Geotechnical Consultant based on the conditions exposed during grading. All soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as determined by the Geotechnical Consultant.

2. Soil, alluvium, or bedrock materials determined by the Soils Engineer as being unsuitable for placement in compacted fills shall be removed from the site. Any material incorporated as a part of a compacted fill must be approved by the Geotechnical Consultant.

3. Should potentially hazardous materials be encountered, the Contractor should stop work in the affected area. An environmental consultant specializing in hazardous materials should be notified immediately for evaluation and handling of these materials prior to continuing work in the affected area.

B. Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide sufficient survey control for determining locations and elevations of processed areas, keys, and benches.

C. Processing

After the ground surface to receive fill has been declared satisfactory for support of fill by the Geotechnical Consultant, it shall be scarified to a minimum depth of 6 inches and until the ground surface is uniform and free from ruts, hollows, hummocks, or other uneven features which may prevent uniform compaction.

The scarified ground surface shall then be brought to optimum moisture, mixed as required, and compacted to a minimum relative compaction of 90 percent.

D. Subdrains

Subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency, and/or with the recommendations of the Geotechnical Consultant. (Typical Canyon Subdrain details are given on Plate SG-1).

E. Cut/Fill & Deep Fill/Shallow Fill Transitions

In order to provide uniform bearing conditions in cut/fill and deep fill/shallow fill transition lots, the cut and shallow fill portions of the lot should be overexcavated to the depths and the horizontal limits discussed in the approved geotechnical report and replaced with compacted fill. (Typical details are given on Plate SG-7.)

STANDARD GRADING SPECIFICATIONS

IV. COMPACTED FILL MATERIAL

A. General

Materials excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Geotechnical Consultant. Material to be used for fill shall be essentially free of organic material and other deleterious substances. Roots, tree branches, and other matter missed during clearing shall be removed from the fill as recommended by the Geotechnical Consultant. Material that is spongy, subject to decay, or otherwise considered unsuitable shall not be used in the compacted fill.

Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

B. Oversize Materials

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches in diameter, shall be taken offsite or placed in accordance with the recommendations of the Geotechnical Consultant in areas designated as suitable for rock disposal (Typical details for Rock Disposal are given on Plate SG-4).

Rock fragments less than 12 inches in diameter may be utilized in the fill provided, they are not nested or placed in concentrated pockets; they are surrounded by compacted fine grained soil material and the distribution of rocks is approved by the Geotechnical Consultant.

C. Laboratory Testing

Representative samples of materials to be utilized as compacted fill shall be analyzed by the laboratory of the Geotechnical Consultant to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted by the Geotechnical Consultant as soon as possible.

D. Import

If importing of fill material is required for grading, proposed import material should meet the requirements of the previous section. The import source shall be given to the Geotechnical Consultant at least 2 working days prior to importing so that appropriate tests can be performed and its suitability determined.

V. FILL PLACEMENT AND COMPACTION

A. Fill Layers

Material used in the compacting process shall be evenly spread, watered, processed, and compacted in thin lifts not to exceed 6 inches in thickness to obtain a uniformly dense layer. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Consultant.

B. Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly above optimum moisture content.

C. Compaction

Each layer shall be compacted to 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency. (In general, ASTM D 1557-02, will be used.)

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or expansive soils condition, the area to received fill compacted to less than 90 percent shall either be delineated on the grading plan or appropriate reference made to the area in the soils report.

D. Failing Areas

If the moisture content or relative density varies from that required by the Geotechnical Consultant, the Contractor shall rework the fill until it is approved by the Geotechnical Consultant.

E. Benching

All fills shall be keyed and benched through all topsoil, colluvium, alluvium or creep material, into sound bedrock or firm material where the slope receiving fill exceeds a ratio of 5 horizontal to 1 vertical, in accordance with the recommendations of the Geotechnical Consultant.

VI. SLOPES

A. Fill Slopes

The contractor will be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses, and stabilization fills. 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, or by any other procedure that produces the required compaction.

B. Side Hill Fills

The key for side hill fills shall be a minimum of 15 feet within bedrock or firm materials, unless otherwise specified in the soils report. (See detail on Plate SG-5.)

C. Fill-Over-Cut Slopes

Fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep material into rock or firm materials, and the transition shall be stripped of all soils prior to placing fill. (see detail on Plate SG-6).

D. Landscaping

All fill slopes should be planted or protected from erosion by other methods specified in the soils report.

E. Cut Slopes

1. The Geotechnical Consultant should observe all cut slopes at vertical intervals not exceeding 10 feet.

2. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be evaluated by the Geotechnical Consultant, and recommendations shall be made to treat these problems (Typical details for stabilization of a portion of a cut slope are given in Plates SG-2 and SG-3.).

3. Cut slopes that face in the same direction as the prevailing drainage shall be protected from slope wash by a non-erodible interceptor swale placed at the top of the slope.

4. Unless otherwise specified in the soils and geological report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

5. Drainage terraces shall be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Geotechnical Consultant.

VII. GRADING OBSERVATION

A. General

All cleanouts, processed ground to receive fill, key excavations, subdrains, and rock disposals must be observed and approved by the Geotechnical Consultant prior to placing any fill. It shall be the Contractor's responsibility to notify the Geotechnical Consultant when such areas are ready.

B. Compaction Testing

Observation of the fill placement shall be provided by the Geotechnical Consultant during the progress of grading. Location and frequency of tests shall be at the Consultants discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations may be selected to verify adequacy of compaction levels in areas that are judged to be susceptible to inadequate compaction.

C. Frequency of Compaction Testing

In general, density tests should be made at intervals not exceeding 2 feet of fill height or every 1000 cubic yards of fill placed. This criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests shall be made to verify that the required compaction is being achieved.

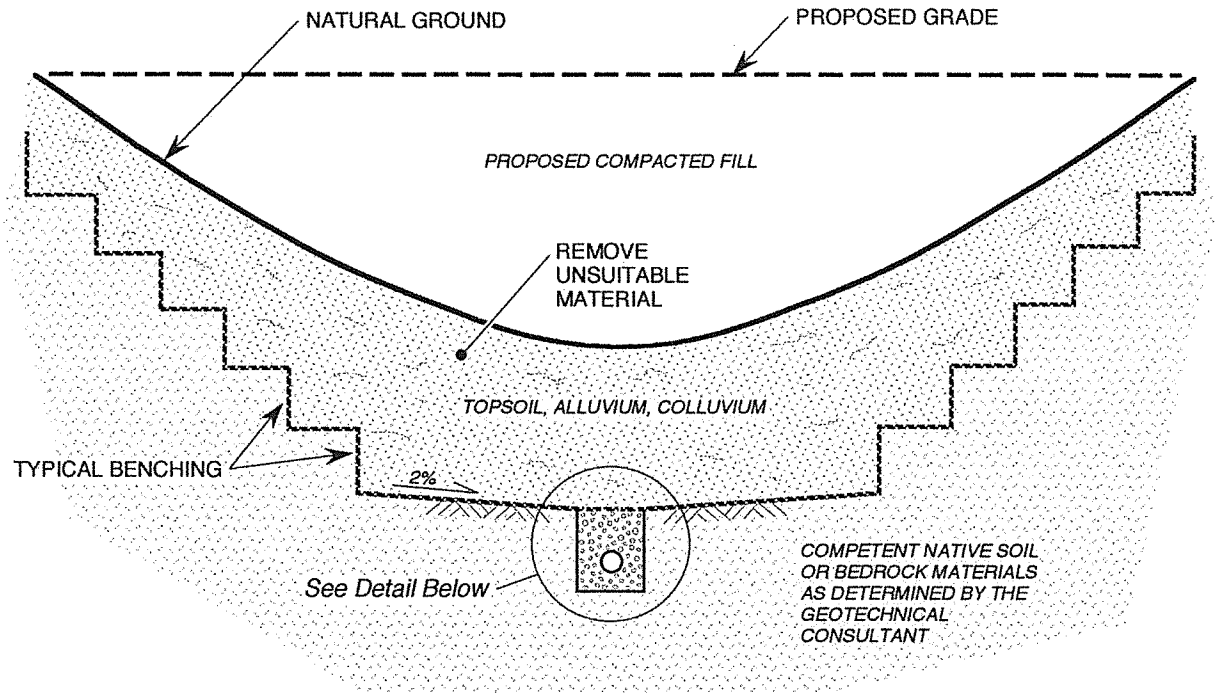
VIII. CONSTRUCTION CONSIDERATIONS

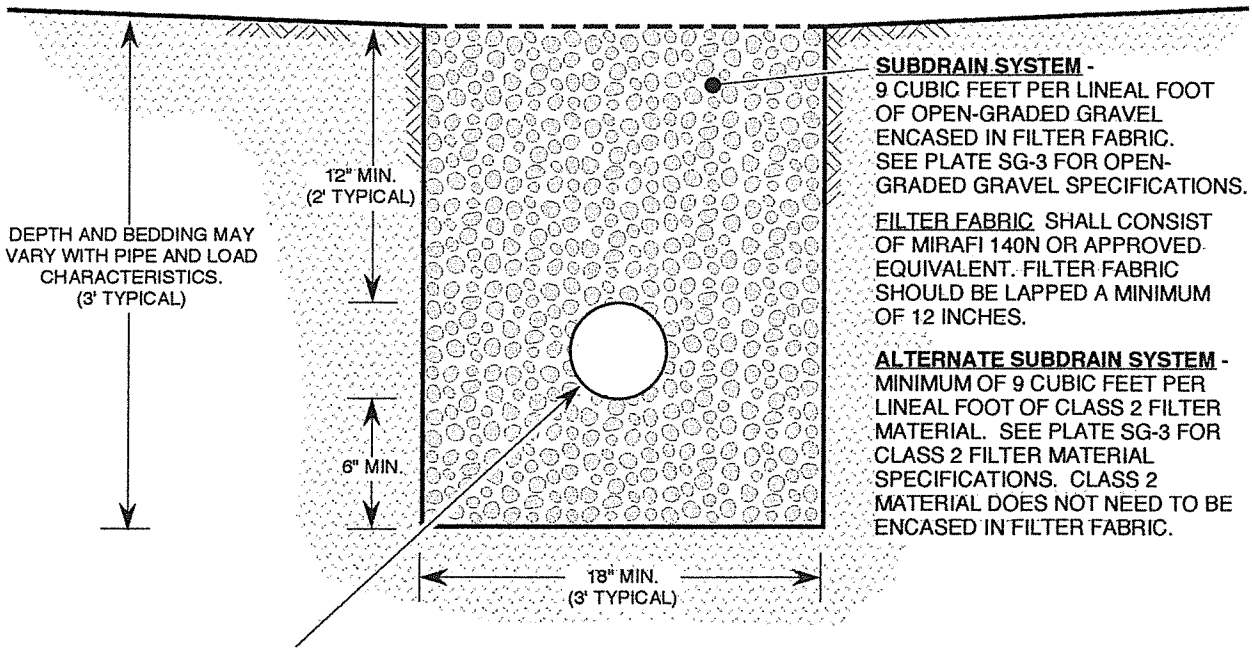
A. Erosion control measures, when necessary, shall be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

B. Upon completion of grading and termination of observations by the Geotechnical Consultant, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features shall be performed without the approval of the Geotechnical Consultant.

C. Care shall be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of permanent nature on or adjacent to the property.

S:\!BOILERS-WORK\REPORT INSERTS\STANDARD GRADING SPECS





SUBDRAIN SYSTEM -
9 CUBIC FEET PER LINEAL FOOT OF OPEN-GRADED GRAVEL ENCASED IN FILTER FABRIC. SEE PLATE SG-3 FOR OPEN-GRADED GRAVEL SPECIFICATIONS.

FILTER FABRIC SHALL CONSIST OF MIRAFI 140N OR APPROVED EQUIVALENT. FILTER FABRIC SHOULD BE LAPPED A MINIMUM OF 12 INCHES.

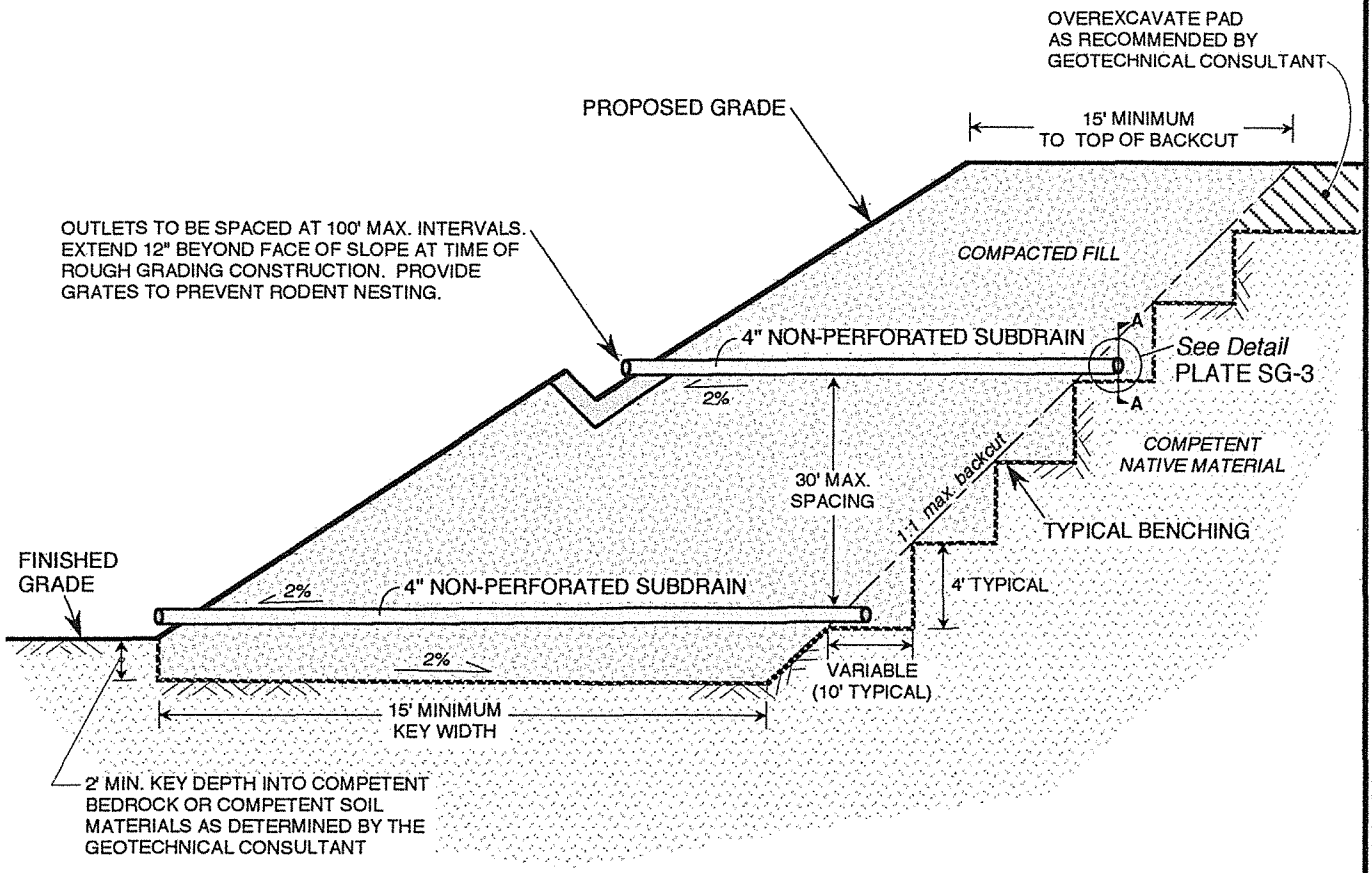
ALTERNATE SUBDRAIN SYSTEM -
MINIMUM OF 9 CUBIC FEET PER LINEAL FOOT OF CLASS 2 FILTER MATERIAL. SEE PLATE SG-3 FOR CLASS 2 FILTER MATERIAL SPECIFICATIONS. CLASS 2 MATERIAL DOES NOT NEED TO BE ENCASED IN FILTER FABRIC.

MINIMUM 6-INCH DIAMETER PVC SCHEDULE 40, OR ABS SDR-35 WITH A MINIMUM OF EIGHT 1/4-INCH DIAMETER PERFORATIONS PER LINEAL FOOT IN BOTTOM HALF OF PIPE. PIPE TO BE LAID WITH PERFORATIONS FACING DOWN.

NOTES:

1. FOR CONTINUOUS RUNS IN EXCESS OF 500 FEET USE 8-INCH DIAMETER PIPE.
2. FINAL 20 FEET OF PIPE AT OUTLET SHALL BE NON-PERFORATED AND BACKFILLED WITH FINE-GRAINED MATERIAL.

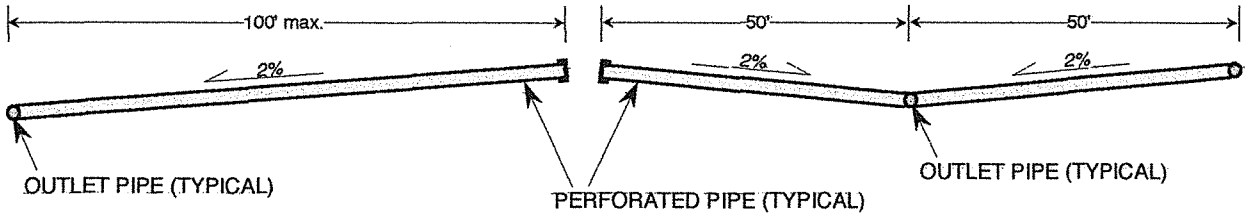
PETRA	CANYON SUBDRAIN DETAIL	PLATE SG-1



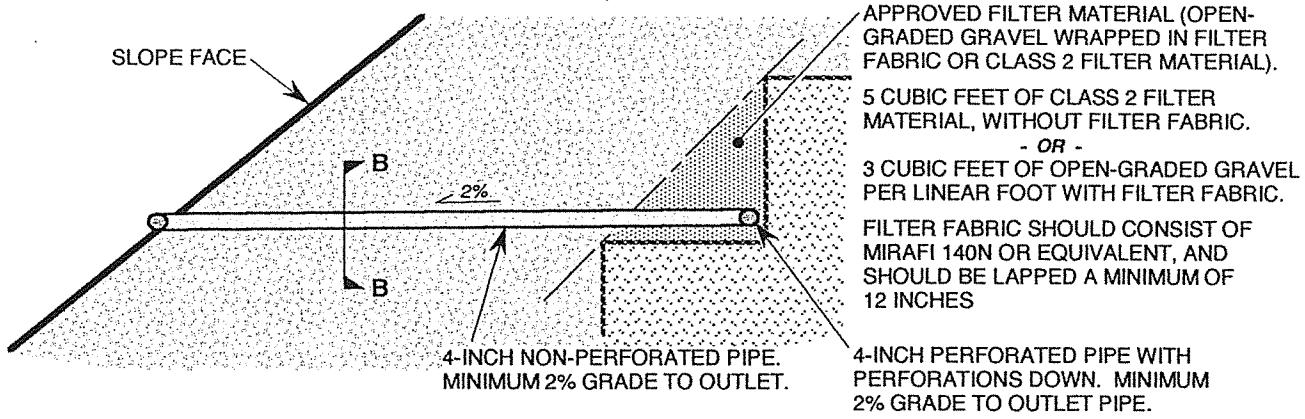
NOTES:

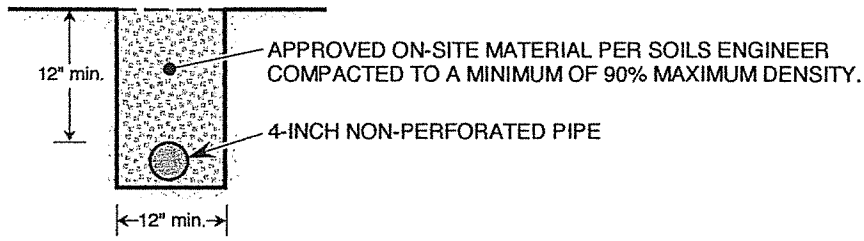
1. 30' MAXIMUM VERTICAL SPACING BETWEEN SUBDRAIN SYSTEMS.
2. 100' MAXIMUM HORIZONTAL DISTANCE BETWEEN NON-PERFORATED OUTLET PIPES. *(See Below)*
3. MINIMUM GRADIENT OF 2% FOR ALL PERFORATED AND NON-PERFORATED PIPE.

SECTION A-A (PERFORATED PIPE PROFILE)



PETRA	BUTTRESS OR STABILIZATION FILL DETAIL	PLATE SG-2





SECTION B-B (OUTLET PIPE)

PIPE SPECIFICATIONS:

1. 4-INCH MINIMUM DIAMETER, PVC SCHEDULE 40 OR ABS SDR-35.
2. FOR PERFORATED PIPE, MINIMUM 8 PERFORATIONS PER FOOT ON BOTTOM HALF OF PIPE.

FILTER MATERIAL/FABRIC SPECIFICATIONS:

OPEN-GRADED GRAVEL ENCASED IN FILTER FABRIC.
(MIRAFI 140N OR EQUIVALENT)

OPEN-GRADED GRAVEL

SIEVE SIZE	PERCENT PASSING
1 1/2-INCH	88 - 100
1-INCH	5 - 40
3/4-INCH	0 - 17
3/8-INCH	0 - 7
No. 200	0 - 3

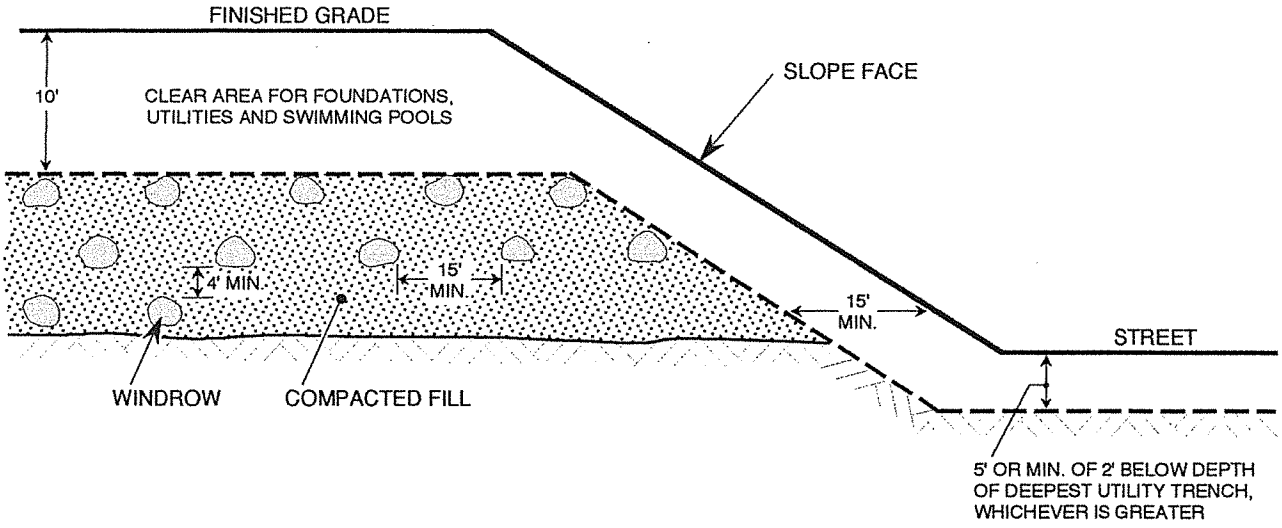
ALTERNATE:

CLASS 2 PERMEABLE FILTER MATERIAL PER CALTRANS STANDARD SPECIFICATION 68-1.025.

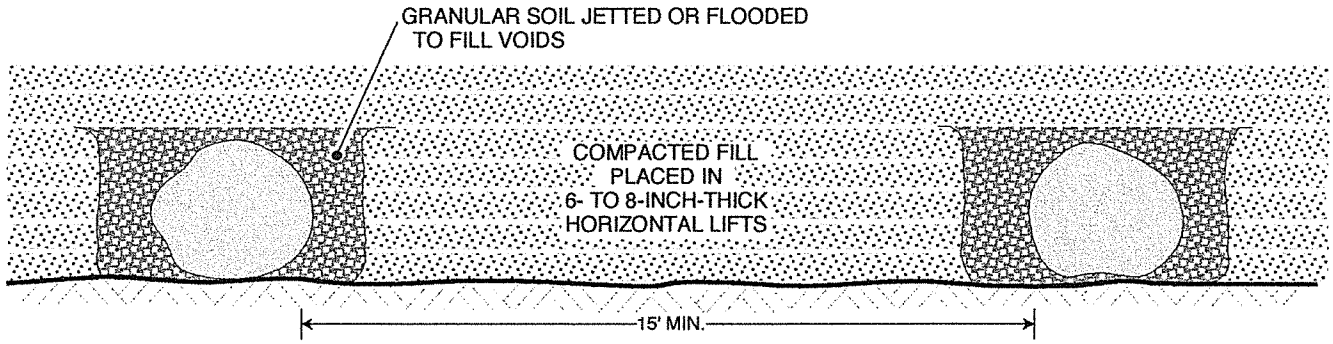
CLASS 2 FILTER MATERIAL

SIEVE SIZE	PERCENT PASSING
1-INCH	100
3/4-INCH	90 - 100
3/8-INCH	40 - 100
No. 4	25 - 40
No. 8	18 - 33
No. -30	5 - 15
No. -50	0 - 7
No. 200	0 - 3

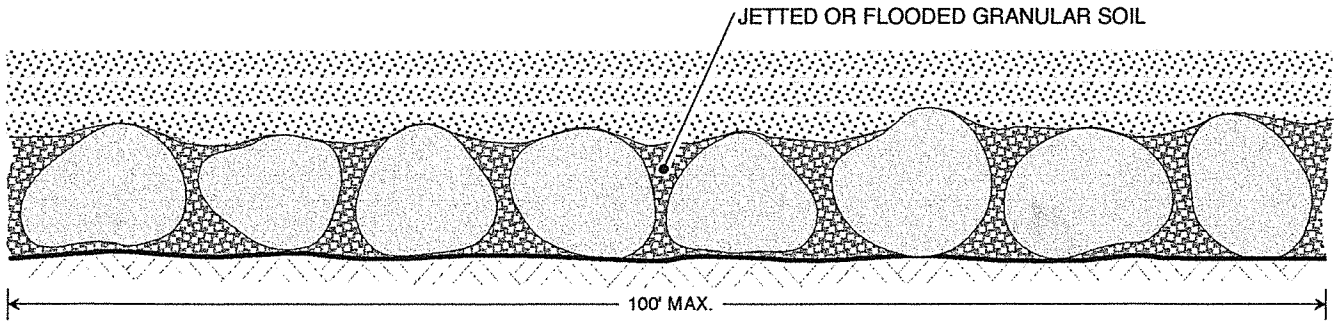
PETRA	BUTTRESS OR STABILIZATION FILL SUBDRAIN	PLATE SG-3



TYPICAL WINDROW DETAIL (END VIEW)

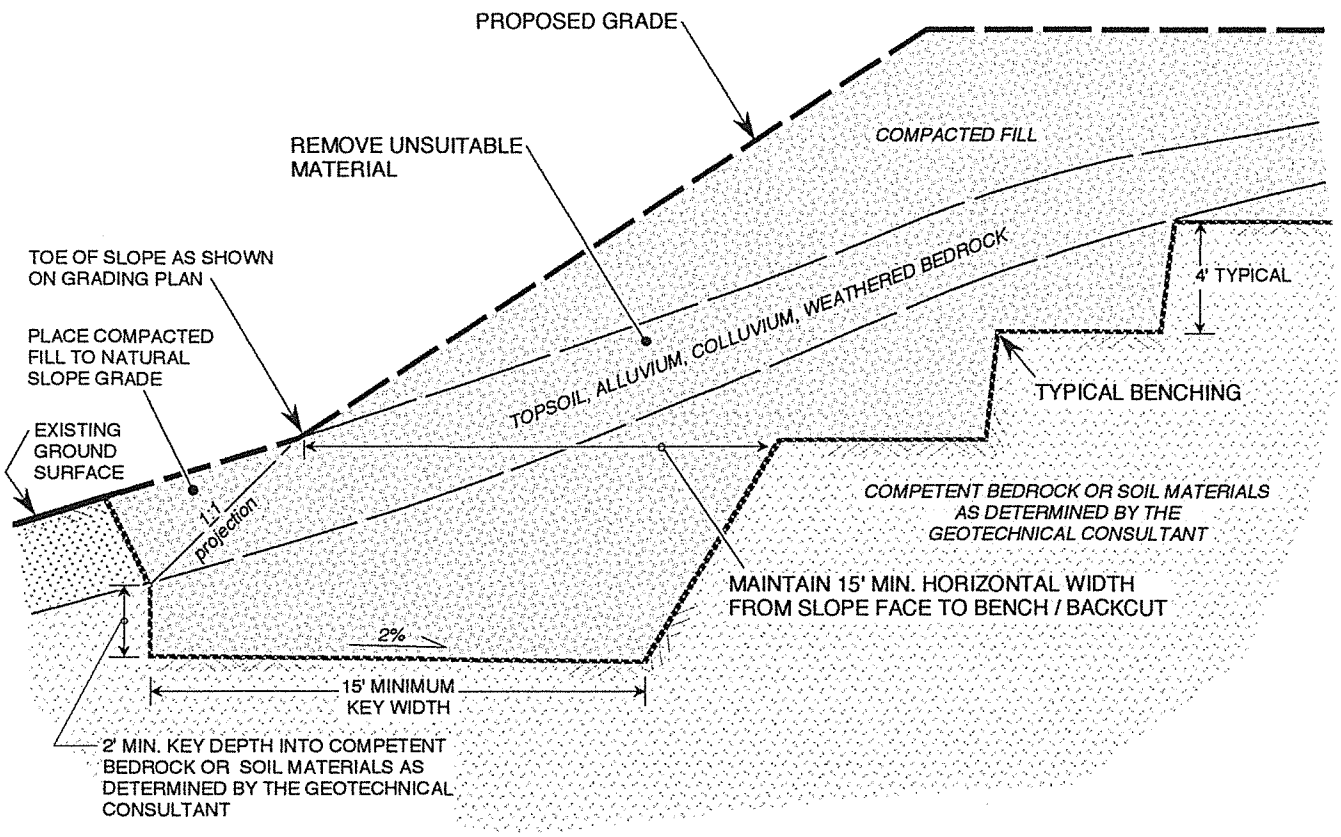


TYPICAL WINDROW DETAIL (PROFILE VIEW)



NOTE: OVERSIZE ROCK IS DEFINED AS CLASTS HAVING A MAXIMUM DIMENSION OF 12" OR LARGER

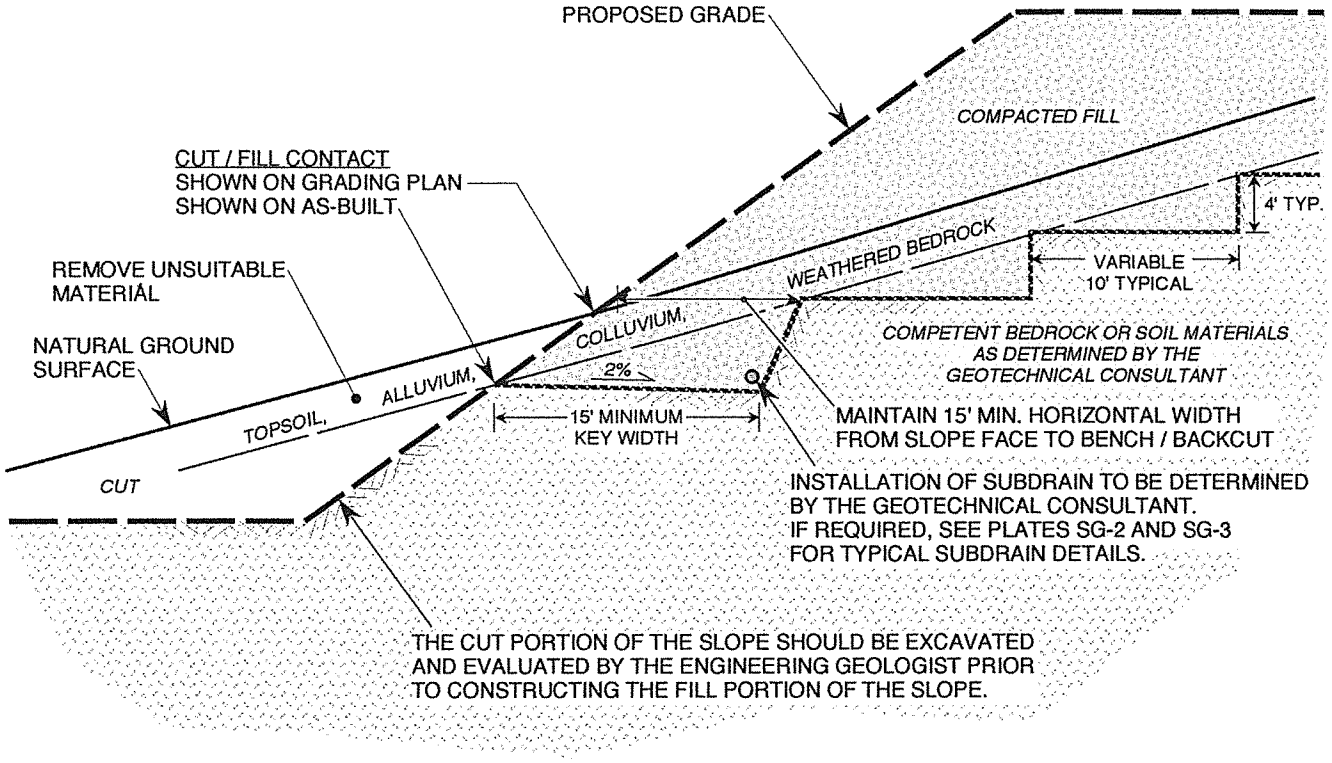
PETRA	TYPICAL ROCK DISPOSAL DETAIL	PLATE SG-4



NOTES:

1. WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY; HOWEVER, FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.
2. SOILS ENGINEER TO DETERMINE IF SUBDRAIN IS REQUIRED.

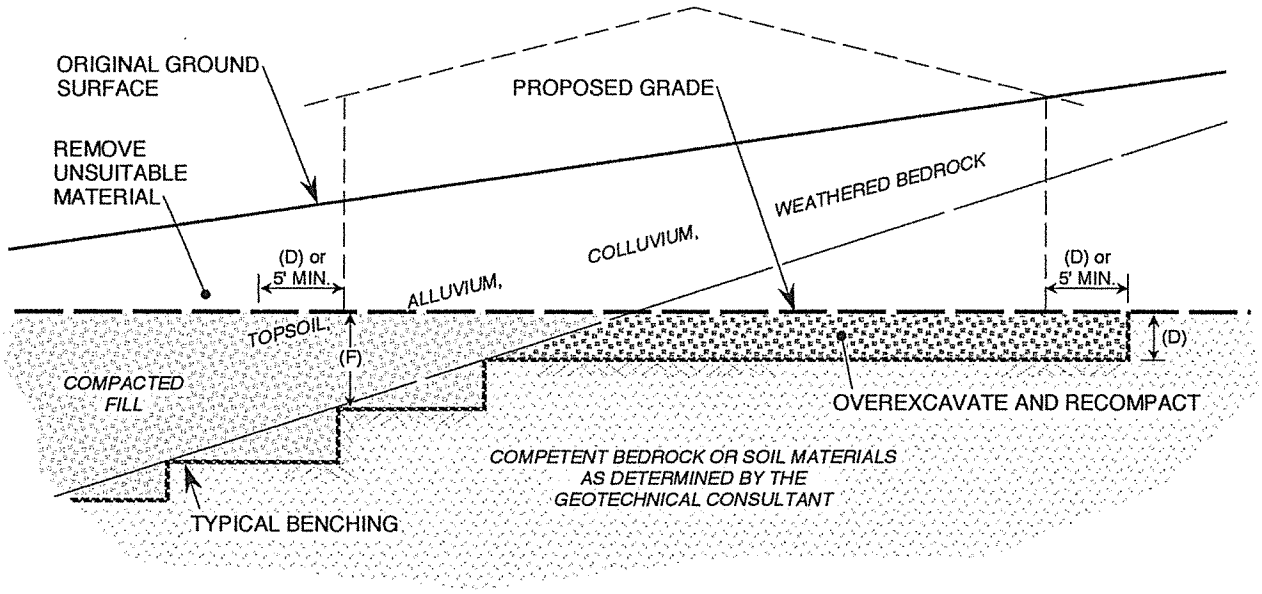
PETRA	FILL SLOPE ABOVE NATURAL SLOPE	PLATE SG-5



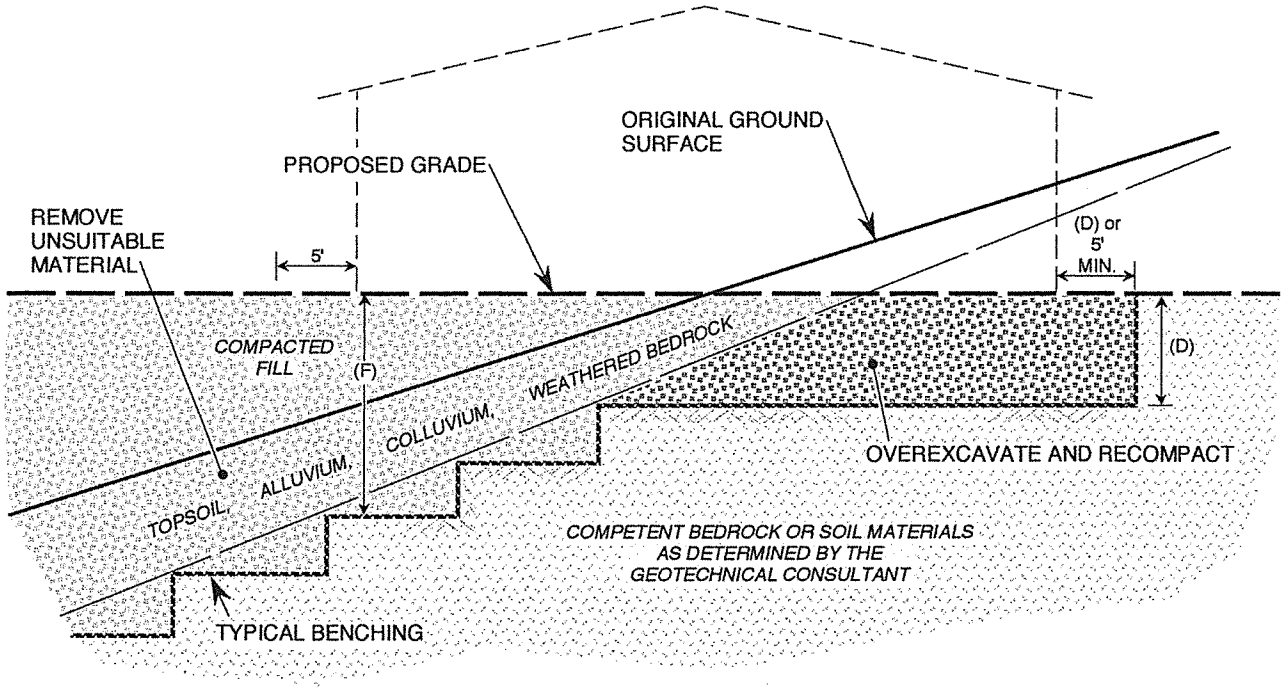
PETRA	FILL SLOPE ABOVE CUT SLOPE	PLATE SG-6

CUT LOT

UNSUITABLE MATERIAL EXPOSED IN PORTION OF CUT PAD

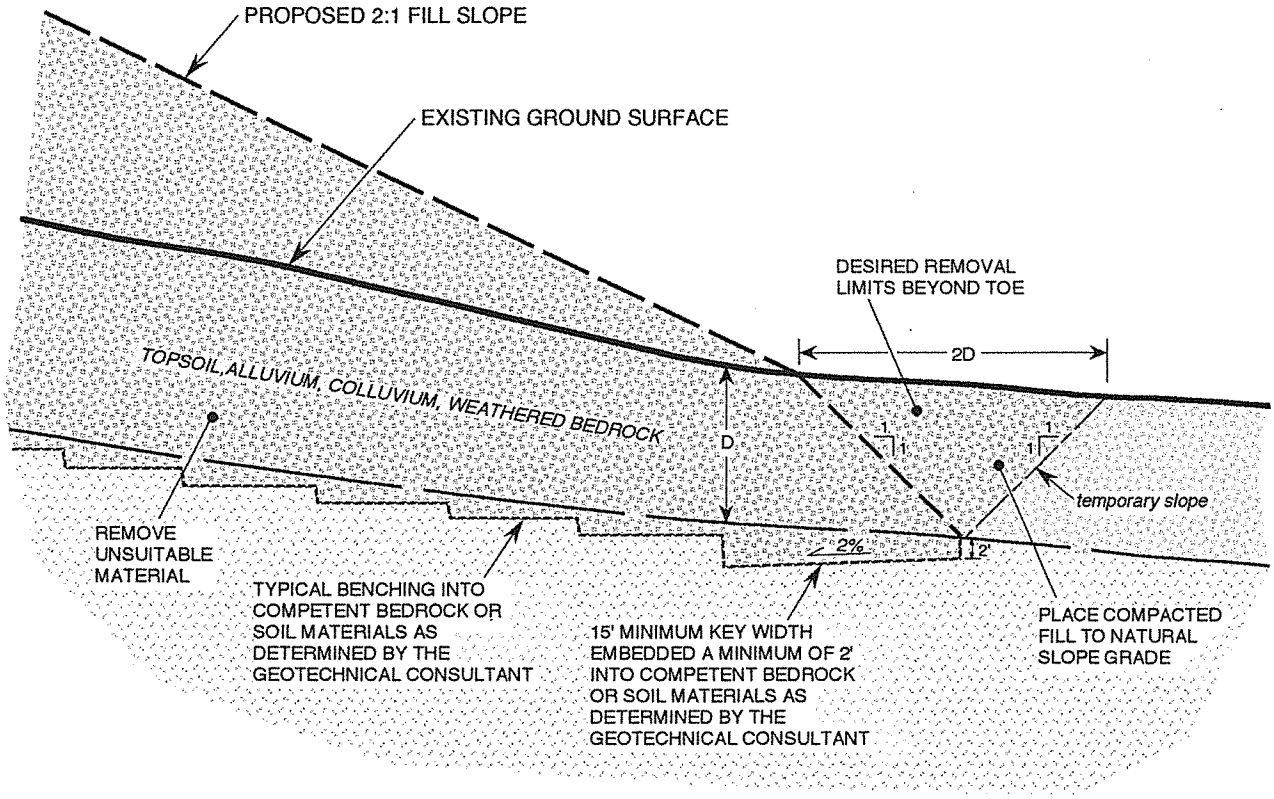


CUT-FILL TRANSITION LOT



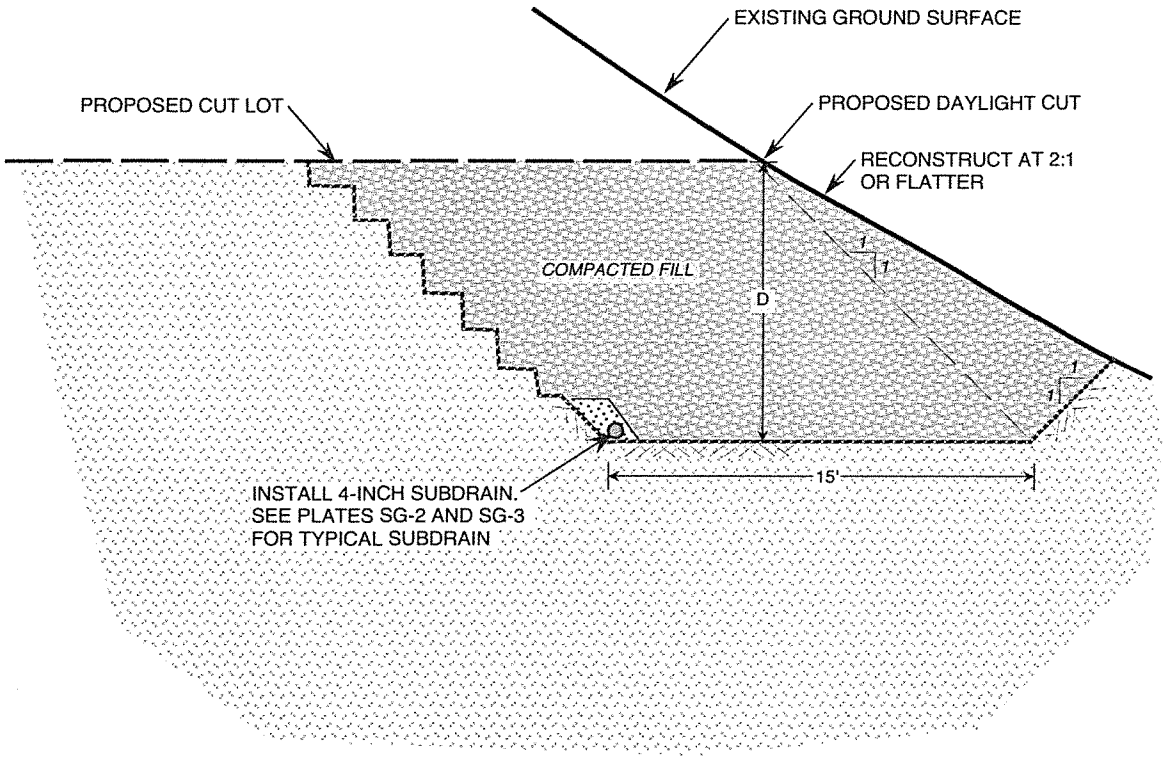
MAXIMUM FILL THICKNESS (F)	DEPTH OF OVEREXCAVATION (D)
FOOTING DEPTH TO 3 FEET	EQUAL DEPTH
3 TO 6 FEET	3 FEET
GREATER THAN 6 FEET	1/2 THE THICKNESS OF DEEPEST FILL PLACED WITHIN THE "FILL" PORTION (F) TO 15 FEET MAXIMUM

PETRA	CUT LOTS AND CUT-FILL TRANSITION LOTS	PLATE SG-7



D = RECOMMENDED DEPTH OF REMOVAL
PER GEOTECHNICAL REPORT

PETRA	TYPICAL REMOVALS BEYOND TOE OF PROPOSED FILL SLOPE	PLATE SG-8



NOTE:

1. "D" SHALL BE 10 FEET MINIMUM OR AS DETERMINED BY SOILS ENGINEER.

PETRA	SHEAR KEY ON DAYLIGHT CUT LOTS	PLATE SG-9

APPENDIX C

PRELIMINARY TITLE REPORT

Fidelity National Title
BUILDER SERVICES

4210 Riverwalk Parkway, Suite 100
Riverside, CA 92505
Phone: (951) 710-5944
Fax: (951) 710-5955

Issuing Policies of Fidelity National Title Insurance Company

Order No.: 010-30112060-A-BAM

TO:

National Community Renaissance
9421 Haven Avenue
Rancho Cucamonga, CA 91730

ATTN: **Alexa Washburn**
YOUR REFERENCE:

Main Office Line: (949) 622-5000

Title Officer: Andrew Margo (BS-RIV)
Title Officer Phone: (951) 710-5944
Title Officer Fax: (951) 710-5955
Title Officer Email: theATeam@fnf.com

PROPERTY ADDRESS: **Vacant Land, Rancho Mirage, CA**

AMENDED **PRELIMINARY REPORT**

In response to the application for a policy of title insurance referenced herein, ***Fidelity National Title Company*** *hereby reports that it is prepared to issue, or cause to be issued, as of the date hereof, a policy or policies of title insurance describing the land and the estate or interest therein hereinafter set forth, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an exception herein or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations or Conditions of said policy forms.*

The printed Exceptions and Exclusions from the coverage and Limitations on Covered Risks of said policy or policies are set forth in Attachment One. The policy to be issued may contain an arbitration clause. When the Amount of Insurance is less than that set forth in the arbitration clause, all arbitrable matters shall be arbitrated at the option of either the Company or the Insured as the exclusive remedy of the parties. Limitations on Covered Risks applicable to the CLTA and ALTA Homeowner's Policies of Title Insurance which establish a Deductible Amount and a Maximum Dollar Limit of Liability for certain coverages are also set forth in Attachment One. Copies of the policy forms should be read. They are available from the office which issued this report.

This report (and any supplements or amendments hereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

The policy(s) of title insurance to be issued hereunder will be policy(s) of Fidelity National Title Insurance Company, a Florida Corporation.

Please read the exceptions shown or referred to herein and the exceptions and exclusions set forth in Attachment One of this report carefully. The exceptions and exclusions are meant to provide you with notice of matters which are not covered under the terms of the title insurance policy and should be carefully considered.

It is important to note that this preliminary report is not a written representation as to the condition of title and may not list all liens, defects and encumbrances affecting title to the land.

Countersigned by:

Authorized Signature

Fidelity National Title
BUILDER SERVICES

4210 Riverwalk Parkway, Suite 100
Riverside, CA 92505
Phone: (951) 710-5944
Fax: (951) 710-5955

AMENDED **PRELIMINARY REPORT**

EFFECTIVE DATE: **March 26, 2024 at 7:30 a.m., Amended: April 2, 2024, Amendment No. A**

ORDER NO.: 010-30112060-A-BAM

The form of policy or policies of title insurance contemplated by this report is:

ALTA Standard Owners Policy (6-17-06)

1. THE ESTATE OR INTEREST IN THE LAND HEREINAFTER DESCRIBED OR REFERRED TO COVERED BY THIS REPORT IS:

   A FEE

2. TITLE TO SAID ESTATE OR INTEREST AT THE DATE HEREOF IS VESTED IN:

   RANCHO MIRAGE HOUSING AUTHORITY

3. THE LAND REFERRED TO IN THIS REPORT IS DESCRIBED AS FOLLOWS:

   See Exhibit A attached hereto and made a part hereof.

EXHIBIT A

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF RANCHO MIRAGE IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

THAT PORTION OF THE PROPERTY DESCRIBED IN GRANT DEED RECORDED NOVEMBER 15, 1983 AS INSTRUMENT NO. 237642, OFFICIAL RECORDS OF RIVERSIDE COUNTY, STATE OF CALIFORNIA, LOCATED WITHIN THE NORTHEAST QUARTER OF SECTION 30, TOWNSHIP 4 SOUTH, RANGE 6 EAST, SAN BERNARDINO MERIDIAN, DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTER QUARTER COMER OF SAID SECTION 30 AS SHOWN ON RECORD OF SURVEY FILED IN BOOK 147, PAGE 6, OF RECORDS OF SURVEYS, OFFICIAL RECORDS OF SAID COUNTY;
THENCE NORTH 89°35'36" EAST 667.17 FEET ALONG THE SOUTH LINE OF THE SOUTHWEST QUARTER OF SAID NORTHEAST QUARTER OF SECTION 30;
THENCE PARALLEL WITH THE EAST LINE OF THE OF SAID SOUTHWEST QUARTER NORTH 00°03'04" EAST 701.97 FEET TO THE TRUE POINT OF BEGINNING;
THENCE CONTINUING ALONG SAID PARALLEL LINE, NORTH 00°03'04" EAST 333.74 FEET;
THENCE PARALLEL WITH THE SOUTH LINE OF SAID SOUTHWEST QUARTER NORTH 89°35'36" EAST 652.62 FEET TO THE EAST LINE OF SAID SOUTHWEST QUARTER;
THENCE SOUTH 00°03'04" WEST 333.74 FEET ALONG SAID EAST LINE;
THENCE PARALLEL WITH THE SOUTH LINE OF SAID SOUTHWEST QUARTER SOUTH 89°35'36" WEST 652.62 FEET TO THE TRUE POINT OF BEGINNING.

APN: 685-090-011 (PORTION)

EXCEPTIONS

AT THE DATE HEREOF, ITEMS TO BE CONSIDERED AND EXCEPTIONS TO COVERAGE IN ADDITION TO THE PRINTED EXCEPTIONS AND EXCLUSIONS IN SAID POLICY FORM WOULD BE AS FOLLOWS:

AA. Property taxes, which are a lien not yet due and payable, including any assessments collected with taxes to be levied for the fiscal year 2024-2025.

A. There were no taxes levied for the fiscal year 2023-2024 as the property was vested in a public entity.

B. A Notice

Entitled:	Notice of Assessment
For:	Assessment District No. 150
Executed by:	County of Riverside
Recording Date:	March 25, 1985
Recording No:	as Instrument No. 60450 of Official Records

Reference is hereby made to said document for full particulars.

The Company requires a current demand from the taxing agency regarding the payment of this lien prior to closing.

C. The lien of supplemental or escaped assessments of property taxes, if any, made pursuant to the provisions of Chapter 3.5 (commencing with Section 75) or Part 2, Chapter 3, Articles 3 and 4, respectively, of the Revenue and Taxation Code of the State of California as a result of the transfer of title to the vestee named in Schedule A or as a result of changes in ownership or new construction occurring prior to Date of Policy.

1. Water rights, claims or title to water, whether or not disclosed by the public records.

2. Matters contained in that certain document

Entitled:	Reciprocal Access and Utility Agreement
Dated:	October 21, 1992
Executed by:	The City pf Rancho Mirage, a municipal corporation, organized and existing under the laws of the State of California and Edwin Vlessing Partners, a California limited partnership
Recording Date:	June 8, 1993
Recording No:	as Instrument No. 214408 of Official Records

Reference is hereby made to said document for full particulars.

3. Easement(s) for the purpose(s) shown below and rights incidental thereto, as granted in a document:

Granted to:	Coachella Valley Water District, a public agency of the State of California
Purpose:	underground pipeline(s) and necessary devices and appurtenances thereto
Recording Date:	May 10, 2016
Recording No:	as Instrument No. 2016-0188380 of Official Records
Affects:	A portion of said land as described therein

EXCEPTIONS
(Continued)

4. Matters contained in that certain document

Entitled:	Standard Domestic Water System and Sanitation System Installation Agreement
Dated:	June 13, 2016
Executed by:	Coachella Valley Water District, a public agency of the State of California and City of Rancho Mirage, A Municipal Corporation
Recording Date:	June 21, 2016
Recording No:	as Instrument No. 2016-0252637 of Official Records

Reference is hereby made to said document for full particulars.

5. Matters contained in that certain document

Entitled:	Notice of Acceptance
Recording Date:	May 26, 2017
Recording No:	as Instrument No. 2017-0212369 of Official Records

Reference is hereby made to said document for full particulars.

6. Please be advised that our search did not disclose any open Deeds of Trust of record. If you should have knowledge of any outstanding obligation, please contact the Title Department immediately for further review prior to closing.

7. Any easements not disclosed by the public records as to matters affecting title to real property, whether or not said easements are visible and apparent.

8. Matters which may be disclosed by an inspection and/or by a correct ALTA/NSPS Land Title Survey of said Land that is satisfactory to the Company, and/or by inquiry of the parties in possession thereof.

9. Any rights of the parties in possession of a portion of, or all of, said Land, which rights are not disclosed by the public records.

   The Company will require, for review, a full and complete copy of any unrecorded agreement, contract, license and/or lease, together with all supplements, assignments and amendments thereto, before issuing any policy of title insurance without excepting this item from coverage.

   The Company reserves the right to except additional items and/or make additional requirements after reviewing said documents.

PLEASE REFER TO THE "INFORMATIONAL NOTES" AND "REQUIREMENTS" SECTIONS WHICH FOLLOW FOR INFORMATION NECESSARY TO COMPLETE THIS TRANSACTION.

END OF EXCEPTIONS

REQUIREMENTS SECTION

1. This Company will require evidence of compliance with the statutory limitations incident to the governmental agency named below, with reference to any conveyance of an interest in the Land this Company will be asked to record and/or rely upon in the issuance of any form of title insurance.

   Governmental agency: Rancho Mirage Housing Authority

2. In order to complete this report, the Company requires a Statement of Information to be completed by the following party(s),

   Party(s): All parties

   The Company reserves the right to add additional items or make further requirements after review of the requested Statement of Information.

   NOTE: The Statement of Information is necessary to complete the search and examination of title under this order. Any title search includes matters that are indexed by name only, and having a completed Statement of Information assists the Company in the elimination of certain matters which appear to involve the parties but in fact affect another party with the same or similar name. Be assured that the Statement of Information is essential and will be kept strictly confidential to this file.

3. Furnish for review a full and complete copy of any unrecorded agreement, contract, license and/or lease together with all supplements, assignments and amendments thereto, prior to the close of this transaction.

   The Company reserves the right to add additional items or make further requirements after review of the requested documentation.

4. Unrecorded matters which may be disclosed by an Owner's Affidavit or Declaration. A form of the Owner's Affidavit/Declaration is attached to this Preliminary Report/Commitment. This Affidavit/Declaration is to be completed by the record owner of the land and submitted for review prior to the closing of this transaction. Your prompt attention to this requirement will help avoid delays in the closing of this transaction. Thank you.

   The Company reserves the right to add additional items or make further requirements after review of the requested Affidavit/Declaration.

END OF REQUIREMENTS

INFORMATIONAL NOTES SECTION

1. Note: The policy of title insurance will include an arbitration provision. The Company or the insured may demand arbitration. Arbitrable matters may include, but are not limited to, any controversy or claim between the Company and the insured arising out of or relating to this policy, any service of the Company in connection with its issuance or the breach of a policy provision or other obligation. Please ask your escrow or title officer for a sample copy of the policy to be issued if you wish to review the arbitration provisions and any other provisions pertaining to your Title Insurance coverage.

2. Notice: Please be aware that due to the conflict between federal and state laws concerning the cultivation, distribution, manufacture or sale of marijuana, the Company is not able to close or insure any transaction involving Land that is associated with these activities.

3. Pursuant to Government Code Section 27388.1, as amended and effective as of 1-1-2018, a Documentary Transfer Tax (DTT) Affidavit may be required to be completed and submitted with each document when DTT is being paid or when an exemption is being claimed from paying the tax. If a governmental agency is a party to the document, the form will not be required. DTT Affidavits may be available at a Tax Assessor-County Clerk-Recorder.

4. The following Exclusion(s) are added to preliminary reports, commitments and will be included as an endorsement in the following policies:

   A. 2006 ALTA Owner's Policy (06-17-06).

      6. Defects, liens, encumbrances, adverse claims, notices, or other matters not appearing in the Public Records but that would be disclosed by an examination of any records maintained by or on behalf of a Tribe or on behalf of its members.

   B. 2006 ALTA Loan Policy (06-17-06).

      8. Defects, liens, encumbrances, adverse claims, notices, or other matters not appearing in the Public Records but that would be disclosed by an examination of any records maintained by or on behalf of a Tribe or on behalf of its members.

      9. Any claim of invalidity, unenforceability, or lack of priority of the lien of the Insured Mortgage based on the application of a Tribe's law resulting from the failure of the Insured Mortgage to specify State law as the governing law with respect to the lien of the Insured Mortgage.

   C. ALTA Homeowner's Policy of Title Insurance (12-02-13) and CLTA Homeowner's Policy of Title Insurance (12-02-13).

      10. Defects, liens, encumbrances, adverse claims, notices, or other matters not appearing in the Public Records but that would be disclosed by an examination of any records maintained by or on behalf of a Tribe or on behalf of its members.

   D. ALTA Expanded Coverage Residential Loan Policy - Assessments Priority (04-02-15).

      12. Defects, liens, encumbrances, adverse claims, notices, or other matters not appearing in the Public Records but that would be disclosed by an examination of any records maintained by or on behalf of a Tribe or on behalf of its members.

      13. Any claim of invalidity, unenforceability, or lack of priority of the lien of the Insured Mortgage based on the application of a Tribe's law resulting from the failure of the Insured Mortgage to specify State law as the governing law with respect to the lien of the Insured Mortgage.

   E. CLTA Standard Coverage Policy 1990 (11-09-18).

      7. Defects, liens, encumbrances, adverse claims, notices, or other matters not appearing in the public records but that would be disclosed by an examination of any records maintained by or on behalf of a tribe or on behalf of its members.

INFORMATIONAL NOTES
(Continued)

8. Any claim of invalidity, unenforceability, or lack of priority of the lien of the insured mortgage based on the application of a tribe's law resulting from the failure of the insured mortgage to specify state law as the governing law with respect to the lien of the insured mortgage.

5. Note: The only conveyance(s) affecting said Land, which recorded within 24 months of the date of this report, are as follows:

Grantor:	City of Rancho Mirage
Grantee:	Rancho Mirage Housing Authority
Recording Date:	December 12, 2023
Recording No:	as Instrument No. 2023-0368272 of Official Records

Grantor:	City of Rancho Mirage
Grantee:	Rancho Mirage Housing Authority
Recording Date:	December 12, 2023
Recording No:	as Instrument No. 2023-0368273 of Official Records

Grantor:	City of Rancho Mirage
Grantee:	Rancho Mirage Housing Authority
Recording Date:	December 12, 2023
Recording No:	as Instrument No. 2023-0368274 of Official Records

END OF INFORMATIONAL NOTES

Andrew Margo (BS-RIV)/tg

Wire Fraud Alert

This Notice is not intended to provide legal or professional advice. If you have any questions, please consult with a lawyer.

All parties to a real estate transaction are targets for wire fraud and many have lost hundreds of thousands of dollars because they simply relied on the wire instructions received via email, without further verification. **If funds are to be wired in conjunction with this real estate transaction, we strongly recommend verbal verification of wire instructions through a known, trusted phone number prior to sending funds.**

In addition, the following non-exclusive self-protection strategies are recommended to minimize exposure to possible wire fraud.

- **NEVER RELY** on emails purporting to change wire instructions. Parties to a transaction rarely change wire instructions in the course of a transaction.
- **ALWAYS VERIFY** wire instructions, specifically the ABA routing number and account number, by calling the party who sent the instructions to you. DO NOT use the phone number provided in the email containing the instructions, use phone numbers you have called before or can otherwise verify. **Obtain the phone number of relevant parties to the transaction as soon as an escrow account is opened**. DO NOT send an email to verify as the email address may be incorrect or the email may be intercepted by the fraudster.
- **USE COMPLEX EMAIL PASSWORDS** that employ a combination of mixed case, numbers, and symbols. Make your passwords greater than eight (8) characters. Also, change your password often and do NOT reuse the same password for other online accounts.
- **USE MULTI-FACTOR AUTHENTICATION** for email accounts. Your email provider or IT staff may have specific instructions on how to implement this feature.

For more information on wire-fraud scams or to report an incident, please refer to the following links:

Federal Bureau of Investigation:
http://www.fbi.gov

Internet Crime Complaint Center:
http://www.ic3.gov

Fidelity National Title
BUILDER SERVICES

4210 Riverwalk Parkway, Suite 100
Riverside, CA 92505
Phone: (951) 710-5944
Fax: (951) 710-5955

Notice of Available Discounts

Pursuant to Section 2355.3 in Title 10 of the California Code of Regulations Fidelity National Financial, Inc. and its subsidiaries ("FNF") must deliver a notice of each discount available under our current rate filing along with the delivery of escrow instructions, a preliminary report or commitment. Please be aware that the provision of this notice does not constitute a waiver of the consumer's right to be charged the filed rate. As such, your transaction may not qualify for the below discounts.

You are encouraged to discuss the applicability of one or more of the below discounts with a Company representative. These discounts are generally described below; consult the rate manual for a full description of the terms, conditions and requirements for such discount. These discounts only apply to transactions involving services rendered by the FNF Family of Companies. This notice only applies to transactions involving property improved with a one-to-four family residential dwelling.

Not all discounts are offered by every FNF Company. The discount will only be applicable to the FNF Company as indicated by the named discount.

FNF Underwritten Title Company	**Underwritten by FNF Underwriters**
CTC – Chicago Title company	CTIC – Chicago Title Insurance Company
CLTC – Commonwealth Land Title Company	CLTIC - Commonwealth Land Title Insurance Company
FNTC – Fidelity National Title Company of California	FNTIC – Fidelity National Title Insurance Company
FNTCCA - Fidelity National Title Company of California	FNTIC - Fidelity National Title Insurance Company
TICOR – Ticor Title Company of California	CTIC – Chicago Title Insurance Company
LTC – Lawyer's Title Company	CLTIC – Commonwealth Land Title Insurance Company
SLTC – ServiceLink Title Company	CTIC – Chicago Title Insurance Company

Available Discounts

DISASTER LOANS (CTIC, CLTIC, FNTIC)
The charge for a Lender's Policy (Standard or Extended coverage) covering the financing or refinancing by an owner of record, within twenty-four (24) months of the date of a declaration of a disaster area by the government of the United States or the State of California on any land located in said area, which was partially or totally destroyed in the disaster, will be fifty percent (50%) of the appropriate title insurance rate.

CHURCHES OR CHARITABLE NON-PROFIT ORGANIZATIONS (CTIC, FNTIC)
On properties used as a church or for charitable purposes within the scope of the normal activities of such entities, provided said charge is normally the church's obligation the charge for an owner's policy shall be fifty percent (50%) to seventy percent (70%) of the appropriate title insurance rate, depending on the type of coverage selected. The charge for a lender's policy shall be forty (40%) to fifty percent (50%) of the appropriate title insurance rate, depending on the type of coverage selected.

ATTACHMENT ONE

CALIFORNIA LAND TITLE ASSOCIATION
STANDARD COVERAGE POLICY – 1990 (11-09-18)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy and the Company will not pay loss or damage, costs, attorneys' fees or expenses which arise by reason of:

1. (a) Any law, ordinance or governmental regulation (including but not limited to building or zoning laws, ordinances, or regulations) restricting, regulating, prohibiting or relating (i) the occupancy, use, or enjoyment of the land; (ii) the character, dimensions or location of any improvement now or hereafter erected on the land; (iii) a separation in ownership or a change in the dimensions or area of the land or any parcel of which the land is or was a part; or (iv) environmental protection, or the effect of any violation of these laws, ordinances or governmental regulations, except to the extent that a notice of the enforcement thereof or a notice of a defect, lien, or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
   (b) Any governmental police power not excluded by (a) above, except to the extent that a notice of the exercise thereof or notice of a defect, lien or encumbrance resulting from a violation or alleged violation affecting the land has been recorded in the public records at Date of Policy.
2. Rights of eminent domain unless notice of the exercise thereof has been recorded in the public records at Date of Policy, but not excluding from coverage any taking which has occurred prior to Date of Policy which would be binding on the rights of a purchaser for value without knowledge.
3. Defects, liens, encumbrances, adverse claims or other matters:
   (a) whether or not recorded in the public records at Date of Policy, but created, suffered, assumed or agreed to by the insured claimant;
   (b) not known to the Company, not recorded in the public records at Date of Policy, but known to the insured claimant and not disclosed in writing to the Company by the insured claimant prior to the date the insured claimant became an insured under this policy;
   (c) resulting in no loss or damage to the insured claimant;
   (d) attaching or created subsequent to Date of Policy; or
   (e) resulting in loss or damage which would not have been sustained if the insured claimant had paid value for the insured mortgage or for the estate or interest insured by this policy.
4. Unenforceability of the lien of the insured mortgage because of the inability or failure of the insured at Date of Policy, or the inability or failure of any subsequent owner of the indebtedness, to comply with the applicable doing business laws of the state in which the land is situated.
5. Invalidity or unenforceability of the lien of the insured mortgage, or claim thereof, which arises out of the transaction evidenced by the insured mortgage and is based upon usury or any consumer credit protection or truth in lending law.
6. Any claim, which arises out of the transaction vesting in the insured the estate of interest insured by this policy or the transaction creating the interest of the insured lender, by reason of the operation of federal bankruptcy, state insolvency or similar creditors' rights laws.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART I

This policy does not insure against loss or damage (and the Company will not pay costs, attorneys' fees or expenses) which arise by reason of:

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
   Proceedings by a public agency which may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the public records.
2. Any facts, rights, interests, or claims which are not shown by the public records but which could be ascertained by an inspection of the land or which may be asserted by persons in possession thereof.
3. Easements, liens or encumbrances, or claims thereof, not shown by the public records.
4. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the public records.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b) or (c) are shown by the public records.
6. Any lien or right to a lien for services, labor or material unless such lien is shown by the public records at Date of Policy.

EXCEPTIONS FROM COVERAGE - SCHEDULE B, PART II

(Variable exceptions such as taxes, easements, CC&R's, etc., are inserted here)

CALIFORNIA LAND TITLE ASSOCIATION
STANDARD COVERAGE OWNER'S POLICY (02-04-22)

EXCLUSIONS FROM COVERAGE

The following matters are excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. a. any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) that restricts, regulates, prohibits, or relates to:
      i. the occupancy, use, or enjoyment of the Land;
      ii. the character, dimensions, or location of any improvement on the Land;
      iii. the subdivision of land; or
      iv. environmental remediation or protection.
   b. any governmental forfeiture, police, regulatory, or national security power.
   c. the effect of a violation or enforcement of any matter excluded under Exclusion 1.a. or 1.b. Exclusion 1 does not modify or limit the coverage provided under Covered Risk 5 or 6.
2. Any power of eminent domain. Exclusion 2 does not modify or limit the coverage provided under Covered Risk 7.
3. Any defect, lien, encumbrance, adverse claim, or other matter:

a. created, suffered, assumed, or agreed to by the Insured Claimant;
b. not Known to the Company, not recorded in the Public Records at the Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
c. resulting in no loss or damage to the Insured Claimant;
d. attaching or created subsequent to the Date of Policy (Exclusion 3.d. does not modify or limit the coverage provided under Covered Risk 9 or 10); or
e. resulting in loss or damage that would not have been sustained if consideration sufficient to qualify the Insured named in Schedule A as a bona fide purchaser had been given for the Title at the Date of Policy.

4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights law, that the transaction vesting the Title as shown in Schedule A is a:
   a. fraudulent conveyance or fraudulent transfer;
   b. voidable transfer under the Uniform Voidable Transactions Act; or
   c. preferential transfer:
      i. to the extent the instrument of transfer vesting the Title as shown in Schedule A is not a transfer made as a contemporaneous exchange for new value; or
      ii. for any other reason not stated in Covered Risk 9.b.
5. Any claim of a PACA-PSA Trust. Exclusion 5 does not modify or limit the coverage provided under Covered Risk 8.
6. Any lien on the Title for real estate taxes or assessments imposed or collected by a governmental authority that becomes due and payable after the Date of Policy. Exclusion 6 does not modify or limit the coverage provided under Covered Risk 2.b.
7. Any discrepancy in the quantity of the area, square footage, or acreage of the Land or of any improvement to the Land.

EXCEPTIONS FROM COVERAGE

Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This policy treats any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document are excepted from coverage.

This policy does not insure against loss or damage and the Company will not pay costs, attorneys' fees, or expenses resulting from the terms and conditions of any lease or easement identified in Schedule A, and the following matters:

PART I

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records at Date of Policy but that could be (a) ascertained by an inspection of the Land, or (b) asserted by persons or parties in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records at Date of Policy.
4. Any encroachment, encumbrance, violation, variation, easement, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records at Date of Policy.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor, material or equipment unless such lien is shown by the Public Records at Date of Policy.
7. Any claim to (a) ownership of or rights to minerals and similar substances, including but not limited to ores, metals, coal, lignite, oil, gas, uranium, clay, rock, sand, and gravel located in, on, or under the Land or produced from the Land, whether such ownership or rights arise by lease, grant, exception, conveyance, reservation, or otherwise; and (b) any rights, privileges, immunities, rights of way, and easements associated therewith or appurtenant thereto, whether or not the interests or rights excepted in (a) or (b) appear in the Public Records or are shown in Schedule B.

PART II

(Variable exceptions such as taxes, easements, CC&R's, etc., are inserted here)

CLTA/ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (07-01-2021)

EXCLUSIONS FROM COVERAGE

The following matters are excluded from the coverage of this policy and We will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. a. any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) that restricts, regulates, prohibits, or relates to:
      i. the occupancy, use, or enjoyment of the Land;
      ii. the character, dimensions, or location of any improvement on the Land;
      iii. the subdivision of land; or
      iv. environmental remediation or protection.
   b. any governmental forfeiture, police, or regulatory, or national security power.
   c. the effect of a violation or enforcement of any matter excluded under Exclusion 1.a. or 1.b. Exclusion 1 does not modify or limit the coverage provided under Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23, or 27.
2. Any power to take the Land by condemnation. Exclusion 2 does not modify or limit the coverage provided under Covered Risk 17.
3. Any defect, lien, encumbrance, adverse claim, or other matter:
   a. created, suffered, assumed, or agreed to by You;
   b. not Known to Us, not recorded in the Public Records at the Date of Policy, but Known to You and not disclosed in writing to Us by You prior to the date You became an Insured under this policy;
   c. resulting in no loss or damage to You;

d. attaching or created subsequent to the Date of Policy (Exclusion 3.d. does not modify or limit the coverage provided under Covered Risk 5, 8.f., 25, 26, 27, 28, or 32); or
e. resulting in loss or damage that would not have been sustained if You paid consideration sufficient to qualify You as a bona fide purchaser of the Title at the Date of Policy.

4. Lack of a right:
   a. to any land outside the area specifically described and referred to in Item 3 of Schedule A; and
   b. in any street, road, avenue, alley, lane, right-of-way, body of water, or waterway that abut the Land.
   Exclusion 4 does not modify or limit the coverage provided under Covered Risk 11 or 21.
5. The failure of Your existing structures, or any portion of Your existing structures, to have been constructed before, on, or after the Date of Policy in accordance with applicable building codes. Exclusion 5 does not modify or limit the coverage provided under Covered Risk 14 or 15.
6. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights law, that the transfer of the Title to You is a:
   a. fraudulent conveyance or fraudulent transfer;
   b. voidable transfer under the Uniform Voidable Transactions Act; or
   c. preferential transfer:
      i. to the extent the instrument of transfer vesting the Title as shown in Schedule A is not a transfer made as a contemporaneous exchange for new value; or
      ii. for any other reason not stated in Covered Risk 30.
7. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
8. Negligence by a person or an entity exercising a right to extract or develop oil, gas, minerals, groundwater, or any other subsurface substance.
9. Any lien on Your Title for real estate taxes or assessments imposed or collected by a governmental authority that becomes due and payable after the Date of Policy. Exclusion 9 does not modify or limit the coverage provided under Covered Risk 8.a. or 27.
10. Any discrepancy in the quantity of the area, square footage, or acreage of the Land or of any improvement to the Land.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

	Your Deductible Amount	Our Maximum Dollar Limit of Liability
Covered Risk 16:	1.00% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1.00% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1.00% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1.00% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$5,000.00

CLTA/ALTA HOMEOWNER'S POLICY OF TITLE INSURANCE (12-02-13)

EXCLUSIONS

In addition to the Exceptions in Schedule B, You are not insured against loss, costs, attorneys' fees, and expenses resulting from:

1. Governmental police power, and the existence or violation of those portions of any law or government regulation concerning:
   a. building;
   b. zoning;
   c. land use;
   d. improvements on the Land;
   e. land division; and
   f. environmental protection.
   This Exclusion does not limit the coverage described in Covered Risk 8.a., 14, 15, 16, 18, 19, 20, 23 or 27.
2. The failure of Your existing structures, or any part of them, to be constructed in accordance with applicable building codes. This Exclusion does not limit the coverage described in Covered Risk 14 or 15.
3. The right to take the Land by condemning it. This Exclusion does not limit the coverage described in Covered Risk 17.
4. Risks:
   a. that are created, allowed, or agreed to by You, whether or not they are recorded in the Public Records;
   b. that are Known to You at the Policy Date, but not to Us, unless they are recorded in the Public Records at the Policy Date;
   c. that result in no loss to You; or
   d. that first occur after the Policy Date - this does not limit the coverage described in Covered Risk 7, 8.e., 25, 26, 27 or 28.
5. Failure to pay value for Your Title.
6. Lack of a right:
   a. to any land outside the area specifically described and referred to in paragraph 3 of Schedule A; and
   b. in streets, alleys, or waterways that touch the Land.
   This Exclusion does not limit the coverage described in Covered Risk 11 or 21.
7. The transfer of the Title to You is invalid as a preferential transfer or as a fraudulent transfer or conveyance under federal bankruptcy, state insolvency, or similar creditors' rights laws.
8. Contamination, explosion, fire, flooding, vibration, fracturing, earthquake, or subsidence.
9. Negligence by a person or an Entity exercising a right to extract or develop minerals, water, or any other substances.

LIMITATIONS ON COVERED RISKS

Your insurance for the following Covered Risks is limited on the Owner's Coverage Statement as follows:

- For Covered Risk 16, 18, 19, and 21 Your Deductible Amount and Our Maximum Dollar Limit of Liability shown in Schedule A.

The deductible amounts and maximum dollar limits shown on Schedule A are as follows:

Our Maximum Dollar

	Your Deductible Amount	Limit of Liability
Covered Risk 16:	1.00% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$10,000.00
Covered Risk 18:	1.00% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 19:	1.00% of Policy Amount Shown in Schedule A or $5,000.00 (whichever is less)	$25,000.00
Covered Risk 21:	1.00% of Policy Amount Shown in Schedule A or $2,500.00 (whichever is less)	$5,000.00

ALTA OWNER'S POLICY (07-01-2021)

EXCLUSIONS FROM COVERAGE

The following matters are excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

1. a. any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) that restricts, regulates, prohibits, or relates to:
      i. the occupancy, use, or enjoyment of the Land;
      ii. the character, dimensions, or location of any improvement on the Land;
      iii. the subdivision of land; or
      iv. environmental remediation or protection.
   b. any governmental forfeiture, police, regulatory, or national security power.
   c. the effect of a violation or enforcement of any matter excluded under Exclusion 1.a. or 1.b. Exclusion 1 does not modify or limit the coverage provided under Covered Risk 5 or 6.
2. Any power of eminent domain. Exclusion 2 does not modify or limit the coverage provided under Covered Risk 7.
3. Any defect, lien, encumbrance, adverse claim, or other matter:
   a. created, suffered, assumed, or agreed to by the Insured Claimant;
   b. not Known to the Company, not recorded in the Public Records at the Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   c. resulting in no loss or damage to the Insured Claimant;
   d. attaching or created subsequent to the Date of Policy (Exclusion 3.d. does not modify or limit the coverage provided under Covered Risk 9 or 10); or
   e. resulting in loss or damage that would not have been sustained if consideration sufficient to qualify the Insured named in Schedule A as a bona fide purchaser had been given for the Title at the Date of Policy.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights law, that the transaction vesting the Title as shown in Schedule A is a:
   a. fraudulent conveyance or fraudulent transfer;
   b. voidable transfer under the Uniform Voidable Transactions Act; or
   c. preferential transfer:
      i. to the extent the instrument of transfer vesting the Title as shown in Schedule A is not a transfer made as a contemporaneous exchange for new value; or
      ii. for any other reason not stated in Covered Risk 9.b.
   5. Any claim of a PACA-PSA Trust. Exclusion 5 does not modify or limit the coverage provided under Covered Risk 8.
   6. Any lien on the Title for real estate taxes or assessments imposed or collected by a governmental authority that becomes due and payable after the Date of Policy. Exclusion 6 does not modify or limit the coverage provided under Covered Risk 2.b.
   7. Any discrepancy in the quantity of the area, square footage, or acreage of the Land or of any improvement to the Land.

EXCEPTIONS FROM COVERAGE

Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This policy treats any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document are excepted from coverage.

This policy does not insure against loss or damage and the Company will not pay costs, attorneys' fees, or expenses resulting from the terms and conditions of any lease or easement identified in Schedule A, and the following matters:

NOTE: The 2021 ALTA Owner's Policy may be issued to afford either Standard Coverage or Extended Coverage. In addition to variable exceptions such as taxes, easements, CC&R's, etc., the Exceptions from Coverage in a Standard Coverage policy will also include the Western Regional Standard Coverage Exceptions listed as 1 through 7 below:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records at Date of Policy but that could be (a) ascertained by an inspection of the Land or (b) asserted by persons or parties in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records at Date of Policy.
4. Any encroachment, encumbrance, violation, variation, easement, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records at Date of Policy.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor, material or equipment unless such lien is shown by the Public Records at Date of Policy.
7. Any claim to (a) ownership of or rights to minerals and similar substances, including but not limited to ores, metals, coal, lignite, oil, gas, uranium, clay, rock, sand, and gravel located in, on, or under the Land or produced from the Land, whether such ownership or rights arise by lease, grant, exception, conveyance, reservation, or otherwise; and (b) any rights, privileges, immunities, rights of way, and easements associated therewith or appurtenant thereto, whether or not the interests or rights excepted in (a) or (b) appear in the Public Records or are shown in Schedule B

2006 ALTA OWNER'S POLICY (06-17-06)

EXCLUSIONS FROM COVERAGE

The following matters are expressly excluded from the coverage of this policy, and the Company will not pay loss or damage, costs, attorneys' fees, or expenses that arise by reason of:

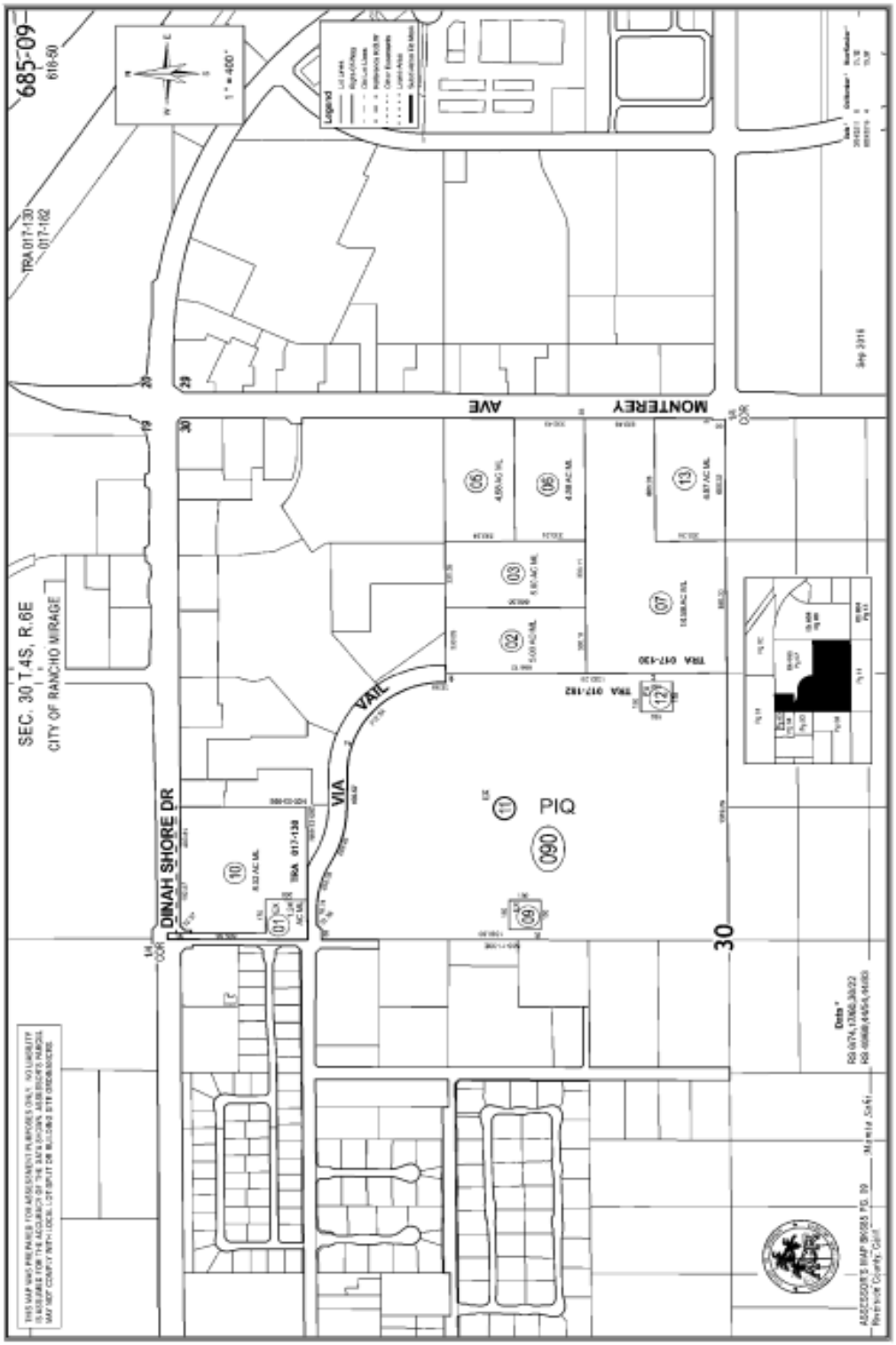
1. (a) Any law, ordinance, permit, or governmental regulation (including those relating to building and zoning) restricting, regulating, prohibiting, or relating to
   (i) the occupancy, use, or enjoyment of the Land;
   (ii) the character, dimensions, or location of any improvement erected on the Land;
   (iii) the subdivision of land; or
   (iv) environmental protection;
   or the effect of any violation of these laws, ordinances, or governmental regulations. This Exclusion 1(a) does not modify or limit the coverage provided under Covered Risk 5.
   (b) Any governmental police power. This Exclusion 1(b) does not modify or limit the coverage provided under Covered Risk 6.
2. Rights of eminent domain. This Exclusion does not modify or limit the coverage provided under Covered Risk 7 or 8.
3. Defects, liens, encumbrances, adverse claims, or other matters
   (a) created, suffered, assumed, or agreed to by the Insured Claimant;
   (b) not Known to the Company, not recorded in the Public Records at Date of Policy, but Known to the Insured Claimant and not disclosed in writing to the Company by the Insured Claimant prior to the date the Insured Claimant became an Insured under this policy;
   (c) resulting in no loss or damage to the Insured Claimant;
   (d) attaching or created subsequent to Date of Policy (however, this does not modify or limit the coverage provided under Covered Risk 9 and 10); or
   (e) resulting in loss or damage that would not have been sustained if the Insured Claimant had paid value for the Title.
4. Any claim, by reason of the operation of federal bankruptcy, state insolvency, or similar creditors' rights laws, that the transaction vesting the Title as shown in Schedule A, is
   (a) a fraudulent conveyance or fraudulent transfer; or
   (b) a preferential transfer for any reason not stated in Covered Risk 9 of this policy.
5. Any lien on the Title for real estate taxes or assessments imposed by governmental authority and created or attaching between Date of Policy and the date of recording of the deed or other instrument of transfer in the Public Records that vests Title as shown in Schedule A.

EXCEPTIONS FROM COVERAGE

This policy does not insure against loss or damage, and the Company will not pay costs, attorneys' fees or expenses, that arise by reason of:

NOTE: The 2006 ALTA Owner's Policy may be issued to afford either Standard Coverage or Extended Coverage. In addition to variable exceptions such as taxes, easements, CC&R's, etc., the Exceptions from Coverage in a Standard Coverage policy will also include the Western Regional Standard Coverage Exceptions listed below as 1 through 7 below:

1. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.
2. Any facts, rights, interests, or claims that are not shown by the Public Records at Date of Policy but that could be (a) ascertained by an inspection of the Land, or (b) asserted by persons or parties in possession of the Land.
3. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records at Date of Policy.
4. Any encroachment, encumbrance, violation, variation, easement, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records at Date of Policy.
5. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.
6. Any lien or right to a lien for services, labor, material or equipment unless such lien is shown by the Public Records at Date of Policy.
7. Any claim to (a) ownership of or rights to minerals and similar substances, including but not limited to ores, metals, coal, lignite, oil, gas, uranium, clay, rock, sand, and gravel located in, on, or under the Land or produced from the Land, whether such ownership or rights arise by lease, grant, exception, conveyance, reservation, or otherwise; and (b) any rights, privileges, immunities, rights of way, and easements associated therewith or appurtenant thereto, whether or not the interests or rights excepted in (a) or (b) appear in the Public Records or are shown in Schedule B.



This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

OWNER'S DECLARATION

Escrow No.: 30112060-010-VR2-BAM
Property Address: Vacant Land
Rancho Mirage, CA 92270

The undersigned hereby declares as follows:

1. (Fill in the applicable paragraph and strike the other)
   a. Declarant ("Owner") is the owner or lessee, as the case may be, of certain premises located at Vacant Land, Rancho Mirage, CA 92270, further described as follows: See Preliminary Report/Commitment No. for full legal description (the "Land").
   b. Declarant is the _____ of _____ ("Owner"), which is the owner or lessee, as the case may be, of certain premises located at Vacant Land, Rancho Mirage, CA 92270, further described as follows: See Preliminary Report/Commitment No. for full legal description (the "Land").
2. (Fill in the applicable paragraph and strike the other)
   a. During the period of six months immediately preceding the date of this declaration no work has been done, no surveys or architectural or engineering plans have been prepared, and no materials have been furnished in connection with the erection, equipment, repair, protection or removal of any building or other structure on the Land or in connection with the improvement of the Land in any manner whatsoever.
   b. During the period of six months immediately preceding the date of this declaration certain work has been done and materials furnished in connection with _____ upon the Land in the approximate total sum of $_____, but no work whatever remains to be done and no materials remain to be furnished to complete the construction in full compliance with the plans and specifications, nor are there any unpaid bills incurred for labor and materials used in making such improvements or repairs upon the Land, or for the services of architects, surveyors or engineers, except as follows: _____. Owner, by the undersigned Declarant, agrees to and does hereby indemnify and hold harmless Fidelity National Title Company against any and all claims arising therefrom.
3. Owner has not previously conveyed the Land; is not a debtor in bankruptcy (and if a partnership, the general partner thereof is not a debtor in bankruptcy); and has not received notice of any pending court action affecting the title to the Land.
4. Except as shown in the above-referenced Preliminary Report/Commitment, there are no unpaid or unsatisfied mortgages, deeds of trust, Uniform Commercial Code financing statements, regular assessments, special assessments, periodic assessments or any assessment from any source, claims of lien, special assessments, or taxes that constitute a lien against the Land or that affect the Land but have not been recorded in the public records. There are no violations of the covenants, conditions and restrictions as shown in the above-referenced Preliminary Report/Commitment.
5. The Land is currently in use as _____; _____ occupy/occupies the Land; and the following are all of the leases or other occupancy rights affecting the Land:

   _____
6. There are no other persons or entities that assert an ownership interest in the Land, nor are there unrecorded easements, claims of easement, or boundary disputes that affect the Land.
7. There are no outstanding options to purchase or rights of first refusal affecting the Land.
8. Between the most recent Effective Date of the above-referenced Preliminary Report/Commitment and the date of recording of the Insured Instrument(s), Owner has not taken or allowed, and will not take or allow, any action or inaction to encumber or otherwise affect title to the Land.

This declaration is made with the intention that Fidelity National Title Company (the "Company") and its policy issuing agents will rely upon it in issuing their title insurance policies and endorsements. Owner, by the undersigned Declarant, agrees to indemnify the Company against loss or damage (including attorneys fees, expenses, and costs) incurred by the Company as a result of any untrue statement made herein.

I declare under penalty of perjury that the foregoing is true and correct and that this declaration was executed on _____ at _____.

Signature: _____

APPENDIX D

ENVIRONMENTAL DATA RESOURCES, INC. REPORT

Vacant Property
Key Largo Avenue / Dinah Shore Drive
Rancho Mirage, CA 92270

Inquiry Number: 7624121.2s
April 15, 2024

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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 (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

KEY LARGO AVENUE / DINAH SHORE DRIVE
RANCHO MIRAGE, CA 92270

COORDINATES

Latitude (North):	33.7968460 - 33° 47' 48.64''
Longitude (West):	116.3936500 - 116° 23' 37.14''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	556129.7
UTM Y (Meters):	3739602.5
Elevation:	308 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	50004950 CATHEDRAL CITY, CA
Version Date:	2021
East Map:	50004258 MYOMA, CA
Version Date:	2021

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20200416
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
KEY LARGO AVENUE / DINAH SHORE DRIVE
RANCHO MIRAGE, CA 92270

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
Reg	AGUA CALIENTE INDIAN		INDIAN RESERV	Same	2806, 0.531, WNW
1	HPC-KCB MONTEREY MAR	72771 DINAH SHORE DR	RCRA NonGen / NLR	Lower	787, 0.149, North
A2	CLARKS NUTRITIONAL C	34175 MONTEREY AVE	CERS HAZ WASTE	Lower	1091, 0.207, NE
A3	CLARKS NUTRITIONAL C	34175 MONTEREY AVE	RCRA NonGen / NLR	Lower	1091, 0.207, NE
B4	WASHINGTON CLEANERS	72817 DINAH SHORE DR	CERS HAZ WASTE, DRYCLEANERS, CERS	Lower	1099, 0.208, NNE
B5	COSTCO WHOLESALE # 4	72-800 DINAH SHORE D	RCRA-SQG	Lower	1197, 0.227, NNE
C6	BEST BUY PACIFIC SAL	34295 MONTEREY AVE	RCRA NonGen / NLR	Lower	1303, 0.247, ENE
C7	BEST BUY PAC #1705	34295 MONTEREY AVE	CERS HAZ WASTE	Lower	1303, 0.247, ENE
8	PALM ELEMENTARY/MIDD	GERALD FORD DRIVE/MO	ENVIROSTOR, SCH	Lower	4333, 0.821, ESE
9	SUNCRETE ROOFTILE	72470 VARNER ROAD	Notify 65	Lower	4969, 0.941, North

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

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large 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

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE ..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

Lists of state and tribal brownfield 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
US CDL ---- National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks
CA FID UST ---- Facility Inventory Database

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
FUSRAP ---- Formerly Utilized Sites Remedial Action Program

EXECUTIVE SUMMARY

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
MINES MRDS	Mineral Resources Data System
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
PFAS NPL	Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES	Federal Sites PFAS Information
PFAS TRIS	List of PFAS Added to the TRI
PFAS TSCA	PFAS Manufacture and Imports Information
PFAS RCRA MANIFEST	PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR	PFAS Contamination Site Location Listing
PFAS WQP	Ambient Environmental Sampling for PFAS
PFAS NPDES	Clean Water Act Discharge Monitoring Information
PFAS ECHO	Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING	Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT	All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC	Aqueous Foam Related Incidents Listing
BIOSOLIDS	ICIS-NPDES Biosolids Facility Data
PFAS	PFAS Contamination Site Location Listing
AQUEOUS FOAM	Former Fire Training Facility Assessments Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
CHROME PLATING	Chrome Plating Facilities Listing
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
ICE	Inspection, Compliance and Enforcement
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
HWTS	Hazardous Waste Tracking System
HAZNET	Facility and Manifest Data
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
HAZMAT	Hazardous Material Facilities
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
CIWQS	California Integrated Water Quality System
CERS	CERS

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)
UST FINDER ---------- UST Finder Database
UST FINDER RELEASE ---------- UST Finder Releases Database

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
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

Lists of Federal RCRA generators

RCRA-SQG: 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.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/04/2023 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
COSTCO WHOLESALE # 4	72-800 DINAH SHORE D	NNE 1/8 - 1/4 (0.227 mi.)	B5	22

EPA ID:: CAR000005579

Lists of state- and tribal hazardous waste facilities

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 01/22/2024 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
PALM ELEMENTARY/MIDD Facility Id: 33650015 Status: No Action Required	***GERALD FORD DRIVE/MO***	***ESE 1/2 - 1 (0.821 mi.)***	***8***	***37***

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

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.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 01/16/2024 has revealed that there are 3 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CLARKS NUTRITIONAL C	34175 MONTEREY AVE	NE 1/8 - 1/4 (0.207 mi.)	A2	11
WASHINGTON CLEANERS	***72817 DINAH SHORE DR***	***NNE 1/8 - 1/4 (0.208 mi.)***	***B4***	***16***
BEST BUY PAC #1705	34295 MONTEREY AVE	ENE 1/8 - 1/4 (0.247 mi.)	C7	35

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 12/04/2023 has revealed that

there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
HPC-KCB MONTEREY MAR EPA ID:: CAC003013076	72771 DINAH SHORE DR	N 1/8 - 1/4 (0.149 mi.)	1	9
CLARKS NUTRITIONAL C EPA ID:: CAL000408442	34175 MONTEREY AVE	NE 1/8 - 1/4 (0.207 mi.)	A3	14
BEST BUY PACIFIC SAL EPA ID:: CAL000435263	34295 MONTEREY AVE	ENE 1/8 - 1/4 (0.247 mi.)	C6	33

INDIAN RESERV: This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

A review of the INDIAN RESERV list, as provided by EDR, and dated 12/31/2014 has revealed that there is 1 INDIAN RESERV site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
AGUA CALIENTE INDIAN		WNW 1/2 - 1 (0.531 mi.)	0	9

DRYCLEANERS: 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 cleaners' agents; linen supply; coin-operated laundries and cleaning; drycleaning plants except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

A review of the DRYCLEANERS list, as provided by EDR, has revealed that there is 1 DRYCLEANERS site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
WASHINGTON CLEANERS	***72817 DINAH SHORE DR***	***NNE 1/8 - 1/4 (0.208 mi.)***	***B4***	***16***

Database: DRYCLEAN SOUTH COAST, Date of Government Version: 11/14/2023

Notify 65: 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.

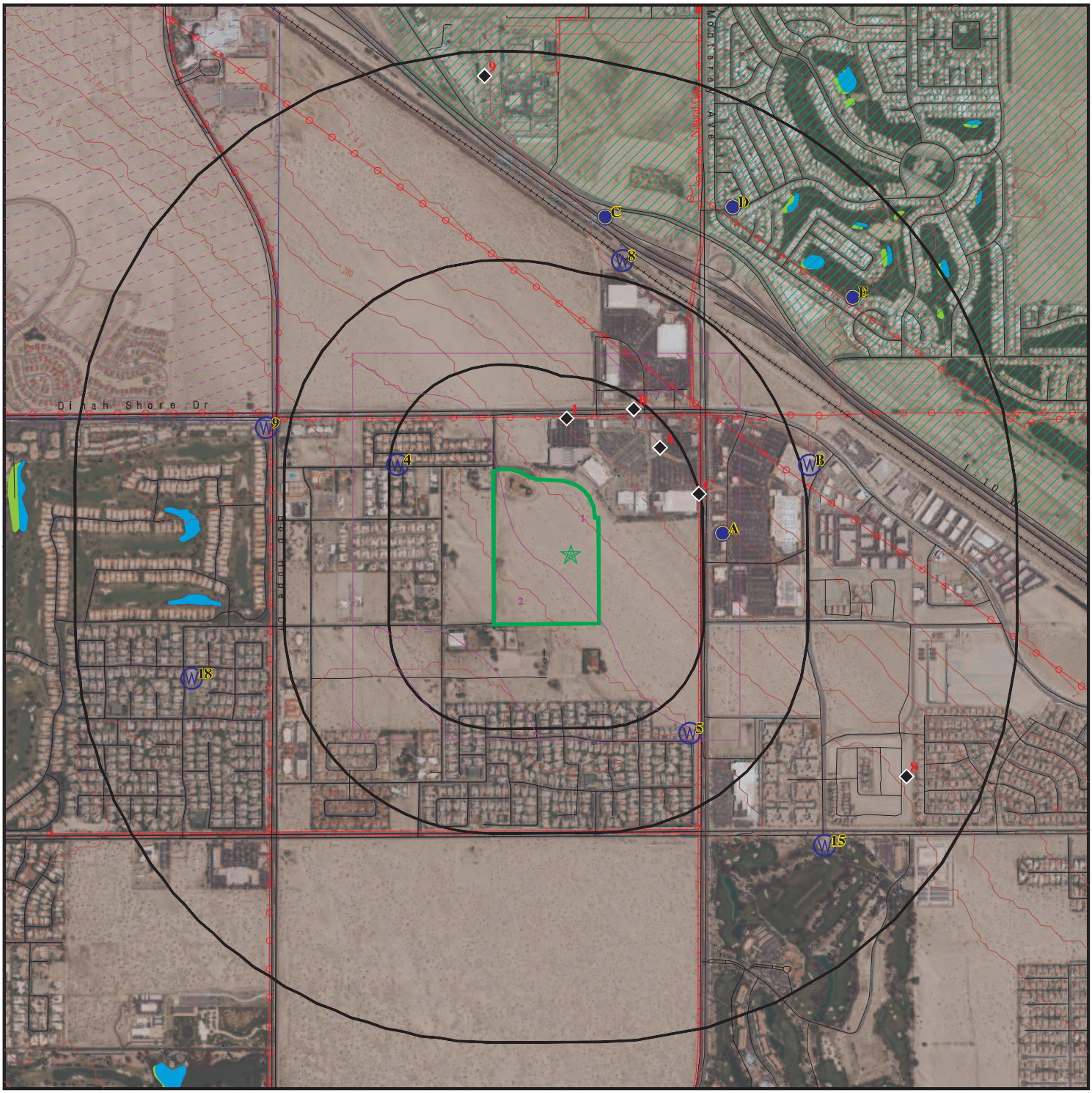
A review of the Notify 65 list, as provided by EDR, and dated 12/06/2023 has revealed that there is 1 Notify 65 site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
SUNCRETE ROOFTILE	72470 VARNER ROAD	N 1/2 - 1 (0.941 mi.)	9	40

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 7624121.2S

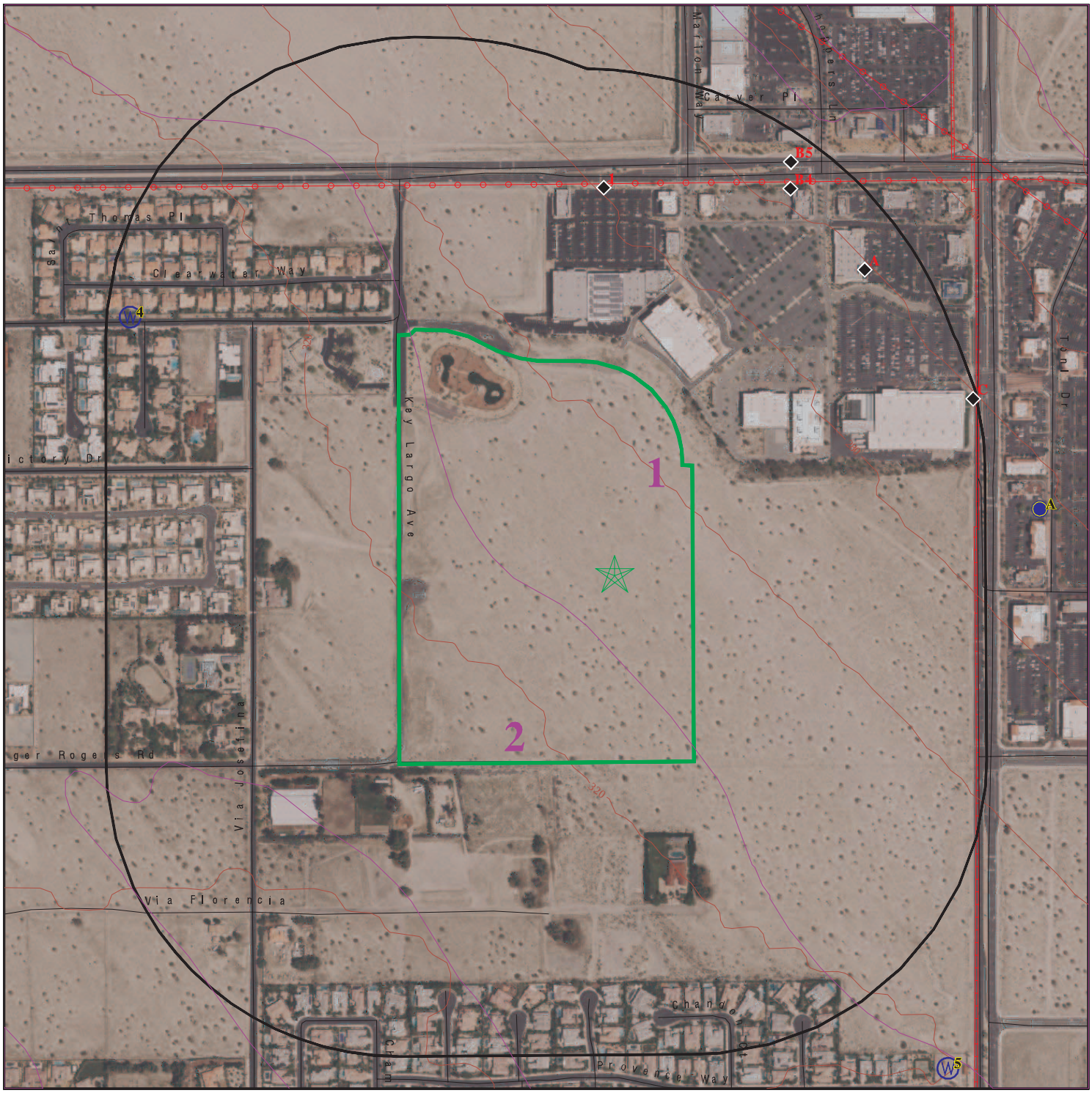


- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- Special Flood Hazard 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:	Vacant Property	CLIENT:	Black Rock Geosciences
ADDRESS:	Key Largo Avenue / Dinah Shore Drive Rancho Mirage CA 92270	CONTACT:	Quin Kinnebrew
LAT/LONG:	33.796846 / 116.39365	INQUIRY #:	7624121.2s
		DATE:	April 15, 2024 1:39 pm

DETAIL MAP - 7624121.2S



0 1/16 1/8 1/4 Miles

- 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
- Indian Reservations BIA
- Power transmission lines
- Pipelines
- 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:	Vacant Property	CLIENT:	Black Rock Geosciences
ADDRESS:	Key Largo Avenue / Dinah Shore Drive Rancho Mirage CA 92270	CONTACT:	Quin Kinnebrew
LAT/LONG:	33.796846 / 116.39365	INQUIRY #:	7624121.2s
		DATE:	April 15, 2024 1:40 pm

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								
Lists of Federal NPL (Superfund) sites								
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
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	1	NR	NR	NR	1
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
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	1	NR	1
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	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
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
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
Lists of 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
Lists of state and tribal brownfield 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	3	NR	NR	NR	3
US CDL	0.001		0	NR	NR	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
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	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	3	NR	NR	NR	3
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	1	NR	1
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
MINES MRDS	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
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	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
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	0.001		0	NR	NR	NR	NR	0
PFAS	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
CHROME PLATING	0.500		0	0	0	NR	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	1	NR	NR	NR	1
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
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
HWTS	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	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		0	NR	NR	NR	NR	0
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	1	NR	1
HAZMAT	0.250		0	0	NR	NR	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		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
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
UST FINDER	0.250		0	0	NR	NR	NR	0
UST FINDER RELEASE	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
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	0	8	0	3	0	11

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

IND RES **AGUA CALIENTE INDIAN RESERVATION** **INDIAN RESERV** **CIND200693**
Region **N/A**
WNW **, CA**
1/2-1
2806 ft.

INDIAN RESERV:
Feature: Indian Reservation
Name: Agua Caliente Indian Reservation
Agency: BIA

---

1 **HPC-KCB MONTEREY MARKETPLACE, LLC** **RCRA NonGen / NLR** **1025833499**
North **72771 DINAH SHORE DR** **CAC003013076**
1/8-1/4 **RANCHO MIRAGE, CA 92270**
0.149 mi.
787 ft.

Relative:
Lower

Actual:
279 ft.

RCRA Listings:

Date Form Received by Agency:	20190502
Handler Name:	Hpc-Kcb Monterey Marketplace, Llc
Handler Address:	72771 DINAH SHORE DR
Handler City,State,Zip:	RANCHO MIRAGE, CA 92270
EPA ID:	CAC003013076
Contact Name:	ERIC COUGHLIN
Contact Address:	18321 VENTURA BLVD
Contact City,State,Zip:	TARZANA, CA 92270
Contact Telephone:	424-835-6575
Contact Fax:	Not reported
Contact Email:	AMY.V@HP-CAP.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:	18321 VENTURA BLVD
Mailing City,State,Zip:	TARZANA, CA 92270
Owner Name:	Eric Coughlin
Owner Type:	Other
Operator Name:	Eric Coughlin
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 State-Reg Handler:	---
Federal Facility Indicator:	Not reported

HPC-KCB MONTEREY MARKETPLACE, LLC (Continued) **1025833499**

Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed 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
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:	20190627
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:	Operator
Owner/Operator Name: ERIC COUGHLIN	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	18321 VENTURA BLVD
Owner/Operator City,State,Zip:	TARZANA, CA 92270
Owner/Operator Telephone:	424-835-6575
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name: ERIC COUGHLIN	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	18321 VENTURA BLVD
Owner/Operator City,State,Zip:	TARZANA, CA 92270
Owner/Operator Telephone:	424-835-6575
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20190502
Handler Name:	HPC-KCB MONTEREY MARKETPLACE, LLC
Federal Waste Generator Description:	Not a generator, verified

HPC-KCB MONTEREY MARKETPLACE, LLC (Continued) **1025833499**

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

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

A2 **CLARKS NUTRITIONAL CENTERS, INC** **CERS HAZ WASTE** **S123537497**
NE **34175 MONTEREY AVE** **N/A**
1/8-1/4 **RANCHO MIRAGE, CA 92270**
0.207 mi.
1091 ft. **Site 1 of 2 in cluster A**

Relative: **Lower**
Actual: **262 ft.**

CERS HAZ WASTE:
Name: CLARKS NUTRITIONAL CENTERS, INC
Address: 34175 MONTEREY AVE
City,State,Zip: RANCHO MIRAGE, CA 92270
Site ID: 358069
CERS ID: 10643776
CERS Description: Hazardous Waste Generator

Violations:
Site ID: 358069
Site Name: Clarks Nutritional Centers, Inc
Violation Date: 08-31-2023
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 08/31/2023. OBSERVATION: Observed incorrect label on the flammables container. Accumulation start date still reflected 12/2022 when last pickup was 6/23/23 per manifest observed at time of inspection. Accumulation start date was updated at time of inspection. CORRECTIVE ACTION: Owner/operator shall label hazardous waste containers with all the required information. Label shall include at least: the words "hazardous waste", generator name and address, accumulation start date, composition and physical state of waste, and hazardous property statement. Submit photos to this department, if applicable.
Violation Division: Riverside County Department of Env Health

CLARKS NUTRITIONAL CENTERS, INC (Continued) **S123537497**

Violation Program: HW
Violation Source: CERS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-31-2023
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility is a convenience store that generates retail hazwaste. All violations noted were corrected at time of inspection. Spoke with Joshua Clark, explained that owner/operator shall verify refrigeration system storage capacity and report the results to chtucker@rivco.org or alert this department via CERS by disclosing if required (exceeds 1000cf total system(s) capacity) within 30 days of this inspection. Clark told me he would try and have an answer by the following business day.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-07-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Facility is a nutrition store which generates retail hazardous waste. Pacific Resource Recovery is the facility's registered hauler.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-05-2021
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Facility is a nutrition store. Hazardous waste generated from return/unsaleable retail items.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO Box 1609
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92502
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Joshua Clark
Entity Title: Project Coordinator
Affiliation Address: Not reported
Affiliation City: Not reported

CLARKS NUTRITIONAL CENTERS, INC (Continued) **S123537497**

Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Operator
Entity Name:	Clarks Nutritional Centers, Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 321-1960,
Affiliation Type Desc:	Parent Corporation
Entity Name:	Clarks Nutritional Centers, Inc
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Environmental Contact
Entity Name:	Joshua Clark
Entity Title:	Not reported
Affiliation Address:	PO Box 1609
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92502
Affiliation Phone:	,
Affiliation Type Desc:	Legal Owner
Entity Name:	Ray Clark
Entity Title:	Not reported
Affiliation Address:	PO Box 1609
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92502
Affiliation Phone:	(951) 321-1960,
Affiliation Type Desc:	Property Owner
Entity Name:	Ray Clark
Entity Title:	Not reported
Affiliation Address:	PO Box 1609
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92502
Affiliation Phone:	(951) 321-1960,
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health

CLARKS NUTRITIONAL CENTERS, INC (Continued) **S123537497**

Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055,
Affiliation Type Desc:	Document Preparer
Entity Name:	Joshua Clark
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

A3 **CLARKS NUTRITIONAL CENTERS INC** **RCRA NonGen / NLR** **1024850663**
NE **34175 MONTEREY AVE** **CAL000408442**
1/8-1/4 **RANCHO MIRAGE, CA 92270**
0.207 mi.
1091 ft. **Site 2 of 2 in cluster A**

Relative: **Lower**

Actual: **262 ft.**

RCRA Listings:

Date Form Received by Agency:	20150713
Handler Name:	Clarks Nutritional Centers Inc
Handler Address:	34175 MONTEREY AVE
Handler City,State,Zip:	RANCHO MIRAGE, CA 92270
EPA ID:	CAL000408442
Contact Name:	MIKE TODD
Contact Address:	PO BOX 1609
Contact City,State,Zip:	RIVERSIDE, CA 92502
Contact Telephone:	909-645-4801
Contact Fax:	951-686-1235
Contact Email:	MIKET@CLARKSNUTRITION.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:	PO BOX 1609
Mailing City,State,Zip:	RIVERSIDE, CA 92502
Owner Name:	Clark'S Nutritional Centers Inc
Owner Type:	Other
Operator Name:	Mike Todd
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No

CLARKS NUTRITIONAL CENTERS INC (Continued) **1024850663**

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 State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed 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
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:	20180906
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: CLARK'S NUTRITIONAL CENTERS INC	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	4225 MARKET ST
Owner/Operator City,State,Zip:	RIVERSIDE, CA 92501
Owner/Operator Telephone:	951-321-1960
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name: MIKE TODD	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	PO BOX 1609
Owner/Operator City,State,Zip:	RIVERSIDE, CA 92502

CLARKS NUTRITIONAL CENTERS INC (Continued) **1024850663**

Owner/Operator Telephone: 909-645-4801
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20150713
Handler Name: CLARKS NUTRITIONAL CENTERS INC
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

List of NAICS Codes and Descriptions:
NAICS Code: 45291
NAICS Description: WAREHOUSE CLUBS AND SUPERCENTERS

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

B4 **WASHINGTON CLEANERS** **CERS HAZ WASTE** **S121695312**
NNE **72817 DINAH SHORE DR #101** **DRYCLEANERS** **N/A**
1/8-1/4 **RANCHO MIRAGE, CA 92270** **CERS**
0.208 mi.
1099 ft. **Site 1 of 2 in cluster B**

Relative: **Lower**
Actual: **257 ft.**

CERS HAZ WASTE:
Name: WASHINGTON CLEANERS
Address: 72817 DINAH SHORE DR #101
City,State,Zip: RANCHO MIRAGE, CA 92270
Site ID: 84718
CERS ID: 10322539
CERS Description: Hazardous Waste Generator

DRYCLEAN SOUTH COAST:
Name: WASHINGTON CLEANERS
Address: 72817 DINAH SHORE DR UNIT 101
City,State,Zip: RANCHO MIRAGE, CA 92270
Facility ID: 138256
Application Number: 421248
Permit Number: F64277
Status: Active
Representative Name: KYU SEOK PARK
Representative Telephone: 760 3459551
Permit Status: ACTIVE

WASHINGTON CLEANERS (Continued) **S121695312**

BCAT Number:	000233
BCAT Description:	DRY CLEANING EQUIP PETROLEUM SOLVENT
CCAT Number:	Not reported
CCAT Description:	Not reported
UTM East:	556.38000488
UTM North:	3740.1499023
Application Date:	10/16/2003
PO Issue Date:	10/30/2003
NAICS Code:	812320
SIC Code:	7216

CERS:

Name:	WASHINGTON CLEANERS
Address:	72817 DINAH SHORE DR #101
City,State,Zip:	RANCHO MIRAGE, CA 92270
Site ID:	84718
CERS ID:	10322539
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	84718
Site Name:	Washington Cleaners
Violation Date:	07-05-2017
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 03/13/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Site ID:	84718
Site Name:	Washington Cleaners
Violation Date:	06-08-2021
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 06/08/2021. OBSERVATION: Observed incomplete labels on dry cleaning waste drum. Information missing included accumulation start date. CORRECTIVE ACTION: Owner/operator shall label hazardous waste containers with all the required information. Label shall include at least: the words ""hazardous waste"", generator name and address, accumulation start date, composition and physical state of waste, and hazardous property statement. Submit photos to this department, if applicable.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	84718
Site Name:	Washington Cleaners

WASHINGTON CLEANERS (Continued) **S121695312**

Violation Date:	11-28-2017
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 03/13/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	84718
Site Name:	Washington Cleaners
Violation Date:	06-08-2021
Citation:	HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description:	Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes:	Returned to compliance on 06/14/2021. OBSERVATION: No training records observed/provided during inspection after 2015. CORRECTIVE ACTION: Owner/operator shall provide training to all employees. Documentation shall be retained and be made available for inspection for a minimum period of 3 years from the date of the training.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	84718
Site Name:	Washington Cleaners
Violation Date:	02-23-2018
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 03/13/2018.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,
Site ID:	84718
Site Name:	Washington Cleaners
Violation Date:	06-08-2021
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 06/08/2021. OBSERVATION: No annual business plan certification was observed in the statewide information management system. CORRECTIVE ACTION: Owner/Operator shall submit an updated business plan in the statewide information management system (e.g. CERS) at http://cers.calepa.ca.gov. Business plans shall be reviewed and certified on at least an annual basis.
Violation Division:	Riverside County Department of Env Health

WASHINGTON CLEANERS (Continued) **S121695312**

Violation Program: HMRRP
Violation Source: CERS,

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2021
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility is a dry cleaner that handles hydrocarbon. NOTE: For future submittals into CERS, review site map to ensure all items are addressed per last inspector's comments. NFPA sign above back door showing signs of weathering - owner/operator shall update sign before no longer legible.
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-13-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 02-23-2018
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-13-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 11-28-2017
Violations Found: Yes
Eval Type: Other, not routine, done by local agency

WASHINGTON CLEANERS (Continued) **S121695312**

Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-08-2021
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility generates dry cleaning waste. NOTE: ensure lid is stored closed on waste drum.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 06-26-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Help with CERS
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Eval General Type: Other/Unknown
Eval Date: 07-05-2017
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS,

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Billy Park
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 72817 Dinah Shore Dr
Affiliation City: Rancho Mirage
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92270
Affiliation Phone: ,

Affiliation Type Desc: Operator
Entity Name: Kyu Seok Park
Entity Title: Not reported

WASHINGTON CLEANERS (Continued) **S121695312**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(760) 328-0450,
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055,
Affiliation Type Desc:	Legal Owner
Entity Name:	Billy Park
Entity Title:	Not reported
Affiliation Address:	72817 Dinah Shore Dr
Affiliation City:	Rancho Mirage
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92270
Affiliation Phone:	(760) 328-0452,
Affiliation Type Desc:	Parent Corporation
Entity Name:	Washington Cleaners
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	Environmental Contact
Entity Name:	Billy Park
Entity Title:	Not reported
Affiliation Address:	72817 Dinah Shore Dr
Affiliation City:	Rancho Mirage
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92270
Affiliation Phone:	,
Affiliation Type Desc:	Identification Signer
Entity Name:	Billy Park
Entity Title:	Owner
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

B5 **COSTCO WHOLESALE # 441** **RCRA-SQG** **1001023199**
NNE **72-800 DINAH SHORE DRIVE** **CAR000005579**
1/8-1/4 **PALM DESERT, CA 92211**
0.227 mi.
1197 ft. **Site 2 of 2 in cluster B**

Relative: **Lower**
Actual: **253 ft.**

RCRA Listings:

Date Form Received by Agency:	20220225
Handler Name:	Costco Wholesale # 441
Handler Address:	DINAH SHORE DRIVE
Handler City,State,Zip:	PALM DESERT, CA 92211-0000
EPA ID:	CAR000005579
Contact Name:	SHARON SAKNIT
Contact Address:	LAKE DR
Contact City,State,Zip:	ISSAQUAH, WA 98027
Contact Telephone:	425-416-2334
Contact Fax:	Not reported
Contact Email:	ENVIRONMENTALCOMPLIANCE@COSTCO.COM
Contact Title:	DIRECTOR, GLOBAL SUSTAINABILITY & COMPLIANCE
EPA Region:	09
Land Type:	Private
Federal Waste Generator Description:	Small Quantity Generator
Non-Notifier:	Not reported
Biennial Report Cycle:	2021
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	GREY HAWK CT, SUITE 200
Mailing City,State,Zip:	CARLSBAD, CA 92010
Owner Name:	Costco Wholesale Corporation
Owner Type:	Private
Operator Name:	Costco Wholesale Corporation
Operator Type:	Private
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:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
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:	20220629
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

Biennial: List of Years
Year: 2021

Click Here for Biennial Reporting System Data:
Year: 2017

Click Here for Biennial Reporting System Data:
Year: 2015

Click Here for Biennial Reporting System Data:
Year: 2013

Click Here for Biennial Reporting System Data:
Year: 2001

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:

Waste Code:	D001
Waste Description:	Ignitable Waste
Waste Code:	D002
Waste Description:	Corrosive Waste
Waste Code:	D003
Waste Description:	Reactive Waste
Waste Code:	D004
Waste Description:	Arsenic
Waste Code:	D005
Waste Description:	Barium
Waste Code:	D006
Waste Description:	Cadmium
Waste Code:	D007
Waste Description:	Chromium
Waste Code:	D008

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Waste Description:	Lead
Waste Code:	D009
Waste Description:	Mercury
Waste Code:	D010
Waste Description:	Selenium
Waste Code:	D011
Waste Description:	Silver
Waste Code:	D013
Waste Description:	Lindane (1,2,3,4,5,6-Hexa-Chlorocyclohexane, Gamma Isomer)
Waste Code:	D016
Waste Description:	2,4-D (2,4-Dichlorophenoxyacetic Acid)
Waste Code:	D018
Waste Description:	Benzene
Waste Code:	D022
Waste Description:	Chloroform
Waste Code:	D024
Waste Description:	M-Cresol
Waste Code:	D026
Waste Description:	Cresol
Waste Code:	D028
Waste Description:	1,2-Dichloroethane
Waste Code:	D029
Waste Description:	1,1-Dichloroethylene
Waste Code:	D035
Waste Description:	Methyl Ethyl Ketone
Waste Code:	D039
Waste Description:	Tetrachloroethylene
Waste Code:	D040
Waste Description:	Trichlorethylene
Waste Code:	D043
Waste Description:	Vinyl Chloride
Waste Code:	F002
Waste Description:	The Following Spent Halogenated Solvents: Tetrachloroethylene, Methylene Chloride, Trichloroethylene, 1,1,1-Trichloroethane, Chlorobenzene, 1,1,2-Trichloro-1,2,2-Trifluoroethane, Ortho-Dichlorobenzene, Trichlorofluoromethane, And 1,1,2, Trichloroethane; All Spent Solvent Mixtures/Blends Containing, Before Use, A Total Of Ten Percent Or More (By Volume) Of One Or More Of The Above Halogenated Solvents Or Those Solvents Listed In F001, F004, And F005; And Still Bottoms From The Recovery Of These Spent Solvents And Spent Solvent Mixtures.

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Waste Code: F003
Waste Description: The Following Spent Nonhalogenated Solvents: Xylene, Acetone, Ethyl Acetate, Ethyl Benzene, Ethyl Ether, Methyl Isobutyl Ketone, N-Butyl Alcohol, Cyclohexanone, And Methanol; All Spent Solvent Mixtures/Blends Containing, Before Use, Only The Above Spent Nonhalogenated Solvents; And All Spent Solvent Mixtures/Blends Containing, Before Use, One Or More Of The Above Nonhalogenated Solvents, And A Total Of Ten Percent Or More (By Volume) Of One Or More Of Those Solvents Listed In F001, F002, F004, And F005; And Still Bottoms From The Recovery Of These Spent Solvents And Spent Solvent Mixtures.

Waste Code: F005
Waste Description: The Following Spent Nonhalogenated Solvents: Toluene, Methyl Ethyl Ketone, Carbon Disulfide, Isobutanol, Pyridine, Benzene, 2-Ethoxyethanol, And 2-Nitropropane; All Spent Solvent Mixtures/Blends Containing, Before Use, A Total Of Ten Percent Or More (By Volume) Of One Or More Of The Above Nonhalogenated Solvents Or Those Solvents Listed In F001, F002, Or F004; And Still Bottoms From The Recovery Of These Spent Solvents And Spent Solvent Mixtures.

Waste Code: P001
Waste Description: 2h-1-Benzopyran-2-One, 4-Hydroxy-3-(3-Oxo-1-Phenylbutyl)-, & Salts, When Present At Concentrations Greater Than 0.3% (Or) Warfarin, & Salts, When Present At Concentrations Greater Than 0.3%

Waste Code: P075
Waste Description: Nicotine, & Salts (Or) Pyridine, 3-(1-Methyl-2-Pyrrolidinyl)-,(S)-, & Salts

Waste Code: U010
Waste Description: Azirino [2',3':3,4]Pyrrolo[1,2-A]Indole-4,7-Dione, 6-Amino-8-[[(Aminocarbonyl)Oxy]Methyl]-1,1a,2,8,8a,8b-Hexahydro-8a-Methoxy-5-Methyl-, [1as-(1aalpha, 8beta, 8aalpha, 8balpha)]- (Or) Mitomycin C

Waste Code: U015
Waste Description: Azaserine (Or) L-Serine, Diazoacetate (Ester)

Waste Code: U019
Waste Description: Benzene (I,T)

Waste Code: U034
Waste Description: Acetaldehyde, Trichloro- (Or) Chloral

Waste Code: U035
Waste Description: Benzenebutanoic Acid, 4-[Bis(2-Chloroethyl)Amino]- (Or) Chlorambucil

Waste Code: U037
Waste Description: Benzene, Chloro- (Or) Chlorobenzene

Waste Code: U044
Waste Description: Chloroform (Or) Methane, Trichloro-

Waste Code: U057
Waste Description: Cyclohexanone (I)

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Waste Code: U058
Waste Description: 2h-1,3,2-Oxazaphosphorin-2-Amine, N,N-Bis(2-Chloroethyl)Tetrahydro-, 2-Oxide (Or) Cyclophosphamide

Waste Code: U059
Waste Description: 5,12-Naphthacenedione, 8-Acetyl-10-[(3-Amino-2,3,6-Trideoxy)-Alpha-L-Lyxo-Hexopyranosyl)Oxy]-7,8,9,10-Tetrahydro-6,8,11-Trihydroxy-1-Methoxy-, (8s-Cis)- (Or) Daunomycin

Waste Code: U075
Waste Description: Dichlorodifluoromethane (Or) Methane, Dichlorodifluoro-

Waste Code: U089
Waste Description: Diethylstilbesterol (Or) Phenol, 4,4'-(1,2-Diethyl-1,2-Ethenediyl)Bis, (E)-

Waste Code: U121
Waste Description: Methane, Trichlorofluoro- (Or) Trichloromonofluoromethane

Waste Code: U129
Waste Description: Cyclohexane, 1,2,3,4,5,6-Hexachloro-, (1alpha, 2alpha, 3beta, 4alpha, 5alpha, 6beta)- (Or) Lindane

Waste Code: U150
Waste Description: L-Phenylalanine, 4-[Bis(2-Chloroethyl)Amino]- (Or) Melphalan

Waste Code: U159
Waste Description: 2-Butanone (I,T) (Or) Methyl Ethyl Ketone (Mek) (I,T)

Waste Code: U200
Waste Description: Reserpine (Or) Yohimban-16-Carboxylic Acid, 11,17-Dimethoxy-18-[(3,4,5-Trimethoxybenzoyl)Oxy]-, Methyl Ester, (3beta, 16beta, 17alpha, 18beta, 20alpha)-

Waste Code: U220
Waste Description: Benzene, Methyl- (Or) Toluene

Waste Code: U228
Waste Description: Ethene, Trichloro- (Or) Trichloroethylene

Waste Code: U239
Waste Description: Benzene, Dimethyl- (I,T) (Or) Xylene (I)

Waste Code: U240
Waste Description: 2,4-D, Salts & Esters (Or) Acetic Acid, (2,4-Dichlorophenoxy)-, Salts & Esters (Or) Dichlorophenoxyacetic Acid 2,4-D

Waste Code: U279
Waste Description: U279

Handler - Owner Operator:
Owner/Operator Indicator: Operator
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Owner/Operator Address: 999 LAKE
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: RTHOMPSON@COSTCO.COM

Owner/Operator Indicator: Operator
Owner/Operator Name: COSTCO WHOLESALE CORP
Legal Status: Private
Date Became Current: 19910309
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: Operator
Owner/Operator Name: COSTCO WHOLESALE CORP
Legal Status: Private
Date Became Current: 19910309
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: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: RTHOMPSON@COSTCO.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: COSTCO WHOLESALE CORPORATION

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: ENVIRONMENTALCOMPLIANCE@COSTCO.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORP-
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: ENVIRONMENTALCOMPLIANCE@COSTCO.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: RTHOMPSON@COSTCO.COM

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Owner/Operator Indicator: Operator
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: ENVIRONMENTALCOMPLIANCE@COSTCO.COM

Owner/Operator Indicator: Owner
Owner/Operator Name: COSTCO WHOLESALE CORP
Legal Status: Private
Date Became Current: 19910309
Date Ended Current: Not reported
Owner/Operator Address: 999 LAKE DR
Owner/Operator City,State,Zip: ISSAQUAH, WA 98027
Owner/Operator Telephone: 425-313-8100
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: COSTCO WHOLESALE CORPORATION
Legal Status: Private
Date Became Current: 19910309
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

Historic Generators:
Receive Date: 20140301
Handler Name: COSTCO WHOLESALE #441
Federal Waste Generator Description: Large Quantity Generator
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: 20160804
Handler Name: COSTCO WHOLESALE # 441
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No

COSTCO WHOLESALE # 441 (Continued) **1001023199**

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: 20180301
Handler Name: COSTCO WHOLESALE # 441
Federal Waste Generator Description: Large Quantity Generator
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: No
Electronic Manifest Broker: No

Receive Date: 20220225
Handler Name: COSTCO WHOLESALE # 441
Federal Waste Generator Description: Small Quantity Generator
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: No
Electronic Manifest Broker: No

Receive Date: 19960901
Handler Name: COSTCO WHOLESALE NO 441
Federal Waste Generator Description: Small Quantity Generator
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: 20020709
Handler Name: COSTCO WHOLESALE NO 441
Federal Waste Generator Description: Small Quantity Generator
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

COSTCO WHOLESALE # 441 (Continued) **1001023199**

Receive Date: 20140711
Handler Name: COSTCO WHOLESALE NO 441
Federal Waste Generator Description: Large Quantity Generator
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: 20211112
Handler Name: COSTCO WHOLESALE # 441
Federal Waste Generator Description: Small Quantity Generator
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: No
Electronic Manifest Broker: No

Receive Date: 19960328
Handler Name: PRICE CLUB #441
Federal Waste Generator Description: Large Quantity Generator
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: 19990304
Handler Name: COACHELLA VALLEY #441
Federal Waste Generator Description: Large Quantity Generator
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: 20001012
Handler Name: COSTCO WHOLESALE # 441
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No

COSTCO WHOLESALE # 441 (Continued) **1001023199**

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: 20020201
Handler Name: COSTCO WHOLESALE #441
Federal Waste Generator Description: Large Quantity Generator
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

List of NAICS Codes and Descriptions:
NAICS Code: 44611
NAICS Description: PHARMACIES AND DRUG STORES

NAICS Code: 446110
NAICS Description: PHARMACIES AND DRUG STORES

NAICS Code: 447190
NAICS Description: OTHER GASOLINE STATIONS

NAICS Code: 45231
NAICS Description: GENERAL MERCHANDISE STORES, INCLUDING WAREHOUSE CLUBS AND SUPERCENTERS

NAICS Code: 452311
NAICS Description: WAREHOUSE CLUBS AND SUPERCENTERS

NAICS Code: 452910
NAICS Description: WAREHOUSE CLUBS AND SUPERCENTERS

NAICS Code: 81292
NAICS Description: PHOTOFINISHING

NAICS Code: 812922
NAICS Description: ONE-HOUR PHOTOFINISHING

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

C6 **BEST BUY PACIFIC SALES #1705** **RCRA NonGen / NLR** **1024866674**
ENE **34295 MONTEREY AVE** **CAL000435263**
1/8-1/4 **RANCHO MIRAGE, CA 92270**
0.247 mi.
1303 ft. **Site 1 of 2 in cluster C**

Relative: **Lower**

Actual: **261 ft.**

RCRA Listings:

Date Form Received by Agency:	20180424
Handler Name:	Best Buy Pacific Sales #1705
Handler Address:	34295 MONTEREY AVE
Handler City,State,Zip:	RANCHO MIRAGE, CA 92270
EPA ID:	CAL000435263
Contact Name:	TIM DUNN
Contact Address:	7601 PENN AVE SOUTH
Contact City,State,Zip:	RICHFIELD, MN 55423
Contact Telephone:	612-291-3406
Contact Fax:	952-430-6708
Contact Email:	ENVCOMPLIANCE@BESTBUY.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:	7601 PENN AVE SOUTH
Mailing City,State,Zip:	RICHFIELD, MN 55423
Owner Name:	Best Buy Co
Owner Type:	Other
Operator Name:	Tim Dunn
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 State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
202 GPRA Corrective Action Baseline:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No

BEST BUY PACIFIC SALES #1705 (Continued) **1024866674**

Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
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:	20180907
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:	Operator
Owner/Operator Name: TIM DUNN	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	7601 PENN AVE SOUTH
Owner/Operator City,State,Zip:	RICHFIELD, MN 55423
Owner/Operator Telephone:	612-291-3406
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name: BEST BUY CO	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	7601 PENN AVE SOUTH
Owner/Operator City,State,Zip:	RICHFIELD, MN 55423
Owner/Operator Telephone:	612-291-3406
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20180424
Handler Name: BEST BUY PACIFIC SALES #1705	
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

BEST BUY PACIFIC SALES #1705 (Continued) **1024866674**

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

C7 **BEST BUY PAC #1705** **CERS HAZ WASTE** **S123537932**
ENE **34295 MONTEREY AVE** **N/A**
1/8-1/4 **RANCHO MIRAGE, CA 92270**
0.247 mi.
1303 ft. **Site 2 of 2 in cluster C**

Relative:
Lower

Actual:
261 ft.

CERS HAZ WASTE:
Name: BEST BUY PAC #1705
Address: 34295 MONTEREY AVE
City,State,Zip: RANCHO MIRAGE, CA 92270
Site ID: 438773
CERS ID: 10765000
CERS Description: Hazardous Waste Generator

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-08-2019
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Facility is a retail appliance store. Hazardous waste on-site includes unsalable/damaged merchandise and universal waste.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Eval General Type: Compliance Evaluation Inspection
Eval Date: 01-25-2022
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Facility is a retail appliance store. Hazardous waste onsite include: unsalable/damaged merchandise and universal waste.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Coordinates:
Site ID: 438773
Facility Name: Best Buy PAC #1705
Env Int Type Code: HWG
Program ID: 10765000
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.,
Latitude: 33.798820
Longitude: -116.391730

BEST BUY PAC #1705 (Continued) **S123537932**

Affiliation:

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	7601 Penn Avenue South B5
Affiliation City:	Richfield
Affiliation State:	MN
Affiliation Country:	Not reported
Affiliation Zip:	55423
Affiliation Phone:	,

Affiliation Type Desc:	Property Owner
Entity Name:	TPX, L.P. c/o New Spark Holdings, Inc.
Entity Title:	Not reported
Affiliation Address:	580 Silver Spur Road
Affiliation City:	Rancho Palos Verdes
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	70275
Affiliation Phone:	(310) 265-6725,

Affiliation Type Desc:	Document Preparer
Entity Name:	Mily Melendez
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Affiliation Type Desc:	Legal Owner
Entity Name:	Best Buy Co, Inc.
Entity Title:	Not reported
Affiliation Address:	7601 Penn Avenue South B5
Affiliation City:	Richfield
Affiliation State:	MN
Affiliation Country:	United States
Affiliation Zip:	55423-3645
Affiliation Phone:	(612) 291-3406,

Affiliation Type Desc:	Identification Signer
Entity Name:	Tim Dunn
Entity Title:	Compliance Sr. Director
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,

Affiliation Type Desc:	Parent Corporation
Entity Name:	Best Buy Co., Inc.
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

BEST BUY PAC #1705 (Continued) **S123537932**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	,
Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055,
Affiliation Type Desc:	Environmental Contact
Entity Name:	Tim Dunn
Entity Title:	Not reported
Affiliation Address:	7601 Penn Avenue South B5
Affiliation City:	Richfield
Affiliation State:	MN
Affiliation Country:	Not reported
Affiliation Zip:	55423
Affiliation Phone:	,
Affiliation Type Desc:	Operator
Entity Name:	Best Buy PAC #1705
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(760) 770-6400,

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8 **PALM ELEMENTARY/MIDDLE SCHOOL** **ENVIROSTOR** **S118756738**
ESE **GERALD FORD DRIVE/MONTEREY AVENUE** **SCH** **N/A**
1/2-1 **PALM DESERT, CA 92211**
0.821 mi.
4333 ft.

Relative: ENVIROSTOR:
Lower

Actual: Name:	PALM ELEMENTARY/MIDDLE SCHOOL
295 ft. Address:	GERALD FORD DRIVE/MONTEREY AVENUE
City,State,Zip:	PALM DESERT, CA 92211
Facility ID:	33650015
Status:	No Action Required
Status Date:	11/21/2003
Site Code:	404494
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	24
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach

PALM ELEMENTARY/MIDDLE SCHOOL (Continued) **S118756738**

Assembly: 47
Senate: 19
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.78920
Longitude: -116.3797
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: PALM ELEMENTARY/MIDDLE SCHOOL
Alias Type: Alternate Name
Alias Name: PALM SPRINGS UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: PALM SPRINGS USD-PALM ELEM/MID SCHOOL
Alias Type: Alternate Name
Alias Name: 404494
Alias Type: Project Code (Site Code)
Alias Name: 33650015
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 11/12/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 11/21/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 11/26/2003
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: PALM ELEMENTARY/MIDDLE SCHOOL
Address: GERALD FORD DRIVE/MONTEREY AVENUE

PALM ELEMENTARY/MIDDLE SCHOOL (Continued) **S118756738**

City,State,Zip:	PALM DESERT, CA 92211
Facility ID:	33650015
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	24
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:	404494
Assembly:	47
Senate:	19
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	11/21/2003
Restricted Use:	NO
Funding:	School District
Latitude:	33.78920
Longitude:	-116.3797
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	PALM ELEMENTARY/MIDDLE SCHOOL
Alias Type:	Alternate Name
Alias Name:	PALM SPRINGS UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	PALM SPRINGS USD-PALM ELEM/MID SCHOOL
Alias Type:	Alternate Name
Alias Name:	404494
Alias Type:	Project Code (Site Code)
Alias Name:	33650015
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	11/12/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	11/21/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	11/26/2003
Comments:	Not reported

PALM ELEMENTARY/MIDDLE SCHOOL (Continued) **S118756738**

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

9
North
1/2-1
0.941 mi.
4969 ft.

SUNCRETE ROOFTILE **Notify 65** **S100178468**
72470 VARNER ROAD **N/A**
THOUSAND PALMS, CA 92276

Relative:
Lower

Actual:
222 ft.

NOTIFY 65:

Name:	SUNCRETE ROOFTILE
Address:	72470 VARNER ROAD
City,State,Zip:	THOUSAND PALMS, CA 92276-3429
Date Reported:	Not reported
Staff Initials:	Not reported
Board File Number:	Not reported
Facility Type:	Not reported
Discharge Date:	Not reported
Issue Date:	Not reported
Incident Description:	Not reported
Global ID:	Not reported
Status:	Not reported

Count: 0 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

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

Lists of Federal NPL (Superfund) sites

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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/08/2024
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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/08/2024
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

Lists of Federal Delisted NPL sites

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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

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: 12/20/2023
Date Data Arrived at EDR: 12/20/2023
Date Made Active in Reports: 01/24/2024
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/26/2024
Next Scheduled EDR Contact: 07/08/2024
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: 01/29/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

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: 01/29/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

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: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

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: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 02/14/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 48

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/02/2024
Next Scheduled EDR Contact: 05/20/2024
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: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
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: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
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: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

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: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/23/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

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: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/23/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

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: 11/06/2023
Date Data Arrived at EDR: 11/07/2023
Date Made Active in Reports: 02/05/2024
Number of Days to Update: 90

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/06/2024
Next Scheduled EDR Contact: 05/20/2024
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

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: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

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 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 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 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 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

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

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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/04/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 11/16/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/13/2024
Number of Days to Update: 89

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/15/2024
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: 11/28/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 89

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/17/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

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: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/23/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Quarterly

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: 03/18/2024
Next Scheduled EDR Contact: 07/01/2024
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: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Lists of state and tribal brownfield 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: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 08/15/2023
Date Data Arrived at EDR: 08/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 93

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/12/2024
Next Scheduled EDR Contact: 06/24/2024
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: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: No Update Planned

SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 11/29/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/23/2024
Number of Days to Update: 86

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/16/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/13/2023
Number of Days to Update: 83

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 05/20/2024
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: 01/26/2024
Next Scheduled EDR Contact: 05/06/2024
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: 01/11/2024
Next Scheduled EDR Contact: 04/29/2024
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: 01/17/2024
Next Scheduled EDR Contact: 05/06/2024
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: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
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: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/23/2024
Next Scheduled EDR Contact: 05/06/2024
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: 12/31/2021
Date Data Arrived at EDR: 09/28/2023
Date Made Active in Reports: 12/18/2023
Number of Days to Update: 81
Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 05/13/2024
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: California Environmental Reporting System Hazardous 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: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
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: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

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: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
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: 11/21/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/26/2024
Next Scheduled EDR Contact: 06/10/2024
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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/08/2024
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: 11/22/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/15/2024
Number of Days to Update: 85

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
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: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/20/2024
Next Scheduled EDR Contact: 07/01/2024
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: 12/31/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/18/2024
Next Scheduled EDR Contact: 04/29/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 84

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 01/30/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/13/2024
Next Scheduled EDR Contact: 05/27/2024
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: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

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: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/06/2024
Next Scheduled EDR Contact: 05/20/2024
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: 12/11/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 07/01/2024
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: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: No Update Planned

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: 02/02/2024
Next Scheduled EDR Contact: 05/13/2024
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: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
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: 12/31/2022
Date Data Arrived at EDR: 11/13/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 86
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/15/2024
Next Scheduled EDR Contact: 05/27/2024
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: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 70
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/17/2024
Next Scheduled EDR Contact: 04/29/2024
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: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 06/10/2024
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: 02/01/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/12/2024
Next Scheduled EDR Contact: 04/29/2024
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: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 05/13/2024
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: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
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: 01/02/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 57

Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 01/11/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
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: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
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: 02/02/2024
Next Scheduled EDR Contact: 05/13/2024
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: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
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: 01/05/2024
Next Scheduled EDR Contact: 05/06/2024
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: 12/31/2023
Date Data Arrived at EDR: 01/11/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 02/15/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/02/2024
Next Scheduled EDR Contact: 07/08/2024
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: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 1

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 05/20/2024
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: 02/05/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
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: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
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: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
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: 11/28/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 12

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

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: 11/03/2023
Date Data Arrived at EDR: 11/08/2023
Date Made Active in Reports: 11/20/2023
Number of Days to Update: 12

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 12/17/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 02/20/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/06/2023
Date Data Arrived at EDR: 09/13/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 89

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
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: 02/12/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/13/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/16/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/10/2017
Number of Days to Update: 63

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

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: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 11/30/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/26/2024
Number of Days to Update: 88

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/06/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 11/30/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/23/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

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

CHROME PLATING: Chrome Plating Facilities Listing

This listing represents chrome plating facilities the California State Water Resources Control Board staff identified as possibly being a source of Per- and polyfluoroalkyl substance (PFAS) contamination. Sites and locations were identified by staff with the Division of Water Quality in the California State Water Board. Data was collected from the CA Air Resources Board 2013 and 2018 - Cr VI emission survey, CA Emission Inventory, CA HAZ Waste discharge database and by reviewing storm water permits. Former chrome plating sites are also included that are open site investigation or remediation cases with the Regional Water Quality Control Boards and the Department of Toxic Substances Control.

Date of Government Version: 11/30/2023
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 02/23/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

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: 12/13/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 03/31/2023
Date Data Arrived at EDR: 05/08/2023
Date Made Active in Reports: 07/31/2023
Number of Days to Update: 84

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 02/09/2024
Next Scheduled EDR Contact: 05/20/2024
Data Release Frequency: Varies

DRYCLEAN GLENN CO DIST: Glenn County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Glenn County Air Pollution Control District.

Date of Government Version: 01/08/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Glenn County Air Pollution Control District
Telephone: 530-934-6500
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN BUTTE CO DIST: Butte County Air Quality Management DistrictDrycleaner Facility Listing

Butte County Air Quality Management DistrictDrycleaner Facility Listing.

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 10/18/2023
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 90

Source: Butte County Air Quality Management District
Telephone: 530-332-9400
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SONOMA CO DIST: Norther Sonoma County County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Northern Sonoma County Air Pollution Control District.,

Date of Government Version: 01/05/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: Santa Barbara County Air Pollution Control District
Telephone: 707-433-5911
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SACRAMENTO METO DIST: Sacramento Metropolitan Air Quality Management DistrictDrycleaner Facility Listing
A listing of drycleaner facility locations, for the Sacramento Metropolitan Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77
Source: Sacramento Metropolitan Air Quality Management District
Telephone: 916-874-3958
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
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: 11/21/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86
Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/26/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Varies

DRYCLEAN AMADOR: Amador Air District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Amador Air Quality Management District

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77
Source: Amador Air Quality Management District
Telephone: 209-257-0112
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN VENTURA CO DIST: Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Ventura County Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 02/08/2024
Number of Days to Update: 23
Source: Ventura County Air Pollution Control District
Telephone: 805-645-1421
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

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: 11/14/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/12/2024
Number of Days to Update: 88
Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 02/20/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

DRYCLEAN SANTA BARB CO DIST: Santa Barbara County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Santa Barbara County Air Pollution Control District.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1475
Source: Santa Barbara County Air Pollution Control District
Telephone: 805-961-8867
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO SIERRA DIST: Northern Sierra Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Northern Sierra Air Quality Management District,

Date of Government Version: 05/07/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Northern Sierra Air Quality Management District
Telephone: 530-274-9350
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN NO COAST UNIFIED DIST: North Coast Unified Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the North Coast Unified Air Quality Management District.

Date of Government Version: 11/30/2016
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1473
Source: North Coast Unified Air Quality Management District
Telephone: 707-443-3093
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN LAKE CO DIST: Lake County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Lake County Air Quality Management District,

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1455
Source: Lake County Air Quality Management District
Telephone: 707-263-7000
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN GRANT: Grant Recipients List
Assembly Bill 998 (AB 998) established the Non-Toxic Dry Cleaning Incentive Program to provide financial assistance to the dry cleaning industry to switch from systems using perchloroethylene (Perc), an identified toxic air contaminant and potential human carcinogen, to non-toxic and non-smog forming alternatives.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 816
Source: California Air Resources Board
Telephone: 916-323-0006
Last EDR Contact: 01/26/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Varies

DRYCLEAN CALAVERAS CO DIST: Calaveras County Environmental Management Agency Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Calaveras County Environmental Management Agency.

Date of Government Version: 06/17/2019
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1412
Source: Calaveras County Environmental Management Agency
Telephone: 209-754-6399
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

DRYCLEAN BAY AREA DIST: Bay Area Air Quality Management District Drycleaner Facility Listing
Bay Area Air Quality Management District Drycleaner Facility Listing.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1432
Source: Bay Area Air Quality Management District
Telephone: 415-516-1916
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN FEATHER RIVER DIST: Feather River Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Feather River Air Quality Management District.

Date of Government Version: 03/08/2023
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 06/05/2023
Number of Days to Update: 88
Source: Feather River Air Quality Management District
Telephone: 530-634-7659
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN TEHAMA CO DIST: Tehama County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Tehama County Air Pollution Control District.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 05/01/2023
Number of Days to Update: 1468
Source: Tehama County Air Pollution Control District
Telephone: 530-527-3717
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
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: 08/31/2023
Date Data Arrived at EDR: 09/08/2023
Date Made Active in Reports: 11/27/2023
Number of Days to Update: 80

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Annually

DRYCLEAN SAN DIEGO CO DIST: San Diego County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the San Diego County Air Pollution Control District.

Date of Government Version: 03/19/2024
Date Data Arrived at EDR: 03/21/2024
Date Made Active in Reports: 04/12/2024
Number of Days to Update: 22

Source: San Diego County Air Pollution Control District
Telephone: 858-586-2616
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN EAST KERN DIST: Eastern Kern Air Pollution Control District District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Eastern Kern Air Pollution Control District.

Date of Government Version: 01/12/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Eastern Kern Air Pollution Control District
Telephone: 661-862-9684
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN IMPERIAL CO DIST: Imperial County Air Pollution Control District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Imperial County Air Pollution Control District

Date of Government Version: 04/25/2023
Date Data Arrived at EDR: 04/26/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 79

Source: Imperial County Air Pollution Control District
Telephone: 442-265-1800
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MENDO CO DIST: Mendocino County Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Mendocino County Air Quality Management District.

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/28/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 77

Source: Mendocino County Air Quality Management District
Telephone: 707-463-4354
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MOJAVE DESERT DIST: Mojave Desert Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Mojave Desert Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78

Source: Mojave Desert Air Quality Management District
Telephone: 760-245-1661
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN YOLO-SOLANO DIST: Yolo-Solano Air Quality Management District Drycleaner Facility Listing

A listing of drycleaner facility locations, for the Yolo-Solano Air Quality Management District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Yolo-Solano Air Quality Management District
Telephone: 530-757-3650
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SHASTA CO DIST: Shasta County Air Quality Management District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Shasta County Air Quality Management District.

Date of Government Version: 04/26/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/14/2023
Number of Days to Update: 78

Source: Shasta County Air Quality Management District
Telephone: 530-225-5674
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN MONTEREY BAY DIST: Monterey Bay Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Monterey Bay Air Quality Management District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/05/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 75

Source: Monterey Bay Air Quality Management District
Telephone: 831-647-9411
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN LUIS OB CO DIST: San Luis Obispo County Air Pollution Control District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Luis Obispo County Air Pollution Control District.

Date of Government Version: 01/03/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/20/2024
Number of Days to Update: 76

Source: San Luis Obispo County Air Pollution Control District
Telephone: 805-781-5756
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN PLACER CO DIST: Placer County Air Quality Management District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the Placer County Air Quality Management District.

Date of Government Version: 05/15/2023
Date Data Arrived at EDR: 05/17/2023
Date Made Active in Reports: 08/14/2023
Number of Days to Update: 89

Source: Placer County Air Quality Management District
Telephone: 530-745-2335
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
Data Release Frequency: Varies

DRYCLEAN SAN JOAQ VAL DIST: San Joaquin Valley Air Pollution Control District District Drycleaner Facility Listing
A listing of drycleaner facility locations, for the San Joaquin Valley Air Pollution Control District.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77

Source: San Joaquin Valley Air Pollution Control District
Telephone: 559-230-6001
Last EDR Contact: 01/03/2024
Next Scheduled EDR Contact: 09/11/2023
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: 12/31/2021
Date Data Arrived at EDR: 06/09/2023
Date Made Active in Reports: 08/30/2023
Number of Days to Update: 82

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/11/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 11/08/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/20/2024
Next Scheduled EDR Contact: 05/20/2024
Data Release Frequency: Varies

ICE: Inspection, Compliance and Enforcement

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/07/2024
Next Scheduled EDR Contact: 05/27/2024
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: 02/07/2024
Date Data Arrived at EDR: 02/07/2024
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 0

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/07/2024
Next Scheduled EDR Contact: 05/27/2024
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: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

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: 10/26/2023
Date Data Arrived at EDR: 10/27/2023
Date Made Active in Reports: 01/29/2024
Number of Days to Update: 94

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 11/29/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/23/2024
Number of Days to Update: 86

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 11/08/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 11/06/2023
Date Data Arrived at EDR: 11/07/2023
Date Made Active in Reports: 02/05/2024
Number of Days to Update: 90

Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/06/2024
Next Scheduled EDR Contact: 05/20/2024
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: 11/22/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86

Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 11/29/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/23/2024
Number of Days to Update: 86

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 12/06/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 02/29/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
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: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Annually

SANTA CRUZ CO SITE MITI: Site Mitigation Listing

Sites may become contaminated with toxic chemicals through illegal dumping or disposal, from leaking underground storage tanks, or through industrial or commercial activities.The goal of the site mitigation program is to protect the public health and the environment while facilitating completion of contaminated site clean-up projects in a timely manner.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 06/23/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 20

Source: Santa Cruz Environmental Health Services
Telephone: 831-454-2761
Last EDR Contact: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: Varies

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 11/29/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 90

Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
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: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 11/29/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 11/22/2023
Date Data Arrived at EDR: 11/22/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 86
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
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: 01/16/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 12/04/2023
Date Data Arrived at EDR: 12/05/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 85

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Varies

UST FINDER: UST Finder Database

EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories . UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/04/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 02/09/2024
Next Scheduled EDR Contact: 05/20/2024
Data Release Frequency: Varies

UST FINDER RELEASE: UST Finder Releases Database

US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/31/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 79

Source: Environmental Protecton Agency
Telephone: 202-564-0394
Last EDR Contact: 02/09/2024
Next Scheduled EDR Contact: 05/20/2024
Data Release Frequency: Semi-Annually

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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 04/27/2023
Date Data Arrived at EDR: 04/27/2023
Date Made Active in Reports: 07/13/2023
Number of Days to Update: 77

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 04/26/2023
Next Scheduled EDR Contact: 05/13/2024
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: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/18/2023
Date Data Arrived at EDR: 12/18/2023
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 86

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
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: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 01/19/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 76

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 10/25/2023
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 83

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 02/05/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
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: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/08/2024
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: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
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: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/13/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List

Cupa facility list

Date of Government Version: 10/27/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 11/21/2023
Number of Days to Update: 20

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
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: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 03/26/2024
Number of Days to Update: 68

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/09/2024
Date Data Arrived at EDR: 01/10/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 77

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/09/2024
Next Scheduled EDR Contact: 07/22/2024
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: 12/31/2022
Date Data Arrived at EDR: 01/12/2023
Date Made Active in Reports: 03/29/2023
Number of Days to Update: 76

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
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: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 04/13/2023
Date Data Arrived at EDR: 07/13/2023
Date Made Active in Reports: 09/27/2023
Number of Days to Update: 76

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
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: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 12/14/2023
Number of Days to Update: 1

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 12/01/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 03/07/2024
Number of Days to Update: 85
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
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: 07/11/2023
Date Data Arrived at EDR: 10/17/2023
Date Made Active in Reports: 01/09/2024
Number of Days to Update: 84
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 01/19/2024
Next Scheduled EDR Contact: 04/29/2024
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: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
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: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 04/12/2023
Date Data Arrived at EDR: 05/02/2023
Date Made Active in Reports: 06/13/2023
Number of Days to Update: 42
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
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: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
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: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/20/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 11/15/2023
Date Data Arrived at EDR: 11/20/2023
Date Made Active in Reports: 02/15/2024
Number of Days to Update: 87

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/27/2024
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: 02/16/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
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: 02/16/2024
Next Scheduled EDR Contact: 06/03/2024
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: 02/16/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 10/31/2023
Date Data Arrived at EDR: 11/03/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 81

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/10/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 05/13/2024
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: 11/09/2023
Date Data Arrived at EDR: 11/09/2023
Date Made Active in Reports: 11/21/2023
Number of Days to Update: 12

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/26/2024
Next Scheduled EDR Contact: 06/10/2024
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: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/29/2024
Number of Days to Update: 85

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/05/2023
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/04/2024
Date Data Arrived at EDR: 01/04/2024
Date Made Active in Reports: 03/21/2024
Number of Days to Update: 77

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
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: 11/07/2022
Date Data Arrived at EDR: 12/21/2022
Date Made Active in Reports: 03/16/2023
Number of Days to Update: 85

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
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: 11/07/2022
Date Data Arrived at EDR: 12/09/2022
Date Made Active in Reports: 03/01/2023
Number of Days to Update: 82

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 01/26/2024
Number of Days to Update: 8

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 01/11/2024
Next Scheduled EDR Contact: 05/13/2024
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: 11/08/2023
Date Data Arrived at EDR: 11/09/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 90

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/12/2024
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: 11/27/2023
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/16/2024
Number of Days to Update: 81

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/04/2023
Date Data Arrived at EDR: 04/05/2023
Date Made Active in Reports: 06/27/2023
Number of Days to Update: 83

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83
Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 10/30/2023
Date Data Arrived at EDR: 11/01/2023
Date Made Active in Reports: 01/23/2024
Number of Days to Update: 83
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/15/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/05/2024
Number of Days to Update: 78
Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 01/18/2024
Next Scheduled EDR Contact: 04/29/2024
Data Release Frequency: Varies

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: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/08/2023
Date Data Arrived at EDR: 11/09/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 90

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/27/2024
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: 03/07/2024
Next Scheduled EDR Contact: 06/17/2024
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: 03/01/2024
Next Scheduled EDR Contact: 06/17/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 11/07/2023
Date Data Arrived at EDR: 11/08/2023
Date Made Active in Reports: 11/16/2023
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/27/2024
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: 02/16/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: No Update Planned

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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
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: 02/09/2024
Next Scheduled EDR Contact: 05/27/2024
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: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
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: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/03/2023
Date Data Arrived at EDR: 08/24/2023
Date Made Active in Reports: 09/12/2023
Number of Days to Update: 19

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/26/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/05/2023
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 27

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2024
Date Data Arrived at EDR: 01/18/2024
Date Made Active in Reports: 04/03/2024
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 10/07/2022
Date Data Arrived at EDR: 10/07/2022
Date Made Active in Reports: 12/21/2022
Number of Days to Update: 75

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 01/29/2024
Next Scheduled EDR Contact: 05/13/2024
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: 04/12/2024
Next Scheduled EDR Contact: 07/29/2024
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: 12/26/2023
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 75

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
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: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
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: 02/02/2024
Next Scheduled EDR Contact: 05/20/2024
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: 12/26/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/09/2024
Number of Days to Update: 77

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 01/16/2024
Next Scheduled EDR Contact: 04/29/2024
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: 11/28/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 02/26/2024
Number of Days to Update: 89

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/05/2024
Next Scheduled EDR Contact: 06/17/2024
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: 12/18/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/22/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 01/22/2024
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 76

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/22/2024
Next Scheduled EDR Contact: 05/06/2024
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: 11/06/2023
Date Data Arrived at EDR: 11/07/2023
Date Made Active in Reports: 01/31/2024
Number of Days to Update: 85

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/06/2024
Next Scheduled EDR Contact: 05/20/2024
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: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
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: 12/31/2019
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/26/2024
Next Scheduled EDR Contact: 05/06/2024
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: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/12/2024
Next Scheduled EDR Contact: 05/27/2024
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: 03/01/2024
Next Scheduled EDR Contact: 06/17/2024
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

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 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

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

VACANT PROPERTY
KEY LARGO AVENUE / DINAH SHORE DRIVE
RANCHO MIRAGE, CA 92270

TARGET PROPERTY COORDINATES

Latitude (North):	33.796846 - 33° 47' 48.65''
Longitude (West):	116.39365 - 116° 23' 37.14''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	556129.7
UTM Y (Meters):	3739602.5
Elevation:	308 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	50004950 CATHEDRAL CITY, CA
Version Date:	2021
East Map:	50004258 MYOMA, CA
Version Date:	2021

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).

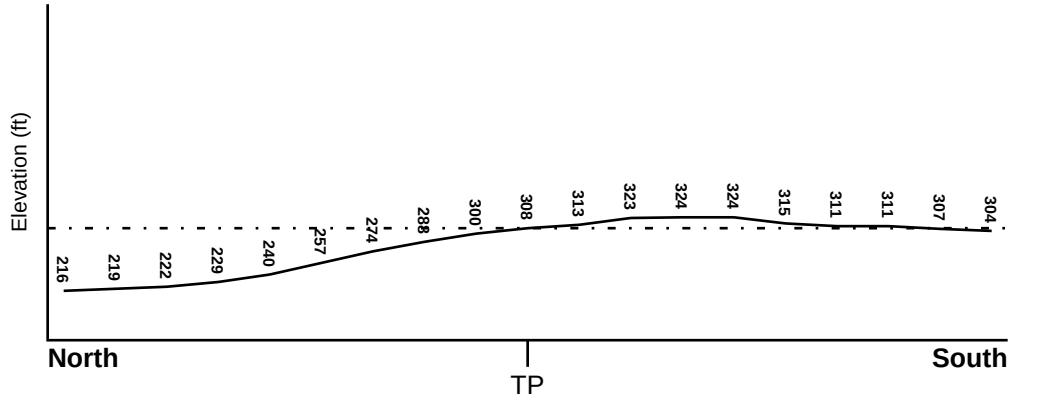
TOPOGRAPHIC INFORMATION

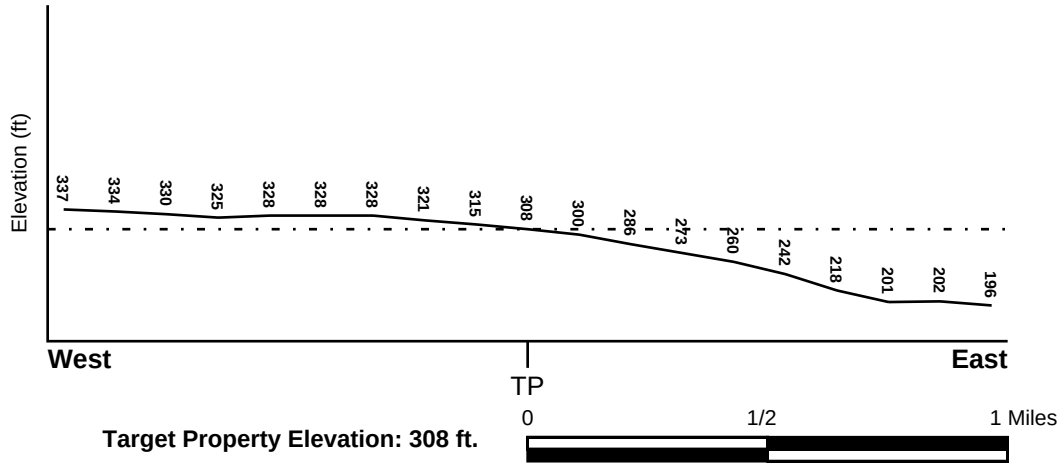
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General NE

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





0 1/2 1 Miles

Target Property Elevation: 308 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
06065C1595G	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
CATHEDRAL CITY	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		

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

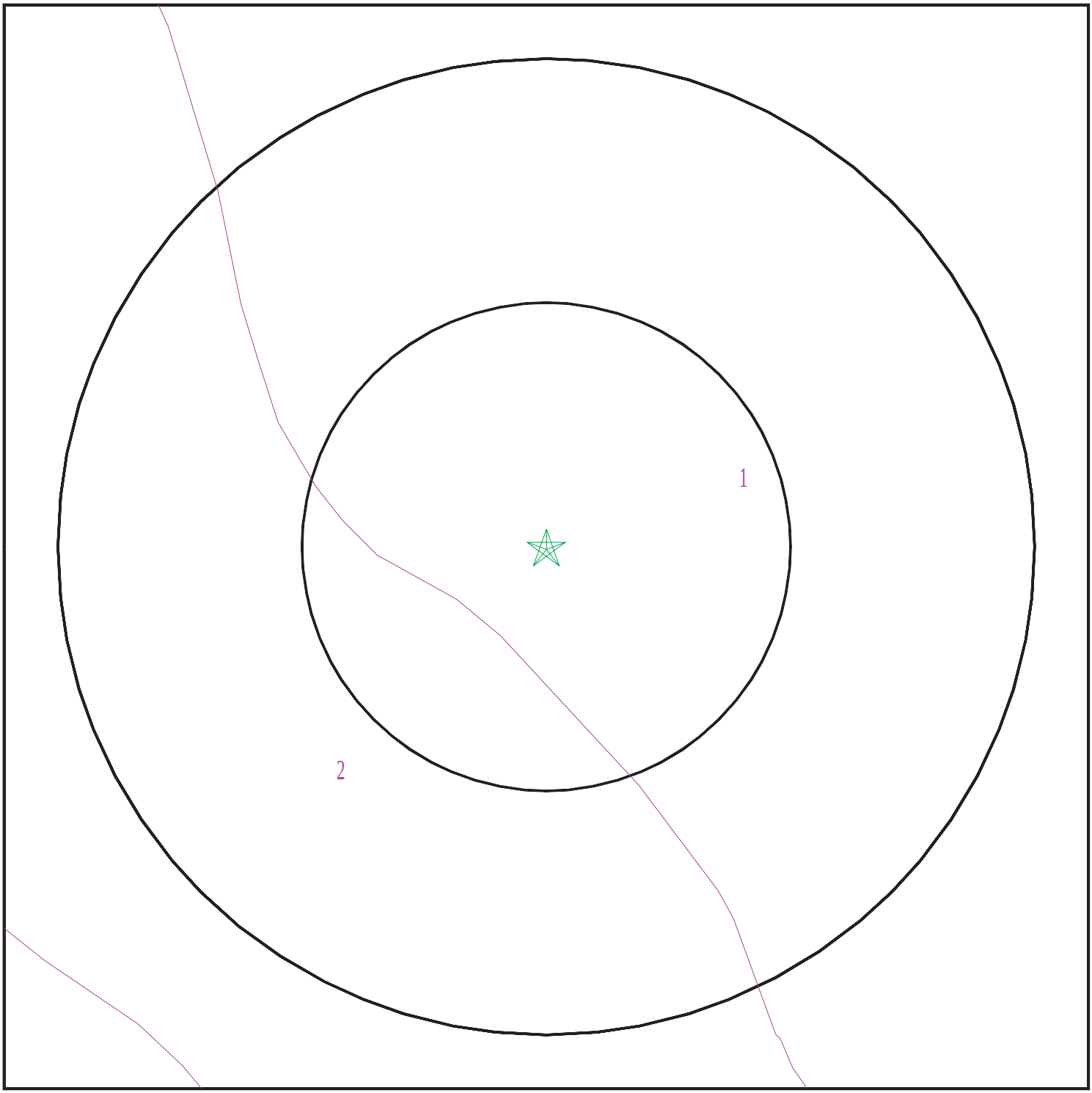
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

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 - 7624121.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Vacant Property	CLIENT:	Black Rock Geosciences
ADDRESS:	Key Largo Avenue / Dinah Shore Drive Rancho Mirage CA 92270	CONTACT:	Quin Kinnebrew
LAT/LONG:	33.796846 / 116.39365	INQUIRY #:	7624121.2s
		DATE:	April 15, 2024 1:40 pm

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: Myoma

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

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	18 inches	fine sand	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: 141 Min: 42	Max: 9 Min: 7.9
2	18 inches	59 inches	sand	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: 141 Min: 42	Max: 9 Min: 7.9

Soil Map ID: 2

Soil Component Name: Myoma

Soil Surface Texture: fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Somewhat excessively drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

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	18 inches	fine sand	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: 141 Min: 42	Max: 9 Min: 7.9
2	18 inches	59 inches	sand	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: 141 Min: 42	Max: 9 Min: 7.9

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

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A1	USGS40000138255	1/4 - 1/2 Mile East
C11	USGS40000138352	1/2 - 1 Mile North

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
E14	USGS40000138323	1/2 - 1 Mile NE
D17	USGS40000138358	1/2 - 1 Mile NNE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

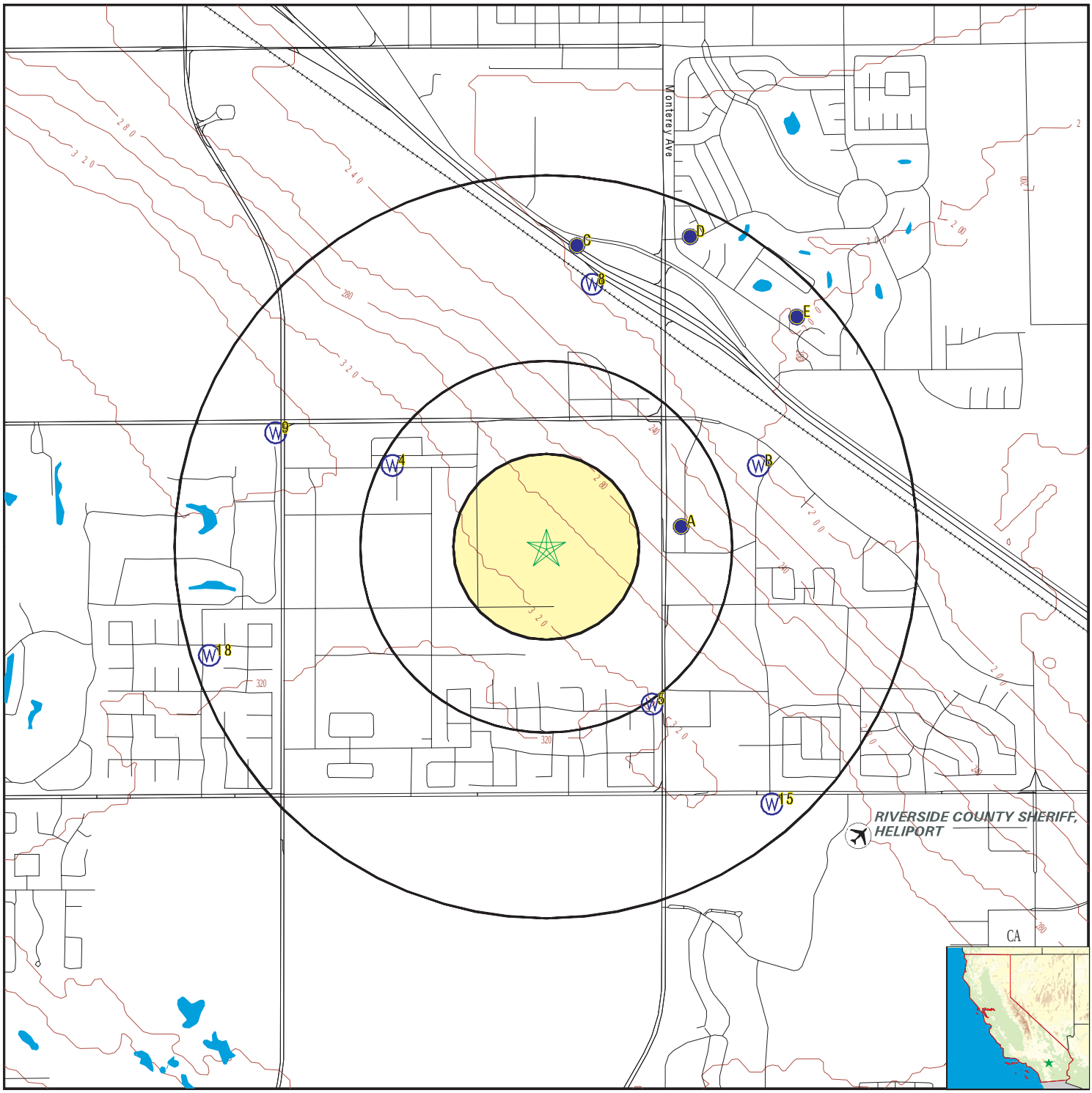
No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CAUSGSN00013154	1/4 - 1/2 Mile East
A3	CADWR0000018383	1/4 - 1/2 Mile East
4	4893	1/4 - 1/2 Mile WNW
5	CADDW2000024294	1/2 - 1 Mile SE
B6	4888	1/2 - 1 Mile ENE
B7	CADDW2000007861	1/2 - 1 Mile ENE
8	CADDW2000018138	1/2 - 1 Mile North
9	CADDW2000015012	1/2 - 1 Mile WNW
C10	CAUSGSN00019118	1/2 - 1 Mile North
D12	CADDW2000006830	1/2 - 1 Mile NNE
E13	CAUSGSN00005522	1/2 - 1 Mile NE
15	CADDW2000015406	1/2 - 1 Mile SE
D16	CAUSGSN00014943	1/2 - 1 Mile NNE
18	CADDW2000024231	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 7624121.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Vacant Property	CLIENT:	Black Rock Geosciences
ADDRESS:	Key Largo Avenue / Dinah Shore Drive Rancho Mirage CA 92270	CONTACT:	Quin Kinnebrew
LAT/LONG:	33.796846 / 116.39365	INQUIRY #:	7624121.2s
		DATE:	April 15, 2024 1:40 pm

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
East
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000138255**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006E29E001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill 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		

A2
East
1/4 - 1/2 Mile
Lower

CA WELLS **CAUSGSN00013154**

Well ID:	USGS-334751116231201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334751116231201	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-334751116231201&store_num=		
GeoTracker Data:	Not Reported		

A3
East
1/4 - 1/2 Mile
Lower

CA WELLS **CADWR0000018383**

Well ID:	04S06E29E001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	04S06E29E001S	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=04S06E29E001S&store_num=		
GeoTracker Data:	Not Reported		

4
WNW
1/4 - 1/2 Mile
Higher

CA WELLS **4893**

Seq:	4893	Prim sta c:	04S/06E-30D02 S
Frds no:	3310001039	County:	33
District:	14	User id:	WAT
System no:	3310001	Water type:	G
Source nam:	WELL 4627 - INACTIVE	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	334800.0	Longitude:	1162400.0
Precision:	8	Status:	IU
Comment 1:	Not Reported	Comment 2:	Not Reported

Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3310001	System nam:	Coachella Vwd: Cove Community
Hqname:	COACHELLA VALLEY WTR DIST	Address:	P.O. Box 1058
City:	Coachella	State:	CA
Zip:	92236	Zip ext:	Not Reported
Pop serv:	167782	Connection:	59922
Area serve:	COVE COMMUNITIES		

5
SE **CA WELLS** **CADDW2000024294**
1/2 - 1 Mile
Higher

GAMA:

Well ID:	CA3310001_289_289	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-289
GAMA Pfas testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_289_289&store_num=		
GeoTracker Data:	Not Reported		

B6
ENE **CA WELLS** **4888**
1/2 - 1 Mile
Lower

Seq:	4888	Prim sta c:	04S/06E-20M01 S
Frds no:	3310001040	County:	33
District:	14	User id:	WAT
System no:	3310001	Water type:	G
Source nam:	WELL 4628	Station ty:	WELL/AMBNT/MUN/INTAKE/SUPPLY
Latitude:	334800.0	Longitude:	1162300.0
Precision:	8	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	3310001	System nam:	Coachella Vwd: Cove Community
Hqname:	COACHELLA VALLEY WTR DIST	Address:	P.O. Box 1058
City:	Coachella	State:	CA
Zip:	92236	Zip ext:	Not Reported
Pop serv:	167782	Connection:	59922
Area serve:	COVE COMMUNITIES		

B7
ENE **CA WELLS** **CADDW2000007861**
1/2 - 1 Mile
Lower

GAMA:

Well ID:	CA3310001_040_040	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-040
GAMA Pfas testing:	Not Reported		

Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_040_040&store_num=
GeoTracker Data: Not Reported

8
North
1/2 - 1 Mile
Lower

CA WELLS **CADDW2000018138**

GAMA:

Well ID:	CA3310001_164_164	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-164
GAMA Pfas testing:	Not Reported		

Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_164_164&store_num=
GeoTracker Data: Not Reported

9
WNW
1/2 - 1 Mile
Higher

CA WELLS **CADDW2000015012**

GAMA:

Well ID:	CA3310001_205_205	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-205
GAMA Pfas testing:	Not Reported		

Groundwater Quality Data: https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_205_205&store_num=
GeoTracker Data: Not Reported

C10
North
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00019118**

Well ID:	USGS-334831116232901	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334831116232901	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-334831116232901&store_num=
GeoTracker Data: Not Reported

C11
North
1/2 - 1 Mile
Lower

FED USGS **USGS40000138352**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006E19J002S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill 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		

D12
NNE **CA WELLS** **CADDW2000006830**
1/2 - 1 Mile
Lower

GAMA:

Well ID:	CA3310001_204_204	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-204
GAMA Pfas testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_204_204&store_num=		
GeoTracker Data:	Not Reported		

E13
NE **CA WELLS** **CAUSGSN00005522**
1/2 - 1 Mile
Lower

Well ID:	USGS-334821116225201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334821116225201	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-334821116225201&store_num=		
GeoTracker Data:	Not Reported		

E14
NE **FED USGS** **USGS40000138323**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006E20L001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill 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		

15
SE **CA WELLS** **CADDW2000015406**
1/2 - 1 Mile
Higher

GAMA:

Well ID:	CA3310001_210_210	Well Type:	MUNICIPAL

Source:	DDW	Other Names:	3310001-210
GAMA Pfas testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_210_210&store_num=		
GeoTracker Data:	Not Reported		

D16
NNE **CA WELLS** **CAUSGSN00014943**
1/2 - 1 Mile
Lower

Well ID:	USGS-334833116231001	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334833116231001	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-334833116231001&store_num=		
GeoTracker Data:	Not Reported		

D17
NNE **FED USGS** **USGS40000138358**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S006E20M001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	960
Well Depth Units:	ft	Well Hole Depth:	986
Well Hole Depth Units:	ft		

18
WSW **CA WELLS** **CADDW2000024231**
1/2 - 1 Mile
Higher

GAMA:

Well ID:	CA3310001_203_203	Well Type:	MUNICIPAL
Source:	DDW	Other Names:	3310001-203
GAMA Pfas testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=CA3310001_203_203&store_num=		
GeoTracker Data:	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
92270	20	2

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 Zip Code: 92270

Number of sites tested: 1

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.800 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

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, 2010 and 2015 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.

Geothermal Wells Listing
Department of Conservation
Telephone: 916-445-9686
Geothermal well means a well constructed to extract or return water to the ground after it has been used for heating or cooling purposes. Geothermal wells in California (except for wells on federal leases which are administered by the Bureau of Land Management) are permitted, drilled, operated, and permanently sealed and closed (plugged and abandoned) under requirements and procedures administered by the Geothermal Section of the Department of Conservations Geologic Energy Management Division (CalGEM, formerly DOGGR).

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.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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

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

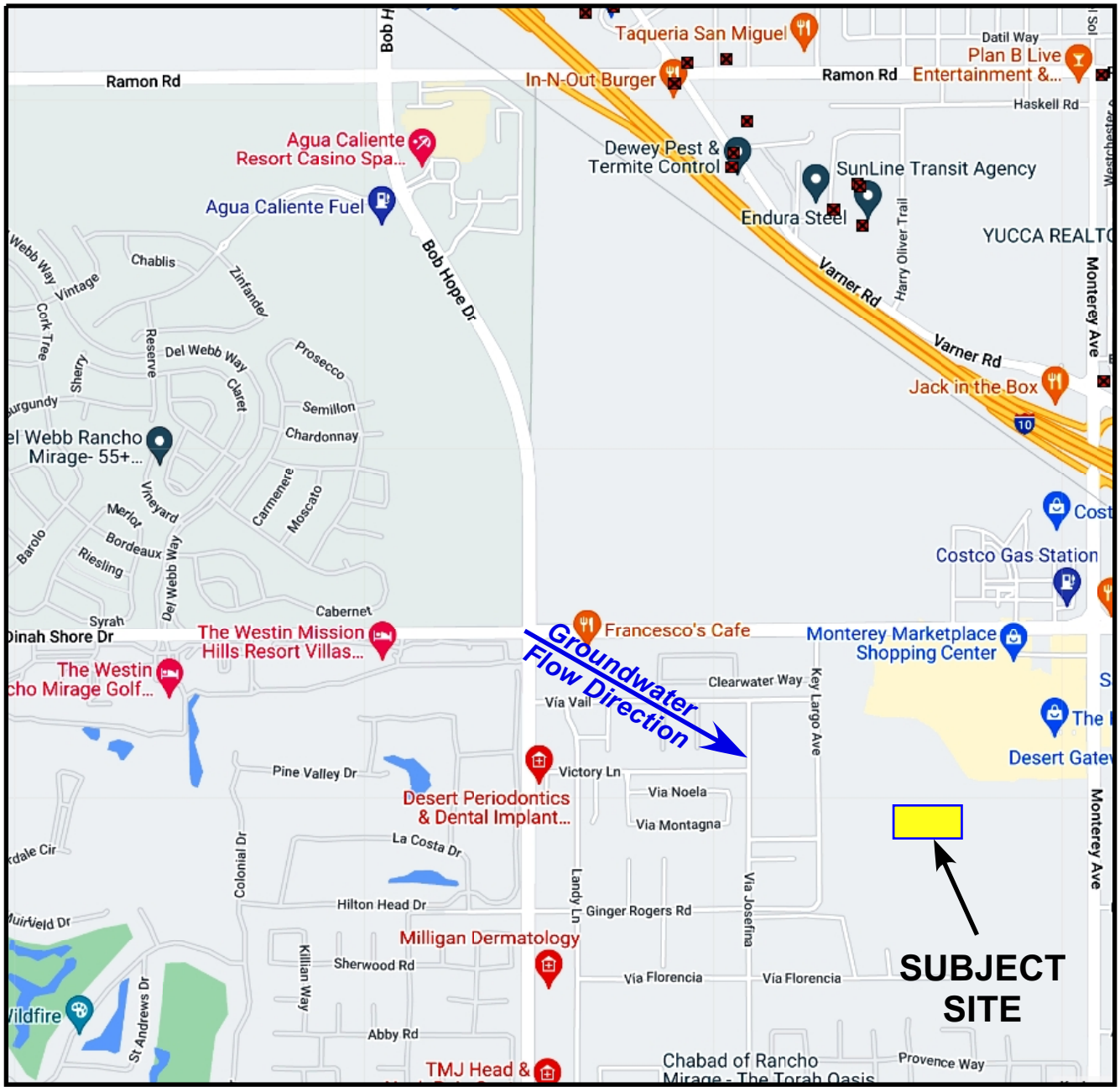
California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX E1

AGENCY DOCUMENTS
(REGIONAL WATER QUALITY CONTROL BOARD)

RWQCB-REGULATED PROPERTIES IN SITE VICINITY
(None Shown within 1/4 Mile & Up-Gradient of Site)



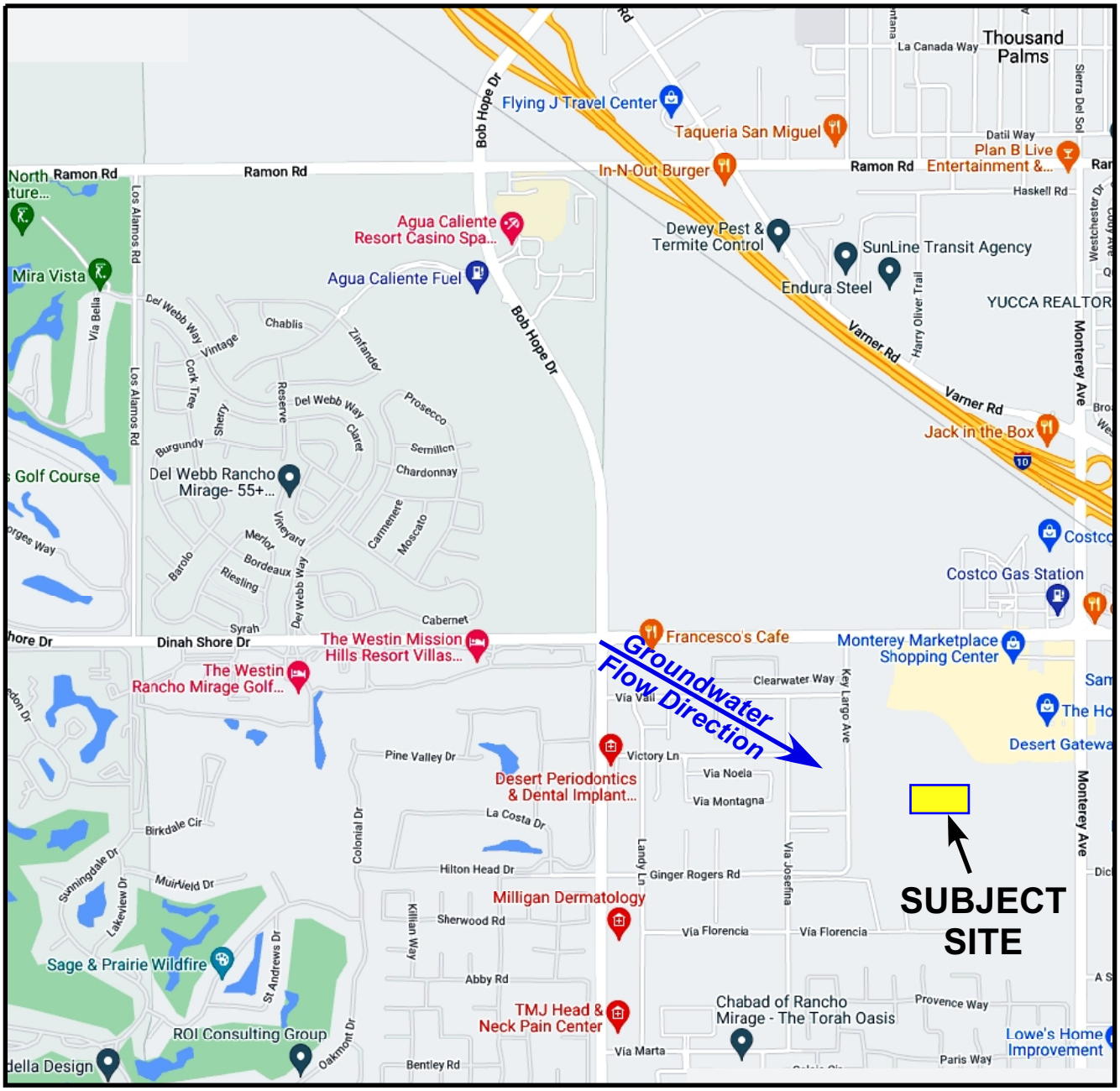
Approx. Scale:
0 770 1,540 feet

Sources: Regional Water Quality Control Board (http://geotracker.waterboards.ca.gov/)

APPENDIX E2

AGENCY DOCUMENTS
(DEPARTMENT OF TOXIC SUBSTANCES CONTROL)

DTSC-REGULATED PROPERTIES IN SITE VICINITY
(None Shown within 1/4 Mile & Up-Gradient of Site)



Approx. Scale:
0 910 1,820 feet

Sources: Department of Toxic Substances Control (https://www.envirostor.dtsc.ca.gov/)

APPENDIX E3

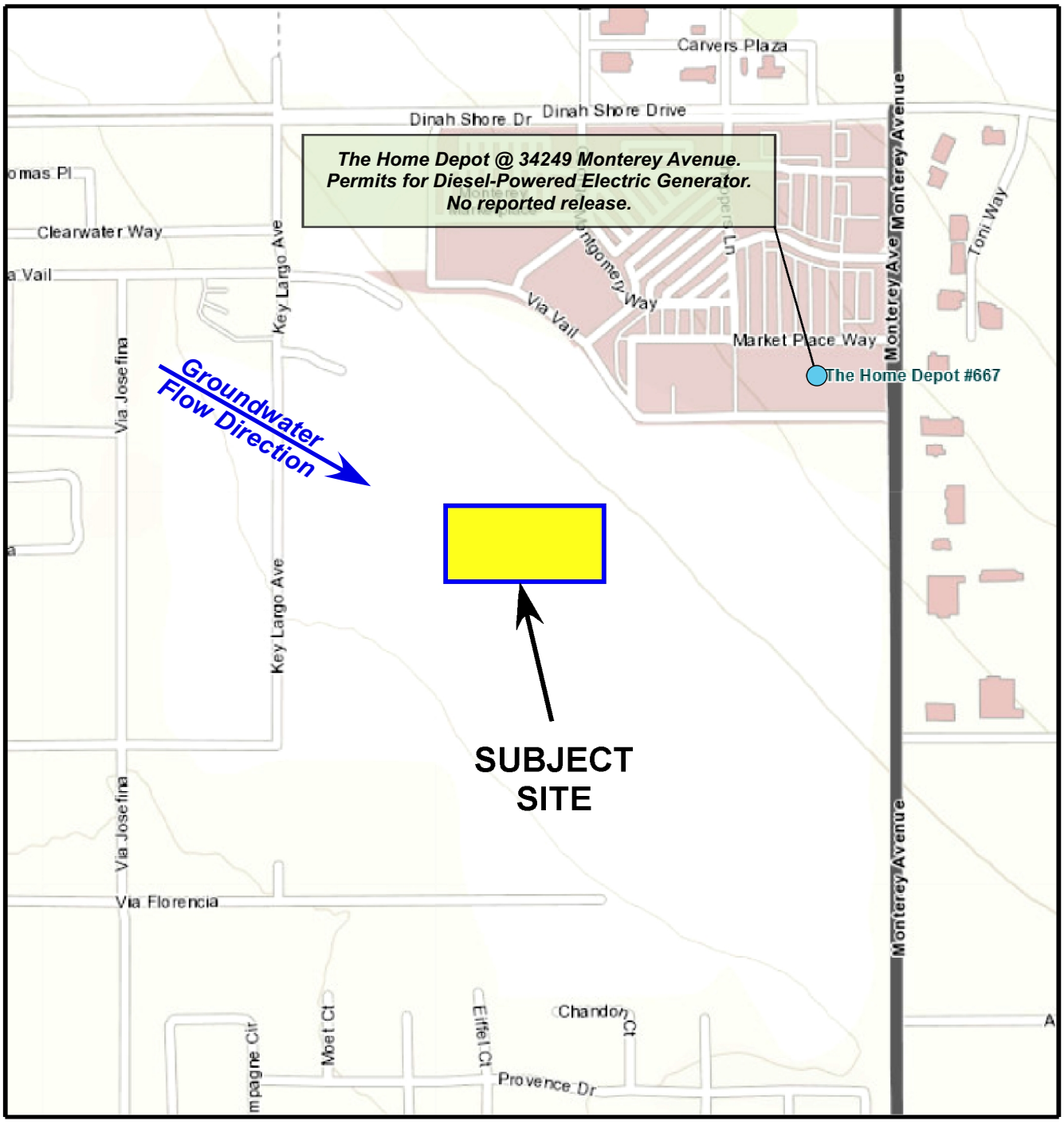
AGENCY DOCUMENTS
(CALIFORNIA GEOLOGIC ENERGY MANAGEMENT DIVISION)


Closest Well
(Chevron U.S.A. Inc.
'Stone (nct-1)' 1)
Varner Rd
Date Palm Dr
10
Ramon Rd
Thousand
Palms
Dinah Shore Dr
Gerald Ford Dr
SITE
LOCATION
athedral
City
Bob Hope Dr
Rancho Mirage
Frank Sinatra Dr
Frank Sinatra
Desert Willow
Approx. Scale:
0 2,125 4,250 feet
Source: California Geologic Energy Management Division (http://www.conservation.ca.gov/calgem)

APPENDIX E4

AGENCY DOCUMENTS
(SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT)

AQMD-REGULATED PROPERTIES IN SITE VICINITY



Approx. Scale:
0 325 650 feet

Source: http://www.aqmd.gov/

Appendix F
Preliminary Drainage Study

PRELIMINARY DRAINAGE STUDY

For

Rancho Mirage Affordable Apartments

Rancho Mirage, California
APN# 685-090-011 (Portion)

Prepared for:

The Pacific Companies
430 E. State Street, Suite 100
Eagle, ID 83616

Prepared by:

Atlas Civil Design, Inc.
872 Higuera Street,
San Luis Obispo, CA 93401
(619) 307-2749

Prepared: October 2024

TABLE OF CONTENTS

APPENDICES

I. PROJECT DESCRIPTION

Purpose

The purpose of this drainage report is to provide hydrologic and hydraulic calculations in support of the preliminary plans for the Rancho Mirage Affordable Apartments project. This report will demonstrate compliance with the retention requirements of the City of Rancho Mirage and the methodology of the Riverside County Flood Control and Water Conservation District Hydrology Manual, dated April 1978.

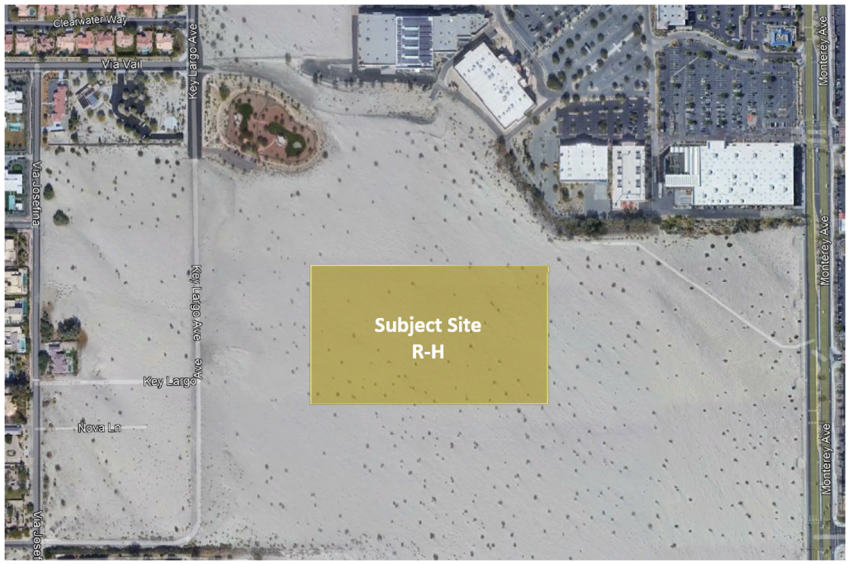
Project Summary

The project is located within a portion of a vacant parcel west of Key Largo Avenue in the City of Rancho Mirage within Riverside County in the State of California. The project is proposed within a 5.00-acre portion of larger city-owned parcel. The site is bounded by vacant land to the west, south, and east. The project is bounded to the north by currently vacant land planned for a future multifamily development, known as Via Vail Village, with proposed construction dates before that of the subject project. See the Vicinity Map below.

The proposed development includes seven multifamily buildings with a total of 150 residential units, as well as parking areas and outdoor amenity space. Offsite improvements include the construction of the public street, Via Vail, along the property frontage.

The site is located in FEMA Zone X, designated as an area of minimal flood hazard determined to be outside the 0.2% annual chance floodplain. The site is located within FEMA FIRM Panel No, 06065C1595G, effective date August 28, 2008, which can be found in Appendix C.

The site is located within the Indio Hydrologic Sub-Area (Sub-Area Number 719.47), Coachella Hydrologic Area, and Whitewater Hydrologic Unit, which ultimately drain toward the Salton Sea.



Vicinity Map
Not to scale

II. EXISTING CONDITIONS

The existing 5.00-acre site consists of vacant land covered in dune sand and sparse vegetation. Site elevations fall from southwest to northeast at an average grade of 3%.

Existing soils are sandy with relatively high infiltration rates. Groundwater was not encountered in geotechnical explorations and is anticipated to be approximately 160 feet below the ground surface. See Appendix D for the full geotechnical investigation report.

Runoff that does not infiltrate drains across the northern property line onto the proposed site of the Via Vail Village project or across the eastern property line onto vacant land planned for the future public street extension of Via Vail and a vacant parcel to the northeast.

The site receives significant runon from surrounding vacant lands. The open space property to the west and portions of the vacant land to the south all drain through the site toward the Via Vail Village site and the land planned for the public street, Via Vail.

The adjacent Via Vail Village project proposes a temporary retention basin on the subject project site to capture any runoff that reaches the Via Vail Village site in the existing condition.

The existing area tributary to and including the project has been delineated into two sub-basins. E1 includes the project area and upstream area that reach the northern and eastern property lines, continuing northeast. E2 includes a small portion of the site and upstream area that drains north within the public park property. Drainage from this area is tributary to a future retention basin for the park parcel proposed per the Via Vail Village plans.

See the Existing Conditions Drainage Exhibit in Appendix A for a graphic depiction of the existing sub-basins.

III. PROPOSED CONDITIONS

Proposed site improvements shall consist of seven multifamily housing buildings with surface parking and associated drive aisles, landscaping, pedestrian hardscape, and outdoor amenity areas. Site grades generally drain southwest to northeast as in the existing condition.

Offsite improvements consist of the construction of the public street, Via Vail, fronting the property. Via Vail will include a 40-foot curb-to-curb drive aisle with a 6-foot meandering sidewalk on the west side.

The proposed site has been delineated into the following sub-basins:

P1

P1 includes the onsite improvements. It includes runoff from roof, landscape, pedestrian hardscape, and vehicular hardscape areas. Drainage from roof areas will outlet at grade into planter areas surrounding the buildings. Landscape swales direct runoff to the area drain

system. Pedestrian sidewalks drain into the adjacent landscape areas or onto the drive aisle where applicable. Runoff in the drive aisle reaches a concrete gutter. Gutter flow is captured in inlets throughout the drive aisle. The private storm drain system collects runoff as described and conveys it to an underground storage tank, referred to as BMP 1.

Basin 1 is designed to retain the 100-year storm. Drainage is stored underground and infiltrated over time. In an emergency overflow condition, drainage would enter an outlet pipe connected to an outlet structure. Overflow drainage may exit the system through the grate and surface flow to the Via Vail right-of-way.

P2

P2 consists of the area within the Via Vail right-of-way west of the centerline. The City of Rancho Mirage requires projects to collect and retain drainage from half of the right-of-way fronting each property. This drainage will be collected in a storm drain inlet and piped onsite to BMP 1.

P3

P3 consists of the area within the right-of-way east of the centerline. The full width of Via Vail will be constructed to serve the project. While the project is not required to retain runoff from the eastern half of the right-of-way, the project proposes to collect and retain the drainage in BMP 1. P3 has been tabulated separately from P2 in order to tabulate the drainage the project would not typically be required to retain.

P4

P4 consists of the offsite area south of the site that is tributary to the site. This area is owned by the City of Rancho Mirage. The project proposes to collect the runoff and store in an offsite retention basin, referred to as BMP 2. BMP 2 is designed to retain the 100-year storm from the public parcel through infiltration. In an overflow condition, drainage would overtop an emergency spillway and surface flow to the Via Vail right-of-way.

P5

P5 includes the portion of offsite, upstream area tributary to the easterly property line that naturally drains north toward the public basin proposed per the Via Vail Village project. The drainage will continue to be directed north with a swale. No additional retention feature is proposed for this area as the public retention basin per the Via Vail Village project has been designed for this area.

See the Proposed Conditions Drainage Exhibit in Appendix A for a depiction of the proposed sub-basins and retention features.

IV. METHODOLOGY

Overview

The City of Rancho Mirage requires retention of the 100-year storm, considering the worst-case duration between the 1, 3, 6, and 24-hour storm durations. Hydrology calculations shall be performed in accordance with the Riverside County Hydrology Manual.

Hydrology

As the City of Rancho Mirage requires full retention of the 100-year storm, the proposed condition hydrology is the focus of this study, as opposed to calculating a difference in flow from the existing condition.

The Hydrology Manual specifies Rational Method for the 1-hour storm duration and the Synthetic Hydrograph Method for the 3-hour, 6-hour, and 24-hour storms. The Synthetic Hydrograph Method considers distribution of rainfall over time, allowing storm volume over various storm durations to be calculated. Retention basin sizing is based on storm volumes, and it was therefore necessary to utilize the Synthetic Hydrograph Method for all four storm durations.

The Synthetic Hydrograph Method is typically utilized for watersheds over 300 acres. The Hydrology Manual specifies a Short Cut Synthetic Hydrograph Method for retention basin sizing for drainage areas of less than 200 acres with lag times less than eight minutes. The Short Cut Synthetic Hydrograph Method has been implemented for this project as the site is five acres and lag times are expected to be relatively short.

The methodology outlined in Plate E-1.2 of the Hydrology Manual was followed and is described in more detail below. References can be found in Appendix C. The calculations described below were performed in Microsoft Excel and are provided in Appendix B.

Point Precipitation

Point rainfall data was obtained for the project location from the isohyetal maps for the 100-year storm for the 1, 3, 6, and 24-hour durations from plates D-4.4, E-5.2, E-5.1, and E-5.6 of the Hydrology Manual.

As the drainage areas are relatively small, aerial adjustment per Plate E-5.8 was not necessary.

Precipitation Intensity Pattern

Hydrology Manual Plate E-5.9 provides rainfall patterns in percentage for various time increments for the 3, 6, and 24-hour duration storms. A 5-minute increment was used for the 1, 3, and 6-hour duration storms. A 15-minute time increment was used for the 24-hour duration storm.

Plate E-5.9 does not provide a rainfall pattern for the 1-hour duration storm. For the 1-hour storm 5-minute increments, the pattern provided for the 3-hour storm in 15-minute increments was utilized.

For each time increment across the duration of each storm considered, the point precipitation was multiplied by the precipitation intensity pattern percentage for the given time increment. This resulted in a rainfall intensity for each time increment.

Loss Rate

Anticipated runoff loss rates due to infiltration, surface interception, evaporation, and other factors were considered.

The runoff curve number was obtained for the pervious area from Plate E-6.1, utilizing the value for urban, residential areas with good coverage and Type A soils.

Next, the infiltrate rate for pervious areas (F_p) was obtained from Plate E-6.2. The Hydrology Manual recommends Antecedent Moisture Condition II for the 100-year storm.

The percentage of imperviousness for each sub-basin was tabulated. The loss rate for pervious areas was then adjusted using the following equation:

$$F = F_p(1.00-0.9A_i)$$

Where: F = Adjusted loss rate (in/hr)
F_p = Loss rate for pervious areas (in/hr)
A_i = Impervious area (decimal percent)

For the 1,3, and 6-hour durations, the loss is considered constant. For the longer duration storm of 24-hours, the loss should be varied to decrease with time. The 24-hour loss rate for each time increment was calculated per the following equation:

$$F_T = [(F-F_m)/54](D-T)^{1.55} + F_m$$

Where: F_T = Adjusted loss rate at time T (in/hr)
F = Adjusted loss rate (in/hr)
D = Storm duration (hr) = 24 hours
T = time from beginning of storm (hr)
F_m = Minimum value on the loss curve (in/hr)

Per plate E-1.1, F_m is typically 50 to 75 percent of F. It was considered 50 percent of F for these calculations.

For some time increments, the loss rate exceeded the rainfall in the given increment. In those increments, a low loss rate was calculated. Per Plate E-1.1, the low loss rate is typically 80 to 90 percent of the rain fall rate. For these calculations, 90 percent was selected.

Effective Rainfall Rate

The effective rainfall rate for each time increment was calculated by subtracting the loss rate from the rainfall intensity for the given increment.

Flood Hydrograph

The flow rate over each time increment was calculated by multiplying the effective rainfall rate by the sub-basin area. The result of the calculations is four time series of runoff over time for the four storm durations considered.

Basin Routing

In order to show retention of the 100-year storm, BMP routing calculations needed to be performed. BMP routing calculations were performed in the hydrology spreadsheet.

For each time increment, a volume of runoff was calculated by multiplying the runoff rate from the hydrograph time series by the time increment (ie. 5 minutes or 15 minutes).

Both BMPs were modeled as basins. BMP 1 is an underground storage vault with 90 percent void space. BMP 1 was modeled as a basin by considering the top area to be the same as the bottom area. The void space was considered by modeling the dimensions (length, width, and height) as the cube root of 90 percent multiplied by each of the proposed dimensions. BMP 1 also includes a gravel layer on all sides of the tank. Although this layer provides additional storage, its volume has, conservatively, not been included in the routing analysis.

For the basin shape, volume over various storage depths can be calculated using the volume equation for a pyramidal frustum based on the bottom area, top area, and depth per the following equation:

$$V = (1/3)\, d\, (A_{top} + A_{bottom} + (A_{top}A_{bottom})^{0.5})$$

Where: V = Volume at depth, d (CF)
d = depth of water in basin (ft)
A_{top} = Area of the top of basin (SF)
A_{bottom} = Area of the bottom of basin (SF)

Freeboard of 1 foot minimum is proposed for the retention BMPs. For the calculations, the top of basin was considered to be below the freeboard. Therefore, the maximum depth listed in the calculations is 1 foot below the graded top of basin.

Infiltration was considered based on the geotechnical testing in Appendix D. A factor of safety of 3 was utilized per the Whitewater River Region Stormwater Quality BMP Design Handbook for LID Appendix B, Table 1. The measured infiltration was divided by the factor of safety, resulting in a design infiltration rate. Calculations are provided in Appendix B.

For each time increment, the volume of drainage infiltrated was calculated based on the basin area and the design infiltration rate.

Where the infiltration volume calculated exceeded the incoming flow volume for the time period, the infiltrated volume in the time period was considered to be the incoming flow volume. Where the incoming flow volume exceeded the infiltration volume, the volume needing to be stored in the basin was calculated as the incoming flow volume less the infiltration volume.

At each step, the incoming flow volume minus the infiltrated volume was added to the basin storage volume from the previous time step, resulting in the current volume being stored in the basin at each time step. The volume equation above was utilized to calculate the depth of water for the volume of water in the basin at each time step.

If the volume needing storage exceeded the maximum storage of the basin, the difference between water volume needing storage and the maximum storage would be the volume overflowing from the basin at the given time period. That volume would then be divided by the time increment length to calculate an overflow rate at the given time period.

If the volume needing storage never exceeded the maximum storage, the storm can be considered fully retained with no overflow from the basin.

Basin Drawdown

Retention basin drawdown was calculated by dividing the high water depth by the design infiltration rate. Calculations are provided in Appendix B.

Pipes Sizing

Pipes, gutters, and curb inlets were not sized in preliminary engineering. In final engineering, public pipes, gutters and curb inlets will be sized per the Riverside County Flood Control Water Conservation District Hydraulic Design Manual, dated 2024. The Hydraulic Design Manual requires pipes to be sized for the 100-year storm with the hydraulic grade line at least 0.5 feet below ground surface. The manual requires gutter and inlet drainage to allow the 10-year storm to be contained within the limits of the curbs and the 100-year storm to be contained within the limits of the right-of-way.

Private onsite pipes, curbs, and gutters will be sized to ensure no flooding reaches the proposed buildings in the 100-year storm.

V. RESULTS

The table below summarizes the peak flow from the site and upstream tributary areas for the 100-year storm in the proposed condition. The worst-case duration of 1-hour is reported below. Results for the 3-hour, 6-hour, and 24-hour are provided in the calculations in Appendix B.

Peak Flow Results

Sub-Basin	Area (AC)	Impervious Area (%)	Unmitigated Q_{100} (CFS) (Prior to BMP Routing)	Mitigated Q_{100} (CFS) (Overflow from BMP)
P1	4.77	82%		
P2	0.23	89%		
P3	0.23	87%		
Total BMP 1	5.23	83%	16.8	0
P4	15.54	0%		
Total BMP 2	15.54	0%	41.4	0
P5	0.23	0%		
Total to Via Vail Village Offsite Basin	0.23	0%	0.6	0

The table below summarizes the parameters of the retention BMPs used in the routing analysis.

Retention BMP Summary

Retention BMP	Drainage Retained	Bottom Area (SF)	Depth (ft)	Side Slope (H:V)	High Water Depth (ft)	Freeboard (ft)	Drawdown (hr)
1	Private and Public	4,950	6.8	3:1	5.7	1.1	16.5
2	Public	37,000	2.0	3:1	1.0	1.0	3.0

The results of the routing analysis verify that the proposed retention BMPs have been sized adequately to retain the 100-year storm event with adequate freeboard and that the facilities will drawdown fully within appropriate time frames. The County of Riverside Hydraulic Design Manual recommends 72 hours for detention basin drawdown, which this project is considering an appropriate guideline for retention BMPs.

Hydraulic analysis of pipes, inlets, and gutters will be provided in final engineering.

VI. WATER QUALITY NOTE

The project is located within the Whitewater River MS4 Region. Water quality requirements are addressed in a separate Water Quality Management Memo and are not discussed in this report.

VII. CONCLUSION

The proposed retention BMPs have been adequately designed to meet the City of Rancho Mirage retention requirements. In a 100-year storm of durations 1-hour, 3-hour, 6-hour, and 24-hour, runoff will remain within the retention BMPs and underground pipe system, posing no threat to people or structures. Overflow structures and overland flow paths to the Via Vail right-of-way are provided for conditions exceeding the 100-year storm.

VIII. DECLARATION OF RESPONSIBLE CHARGE

I hereby declare that I am the engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Profession Code, and that the design is consistent with the prevailing standard of the engineering profession for similar work.

I understand that the check of project drawings and specifications by the City of Rancho Mirage is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for the project design.

_____

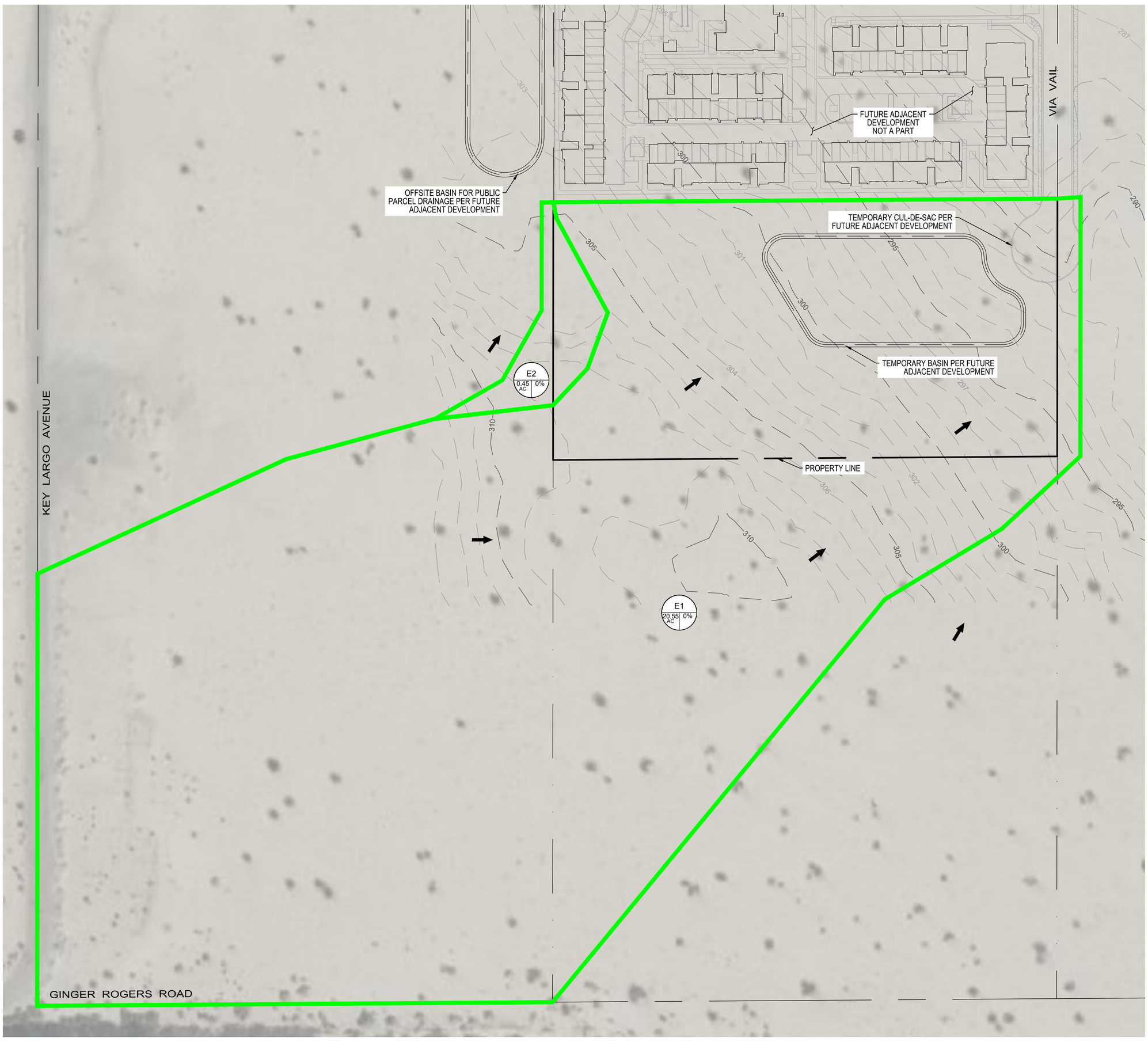
Shannon Dow-Davis Leandro **Date**
R.C.E. No. 84364 **Exp. 09/30/25**

APPENDIX A

Drainage Exhibits

EXISTING CONDITIONS DRAINAGE EXHIBIT

RANCHO MIRAGE AFFORDABLE APARTMENTS



LEGEND

- PROPERTY BOUNDARY LINE
- CENTERLINE
- 335 EXISTING CONTOURS
- DMA BOUNDARY
- FLOW DIRECTION

SITE INFORMATION

HYDROLOGIC SOIL GROUP: A

DEPTH TO GROUNDWATER: APPROXIMATELY 160'

FLOOD ZONE DESIGNATION: X – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN PER FEMA

N

GRAPHIC SCALE

80 0 80 160

(IN FEET)

1" = 80'

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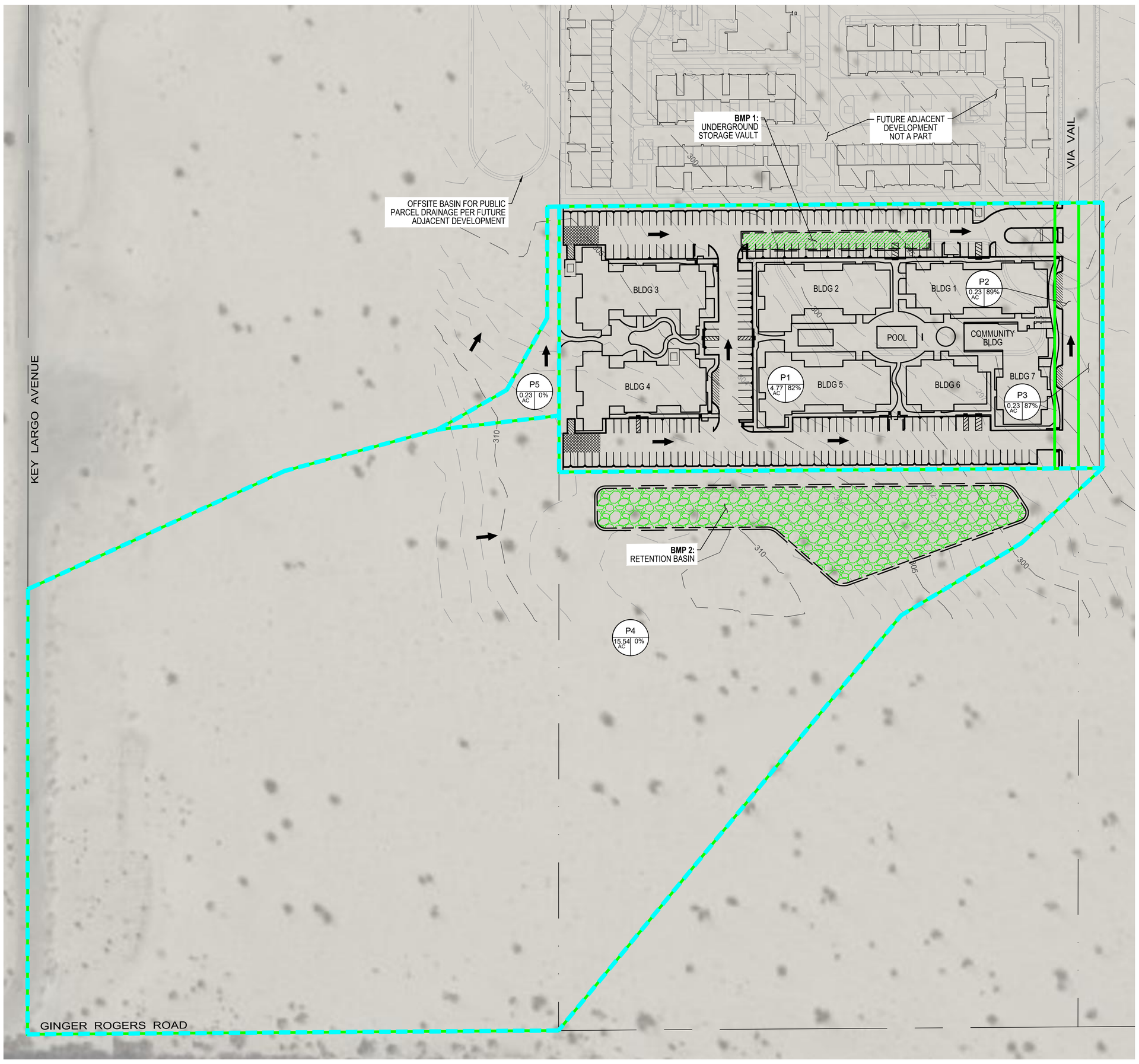
PROPOSED CONDITIONS DRAINAGE EXHIBIT

RANCHO MIRAGE AFFORDABLE APARTMENTS



GRAPHIC SCALE

80 0 80 160

(IN FEET)

1" = 80'

SITE INFORMATION

HYDROLOGIC SOIL GROUP: A

DEPTH TO GROUNDWATER: APPROXIMATELY 160'

FLOOD ZONE DESIGNATION: X – AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN PER FEMA

DMA SUMMARY

SUB-BASIN	AREA (AC)	IMPERVIOUS AREA (%)	UNMITIGATED Q_{100} (CFS) (PRIOR TO BMP ROUTING)	MITIGATED Q_{100} (CFS) (OVERFLOW FROM BMP)
P1	4.77	82%		
P2	0.23	89%		
P3	0.23	87%		
TOTAL BMP 1	5.23	83%	16.8	0
P4	15.54	0%		
TOTAL BMP 2	15.54	0%	41.4	0
P5	0.23	0%		
TOTAL TO VIA VAIL VILLAGE OFFSITE BASIN	0.23	0%	0.6	0

LEGEND

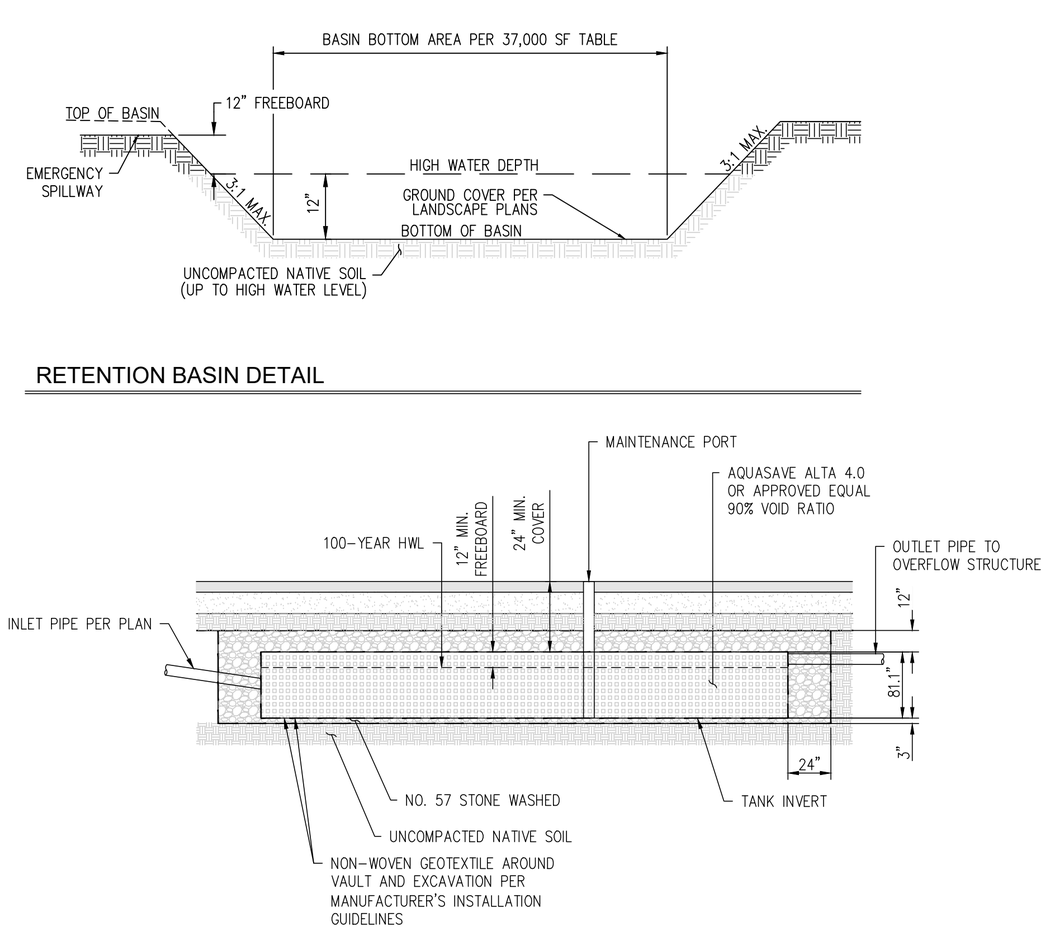
- DMA BOUNDARY
- BASIN DIVIDE
- FLOW DIRECTION
- RETENTION BASIN
- UNDERGROUND STORAGE VAULT
- DMA1 — DMA ID
- X.X AC — TOTAL AREA IN ACRES
- X.X — DMA IMPERVIOUSNESS

BMP SUMMARY

RETENTION BMP	DRAINAGE RETAINED	BOTTOM AREA (SF)	DEPTH (FT)	SIDE SLOPE (H:V)	HIGH WATER DEPTH (FT)	FREEBOARD (FT)	DRAWDOWN (HR)
1	PRIVATE AND PUBLIC	4,950	6.8	3:1	5.7	1.1	16.5
2	PUBLIC	37,000	2.0	3:1	1.0	1.0	3.0

RETENTION BASIN DETAIL

UNDERGROUND STORAGE TANK DETAIL



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APPENDIX B

Hydrology and Routing Calculations

Rancho Mirage Affordable Apartments - Sub-Basin Area Tabulation

Existing Condition

Sub-Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Pervious Area (SF)	Impervious Fraction
E1	895,000	20.55	0	895,000	0
E2	19,700	0.45	0	19,700	0

Proposed Condition

Sub-Basin	Total Area (SF)	Total Area (AC)	Impervious Area (SF)	Pervious Area (SF)	Impervious Fraction
P1	207,800	4.77	171,100	36,700	0.82
P2	10,000	0.23	8,900	1,100	0.89
P3	10,000	0.23	8,700	1,300	0.87
Total to BMP 1	227,800	5.23	188,700	39,100	0.83
P4	677,000	15.54	0	677,000	0
P5	9,900	0.23	0	9,900	0

Rancho Mirage Affordable Apartments - Design Infiltration Rate

Test[1]	Infiltration Rate (in/hr)
P-1	12.00

Factor of Safety[2]	3	
Design infiltration rate	4.00	in/hr

[1] Per infiltration testing results in Appendix D.

[2] Per *Whitewater River Region Stormwater Quality BMP Design Handbook for LID* Appendix B, Table 1.

HYDROLOGY CALCULATIONS - Rancho Mirage Affordable Apartments - BMP 1 — **Program Updated 04/05/2024 by LZ**

Using the RCFC&WCD Short Cut Unit Hydrograph Method
Area Designations **BMP 1 - Area P1, P2, P3**

	Area 1				
Drainage Area (ac.)	**5.2300**				
Unit time (minutes)	**5**	**5**	**5**	**15**	
100 Year Storm Duration (hrs)	1	3	6	24	
Total Precipitation (Plates D-4.4,E-5.2, 5.4, 5.6)(in.)	**1.6**	**2.00**	**2.50**	**3.50**	Or data from NOAA interactive website
Soils Group	A				
AMC index II Runoff Number (plate E-6.1)	32				
Plate E-6.2 Pervious Area Loss Rate (Fp)(in/hr)	0.74	(AMC II)			
Percentage of Impervious Cover (Ai)(%) (plate E-6.3)		**83**			
Weighted Average Loss Rate (F=Fp(1-.9Ai))(in./hr.)	0.19	(used for 1, 3, and 6 hour storm, the 24 hour storm uses variable maximum loss rate per plate E-1.1 (3 of 6))			
Low Loss Rate Percent (%)	90	(typically 80-90%)			
Minimum value percentage on loss rate curve (Fm)(int/hr)		50	(typically 50-75%)		
Retention Basin Infiltration Rate (in/hr)	**4**	(also used for drywell percolation rate)			

Note: Vault has 90% void ratio.
Volume = 0.9 x L x W x D
Volume = $(0.9^{1/3}xL) \times (0.9^{1/3}xW) \times (0.9^{1/3}xD)$
Model area as $(0.9^{1/3}xL) \times (0.9^{1/3}xW)$
Model Depth as $(0.9^{1/3}xD)$

Depth below freeboard = 5.7 ft
Model depth = 5.5 ft

Area of footprint = 4950 SF
Model Area = 4610 SF

Percolation is taken incrementally.
Basin volume is calculated using the "truncated pyramid" formula, a more conservative estimate than "averaged end areas" sometimes used

Basin is zeroed out by reducing variables to 0.001, Zero would crash spreadsheet.

(Drywell can be "zeroed out" by reducing numbers to less than .001, but should not entered as zeros or program chokes.)
Drywell storage includes 40% of the 1' wide rock bed surrounding the drywell: formula (upper)*PI()*(diam/2)^2+(lower)*PI()*((diam/2)^2+0.4*((diam/2+(grav+0.4166))^2-(diam/2+0.4166)^2))
The drywell wall thickness is assumed at 5" (0.4166) and the gravel bed width is variable "grav"

Drywell design factors **Upper sec. (ft.)=** **0.001** **Lower sec. (ft.)=** **0.001** **Ring diam. (ft.) =** **0.001** **Drywell lower max. (cf)=** **0.00** **Upper max.(cf)=** **0.00**
Gravel bed width around drywell= **0.001** **Drywell total(cf)=** **0.00**

Ret. Basin design (area, depth) **Top =** **4610** s.f. **Bot. =** **4610** **s.f.** **Max. Depth (d)=** **5.5** **Max. storage=** **25355.00** (d/3)*(bottom+top+(bottom*top)^0.50)
Formulas **vol=(h/3)*(bottom+top+(bottom*top)^0.50)** **area=bottom+(h/d)*(top-bottom)** **h=(vol*3)/(bottom+top+(bottom*top)^0.5)** **(values must be non-zero or error occurs)**
Outside input from: **N/A** (Max. depth excludes the freeboard. Freeboard provided is on top of max. depth.)

1 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	3.7	0.71	0.19	N/A	0.5232	2.7590	827.71	0.00	0.00	0.00	0.00	0.00	827.71	4610.00	128.06	699.65	0.15	0.00	0.00
0:10	4.8	0.92	0.19	N/A	0.7344	3.8728	1161.84	0.00	0.00	0.00	0.00	0.00	1161.84	4610.00	128.06	1733.44	0.38	0.00	0.00
0:15	5.1	0.98	0.19	N/A	0.7920	4.1766	1252.97	0.00	0.00	0.00	0.00	0.00	1252.97	4610.00	128.06	2858.36	0.62	0.00	0.00
0:20	4.9	0.94	0.19	N/A	0.7536	3.9741	1192.22	0.00	0.00	0.00	0.00	0.00	1192.22	4610.00	128.06	3922.52	0.85	0.00	0.00
0:25	6.6	1.27	0.19	N/A	1.0800	5.6954	1708.61	0.00	0.00	0.00	0.00	0.00	1708.61	4610.00	128.06	5503.08	1.19	0.00	0.00
0:30	7.3	1.40	0.19	N/A	1.2144	6.4041	1921.24	0.00	0.00	0.00	0.00	0.00	1921.24	4610.00	128.06	7296.26	1.58	0.00	0.00
0:35	8.4	1.61	0.19	N/A	1.4256	7.5179	2255.37	0.00	0.00	0.00	0.00	0.00	2255.37	4610.00	128.06	9423.58	2.04	0.00	0.00
0:40	9	1.73	0.19	N/A	1.5408	8.1254	2437.63	0.00	0.00	0.00	0.00	0.00	2437.63	4610.00	128.06	11733.16	2.55	0.00	0.00
0:45	12.3	2.36	0.19	N/A	2.1744	11.4668	3440.03	0.00	0.00	0.00	0.00	0.00	3440.03	4610.00	128.06	15045.13	3.26	0.00	0.00
0:50	17.6	3.38	0.19	N/A	3.1920	**16.8332**	**5049.95**	0.00	0.00	0.00	0.00	0.00	5049.95	4610.00	128.06	19967.03	4.33	**0.00**	**0.00**
0:55	16.1	3.09	0.19	N/A	2.9040	15.3144	4594.31	0.00	0.00	0.00	0.00	0.00	4594.31	4610.00	128.06	24433.29	5.30	0.00	0.00
1:00	4.2	0.81	0.19	N/A	0.6192	3.2653	979.59	0.00	0.00	0.00	0.00	0.00	979.59	4610.00	128.06	25284.82	5.48	0.00	0.00
1:05	0	0.00	0.19	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4610.00	128.06	25156.76	5.46	0.00	0.00
					Total volume (cf)		**26821.49**											**0.00**	

3 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Max.	Value Min.		Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	1.3	0.31	0.19	N/A		0.1248	0.6580	197.41	0.00	0.00	0.00	0.00	0.00	197.41	4610.00	128.06	69.36	0.02	0.00	0.00
0:10	1.3	0.31	0.19	N/A		0.1248	0.6580	197.41	0.00	0.00	0.00	0.00	0.00	197.41	4610.00	128.06	138.71	0.03	0.00	0.00
0:15	1.1	0.26	0.19	N/A		0.0768	0.4049	121.47	0.00	0.00	0.00	0.00	0.00	121.47	4610.00	128.06	132.13	0.03	0.00	0.00
0:20	1.5	0.36	0.19	N/A		0.1728	0.9112	273.35	0.00	0.00	0.00	0.00	0.00	273.35	4610.00	128.06	277.42	0.06	0.00	0.00
0:25	1.5	0.36	0.19	N/A		0.1728	0.9112	273.35	0.00	0.00	0.00	0.00	0.00	273.35	4610.00	128.06	422.72	0.09	0.00	0.00
0:30	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	681.92	0.15	0.00	0.00
0:35	1.5	0.36	0.19	N/A		0.1728	0.9112	273.35	0.00	0.00	0.00	0.00	0.00	273.35	4610.00	128.06	827.22	0.18	0.00	0.00
0:40	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	1086.42	0.24	0.00	0.00
0:45	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	1345.63	0.29	0.00	0.00
0:50	1.5	0.36	0.19	N/A		0.1728	0.9112	273.35	0.00	0.00	0.00	0.00	0.00	273.35	4610.00	128.06	1490.92	0.32	0.00	0.00
0:55	1.6	0.38	0.19	N/A		0.1968	1.0377	311.32	0.00	0.00	0.00	0.00	0.00	311.32	4610.00	128.06	1674.19	0.36	0.00	0.00
1:00	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	1933.39	0.42	0.00	0.00
1:05	2.2	0.53	0.19	N/A		0.3408	1.7971	539.14	0.00	0.00	0.00	0.00	0.00	539.14	4610.00	128.06	2344.48	0.51	0.00	0.00
1:10	2.2	0.53	0.19	N/A		0.3408	1.7971	539.14	0.00	0.00	0.00	0.00	0.00	539.14	4610.00	128.06	2755.56	0.60	0.00	0.00
1:15	2.2	0.53	0.19	N/A		0.3408	1.7971	539.14	0.00	0.00	0.00	0.00	0.00	539.14	4610.00	128.06	3166.65	0.69	0.00	0.00
1:20	2	0.48	0.19	N/A		0.2928	1.5440	463.20	0.00	0.00	0.00	0.00	0.00	463.20	4610.00	128.06	3501.79	0.76	0.00	0.00
1:25	2.6	0.62	0.19	N/A		0.4368	2.3034	691.02	0.00	0.00	0.00	0.00	0.00	691.02	4610.00	128.06	4064.75	0.88	0.00	0.00
1:30	2.7	0.65	0.19	N/A		0.4608	2.4300	728.99	0.00	0.00	0.00	0.00	0.00	728.99	4610.00	128.06	4665.69	1.01	0.00	0.00
1:35	2.4	0.58	0.19	N/A		0.3888	2.0503	615.08	0.00	0.00	0.00	0.00	0.00	615.08	4610.00	128.06	5152.71	1.12	0.00	0.00
1:40	2.7	0.65	0.19	N/A		0.4608	2.4300	728.99	0.00	0.00	0.00	0.00	0.00	728.99	4610.00	128.06	5753.64	1.25	0.00	0.00
1:45	3.3	0.79	0.19	N/A		0.6048	3.1894	956.81	0.00	0.00	0.00	0.00	0.00	956.81	4610.00	128.06	6582.39	1.43	0.00	0.00
1:50	3.1	0.74	0.19	N/A		0.5568	2.9362	880.87	0.00	0.00	0.00	0.00	0.00	880.87	4610.00	128.06	7335.21	1.59	0.00	0.00
1:55	2.9	0.70	0.19	N/A		0.5088	2.6831	804.93	0.00	0.00	0.00	0.00	0.00	804.93	4610.00	128.06	8012.08	1.74	0.00	0.00
2:00	3	0.72	0.19	N/A		0.5328	2.8097	842.90	0.00	0.00	0.00	0.00	0.00	842.90	4610.00	128.06	8726.92	1.89	0.00	0.00
2:05	3.1	0.74	0.19	N/A		0.5568	2.9362	880.87	0.00	0.00	0.00	0.00	0.00	880.87	4610.00	128.06	9479.73	2.06	0.00	0.00
2:10	4.2	1.01	0.19	N/A		0.8208	4.3285	1298.54	0.00	0.00	0.00	0.00	0.00	1298.54	4610.00	128.06	10650.21	2.31	0.00	0.00
2:15	5	1.20	0.19	N/A		1.0128	5.3410	1602.29	0.00	0.00	0.00	0.00	0.00	1602.29	4610.00	128.06	12124.45	2.63	0.00	0.00
2:20	3.5	0.84	0.19	N/A		0.6528	3.4425	1032.75	0.00	0.00	0.00	0.00	0.00	1032.75	4610.00	128.06	13029.14	2.83	0.00	0.00
2:25	6.8	1.63	0.19	N/A		1.4448	7.6192	2285.75	0.00	0.00	0.00	0.00	0.00	2285.75	4610.00	128.06	15186.84	3.29	0.00	0.00
2:30	7.3	1.75	0.19	N/A		1.5648	8.2520	2475.60	0.00	0.00	0.00	0.00	0.00	2475.60	4610.00	128.06	17534.38	3.80	0.00	0.00
2:35	8.2	1.97	0.19	N/A		1.7808	**9.3911**	**2817.33**	0.00	0.00	0.00	0.00	0.00	2817.33	4610.00	128.06	20223.65	4.39	**0.00**	**0.00**
2:40	5.9	1.42	0.19	N/A		1.2288	6.4801	1944.02	0.00	0.00	0.00	0.00	0.00	1944.02	4610.00	128.06	22039.62	4.78	0.00	0.00
2:45	2	0.48	0.19	N/A		0.2928	1.5440	463.20	0.00	0.00	0.00	0.00	0.00	463.20	4610.00	128.06	22374.76	4.85	0.00	0.00
2:50	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	22633.97	4.91	0.00	0.00
2:55	1.8	0.43	0.19	N/A		0.2448	1.2909	387.26	0.00	0.00	0.00	0.00	0.00	387.26	4610.00	128.06	22893.17	4.97	0.00	0.00
3:00	0.6	0.14	0.19	0.13		0.0144	0.0759	22.78	0.00	0.00	0.00	0.00	0.00	22.78	4610.00	128.06	22787.90	4.94	0.00	0.00
3:05	0	0.00	0.19	0.00		0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4610.00	128.06	22659.84	4.92	0.00	0.00
					Total volume (cf)			**27397.90**								**Total Overflow (cf)**			**0.00**	

6 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	0.5	0.15	0.19	0.14	0.0150	0.0791	23.73	0.00	0.00	0.00	0.00	0.00	23.73	4610.00	23.73	0.00	0.00	0.00	0.00
0:10	0.6	0.18	0.19	0.16	0.0180	0.0949	28.48	0.00	0.00	0.00	0.00	0.00	28.48	4610.00	28.48	0.00	0.00	0.00	0.00
0:15	0.6	0.18	0.19	0.16	0.0180	0.0949	28.48	0.00	0.00	0.00	0.00	0.00	28.48	4610.00	28.48	0.00	0.00	0.00	0.00
0:20	0.6	0.18	0.19	0.16	0.0180	0.0949	28.48	0.00	0.00	0.00	0.00	0.00	28.48	4610.00	28.48	0.00	0.00	0.00	0.00
0:25	0.6	0.18	0.19	0.16	0.0180	0.0949	28.48	0.00	0.00	0.00	0.00	0.00	28.48	4610.00	28.48	0.00	0.00	0.00	0.00
0:30	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
0:35	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
0:40	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
0:45	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
0:50	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
0:55	0.7	0.21	0.19	N/A	0.0228	0.1201	36.04	0.00	0.00	0.00	0.00	0.00	36.04	4610.00	36.04	0.00	0.00	0.00	0.00
1:00	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:05	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:10	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:15	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:20	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:25	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:30	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:35	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:40	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:45	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:50	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
1:55	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	83.50	0.00	0.00	0.00	0.00
2:00	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	2.91	0.00	0.00	0.00
2:05	0.8	0.24	0.19	N/A	0.0528	0.2783	83.50	0.00	0.00	0.00	0.00	0.00	83.50	4610.00	128.06	0.00	0.00	0.00	0.00
2:10	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	2.91	0.00	0.00	0.00
2:15	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	5.82	0.00	0.00	0.00
2:20	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	8.73	0.00	0.00	0.00
2:25	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	11.63	0.00	0.00	0.00
2:30	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	14.54	0.00	0.00	0.00
2:35	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	17.45	0.00	0.00	0.00
2:40	0.9	0.27	0.19	N/A	0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	20.36	0.00	0.00	0.00
2:45	1	0.30	0.19	N/A	0.1128	0.5948	178.43	0.00	0.00	0.00	0.00	0.00	178.43	4610.00	128.06	70.73	0.02	0.00	0.00
2:50	1	0.30	0.19	N/A	0.1128	0.5948	178.43	0.00	0.00	0.00	0.00	0.00	178.43	4610.00	128.06	121.10	0.03	0.00	0.00
2:55	1	0.30	0.19	N/A	0.1128	0.5948	178.43	0.00	0.00	0.00	0.00	0.00	178.43	4610.00	128.06	171.47	0.04	0.00	0.00
3:00	1	0.30	0.19	N/A	0.1128	0.5948	178.43	0.00	0.00	0.00	0.00	0.00	178.43	4610.00	128.06	221.84	0.05	0.00	0.00
3:05	1	0.30	0.19	N/A	0.1128	0.5948	178.43	0.00	0.00	0.00	0.00	0.00	178.43	4610.00	128.06	272.21	0.06	0.00	0.00
3:10	1.1	0.33	0.19	N/A	0.1428	0.7530	225.89	0.00	0.00	0.00	0.00	0.00	225.89	4610.00	128.06	370.05	0.08	0.00	0.00
3:15	1.1	0.33	0.19	N/A	0.1428	0.7530	225.89	0.00	0.00	0.00	0.00	0.00	225.89	4610.00	128.06	467.88	0.10	0.00	0.00
3:20	1.1	0.33	0.19	N/A	0.1428	0.7530	225.89	0.00	0.00	0.00	0.00	0.00	225.89	4610.00	128.06	565.71	0.12	0.00	0.00
3:25	1.2	0.36	0.19	N/A	0.1728	0.9112	273.35	0.00	0.00	0.00	0.00	0.00	273.35	4610.00	128.06	711.01	0.15	0.00	0.00
3:30	1.3	0.39	0.19	N/A	0.2028	1.0694	320.81	0.00	0.00	0.00	0.00	0.00	320.81	4610.00	128.06	903.77	0.20	0.00	0.00
3:35	1.4	0.42	0.19	N/A	0.2328	1.2276	368.28	0.00	0.00	0.00	0.00	0.00	368.28	4610.00	128.06	1143.99	0.25	0.00	0.00
3:40	1.4	0.42	0.19	N/A	0.2328	1.2276	368.28	0.00	0.00	0.00	0.00	0.00	368.28	4610.00	128.06	1384.21	0.30	0.00	0.00
3:45	1.5	0.45	0.19	N/A	0.2628	1.3858	415.74	0.00	0.00	0.00	0.00	0.00	415.74	4610.00	128.06	1671.89	0.36	0.00	0.00
3:50	1.5	0.45	0.19	N/A	0.2628	1.3858	415.74	0.00	0.00	0.00	0.00	0.00	415.74	4610.00	128.06	1959.57	0.43	0.00	0.00
3:55	1.6	0.48	0.19	N/A	0.2928	1.5440	463.20	0.00	0.00	0.00	0.00	0.00	463.20	4610.00	128.06	2294.72	0.50	0.00	0.00
4:00	1.6	0.48	0.19	N/A	0.2928	1.5440	463.20	0.00	0.00	0.00	0.00	0.00	463.20	4610.00	128.06	2629.86	0.57	0.00	0.00

4:05	1.7	0.51	0.19	N/A		0.3228	1.7022	510.66	0.00	0.00	0.00	0.00	0.00	510.66	4610.00	128.06	3012.47	0.65	0.00	0.00
4:10	1.8	0.54	0.19	N/A		0.3528	1.8604	558.12	0.00	0.00	0.00	0.00	0.00	558.12	4610.00	128.06	3442.54	0.75	0.00	0.00
4:15	1.9	0.57	0.19	N/A		0.3828	2.0186	605.59	0.00	0.00	0.00	0.00	0.00	605.59	4610.00	128.06	3920.07	0.85	0.00	0.00
4:20	2	0.60	0.19	N/A		0.4128	2.1768	653.05	0.00	0.00	0.00	0.00	0.00	653.05	4610.00	128.06	4445.06	0.96	0.00	0.00
4:25	2.1	0.63	0.19	N/A		0.4428	2.3350	700.51	0.00	0.00	0.00	0.00	0.00	700.51	4610.00	128.06	5017.52	1.09	0.00	0.00
4:30	2.1	0.63	0.19	N/A		0.4428	2.3350	700.51	0.00	0.00	0.00	0.00	0.00	700.51	4610.00	128.06	5589.97	1.21	0.00	0.00
4:35	2.2	0.66	0.19	N/A		0.4728	2.4932	747.97	0.00	0.00	0.00	0.00	0.00	747.97	4610.00	128.06	6209.89	1.35	0.00	0.00
4:40	2.3	0.69	0.19	N/A		0.5028	2.6515	795.44	0.00	0.00	0.00	0.00	0.00	795.44	4610.00	128.06	6877.27	1.49	0.00	0.00
4:45	2.4	0.72	0.19	N/A		0.5328	2.8097	842.90	0.00	0.00	0.00	0.00	0.00	842.90	4610.00	128.06	7592.11	1.65	0.00	0.00
4:50	2.4	0.72	0.19	N/A		0.5328	2.8097	842.90	0.00	0.00	0.00	0.00	0.00	842.90	4610.00	128.06	8306.95	1.80	0.00	0.00
4:55	2.5	0.75	0.19	N/A		0.5628	2.9679	890.36	0.00	0.00	0.00	0.00	0.00	890.36	4610.00	128.06	9069.26	1.97	0.00	0.00
5:00	2.6	0.78	0.19	N/A		0.5928	3.1261	937.82	0.00	0.00	0.00	0.00	0.00	937.82	4610.00	128.06	9879.02	2.14	0.00	0.00
5:05	3.1	0.93	0.19	N/A		0.7428	3.9171	1175.13	0.00	0.00	0.00	0.00	0.00	1175.13	4610.00	128.06	10926.10	2.37	0.00	0.00
5:10	3.6	1.08	0.19	N/A		0.8928	4.7081	1412.44	0.00	0.00	0.00	0.00	0.00	1412.44	4610.00	128.06	12210.49	2.65	0.00	0.00
5:15	3.9	1.17	0.19	N/A		0.9828	5.1828	1554.83	0.00	0.00	0.00	0.00	0.00	1554.83	4610.00	128.06	13637.27	2.96	0.00	0.00
5:20	4.2	1.26	0.19	N/A		1.0728	5.6574	1697.22	0.00	0.00	0.00	0.00	0.00	1697.22	4610.00	128.06	15206.43	3.30	0.00	0.00
5:25	4.7	1.41	0.19	N/A		1.2228	6.4484	1934.53	0.00	0.00	0.00	0.00	0.00	1934.53	4610.00	128.06	17012.91	3.69	0.00	0.00
5:30	5.6	1.68	0.19	N/A		1.4928	**7.8723**	**2361.69**	0.00	0.00	0.00	0.00	0.00	2361.69	4610.00	128.06	19246.54	4.17	**0.00**	**0.00**
5:35	1.9	0.57	0.19	N/A		0.3828	2.0186	605.59	0.00	0.00	0.00	0.00	0.00	605.59	4610.00	128.06	19724.07	4.28	0.00	0.00
5:40	0.9	0.27	0.19	N/A		0.0828	0.4365	130.96	0.00	0.00	0.00	0.00	0.00	130.96	4610.00	128.06	19726.98	4.28	0.00	0.00
5:45	0.6	0.18	0.19	0.16		0.0180	0.0949	28.48	0.00	0.00	0.00	0.00	0.00	28.48	4610.00	128.06	19627.40	4.26	0.00	0.00
5:50	0.5	0.15	0.19	0.14		0.0150	0.0791	23.73	0.00	0.00	0.00	0.00	0.00	23.73	4610.00	128.06	19523.08	4.23	0.00	0.00
5:55	0.3	0.09	0.19	0.08		0.0090	0.0475	14.24	0.00	0.00	0.00	0.00	0.00	14.24	4610.00	128.06	19409.26	4.21	0.00	0.00
6:00	0.2	0.06	0.19	0.05		0.0060	0.0316	9.49	0.00	0.00	0.00	0.00	0.00	9.49	4610.00	128.06	19290.70	4.18	0.00	0.00
6:05	0	0.00	0.19	0.00		0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4610.00	128.06	19162.64	4.16	0.00	0.00
					Total volume (cf)			**26879.68**								**Total Overflow (cf)**			**0.00**	

24 Hour Storm in 15 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:15	0.2	0.03	0.33	0.03	0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
0:30	0.3	0.04	0.32	0.04	0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	19.93	0.00	0.00	0.00	0.00
0:45	0.3	0.04	0.32	0.04	0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	19.93	0.00	0.00	0.00	0.00
1:00	0.4	0.06	0.32	0.05	0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	26.58	0.00	0.00	0.00	0.00
1:15	0.3	0.04	0.31	0.04	0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	19.93	0.00	0.00	0.00	0.00
1:30	0.3	0.04	0.31	0.04	0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	19.93	0.00	0.00	0.00	0.00
1:45	0.3	0.04	0.31	0.04	0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	19.93	0.00	0.00	0.00	0.00
2:00	0.4	0.06	0.30	0.05	0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	26.58	0.00	0.00	0.00	0.00
2:15	0.4	0.06	0.30	0.05	0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	26.58	0.00	0.00	0.00	0.00
2:30	0.4	0.06	0.30	0.05	0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	26.58	0.00	0.00	0.00	0.00
2:45	0.5	0.07	0.29	0.06	0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	33.22	0.00	0.00	0.00	0.00
3:00	0.5	0.07	0.29	0.06	0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	33.22	0.00	0.00	0.00	0.00
3:15	0.5	0.07	0.28	0.06	0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	33.22	0.00	0.00	0.00	0.00
3:30	0.5	0.07	0.28	0.06	0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	33.22	0.00	0.00	0.00	0.00
3:45	0.5	0.07	0.28	0.06	0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	33.22	0.00	0.00	0.00	0.00
4:00	0.6	0.08	0.27	0.08	0.0084	0.0443	39.87	0.00	0.00	0.00	0.00	0.00	39.87	4610.00	39.87	0.00	0.00	0.00	0.00
4:15	0.6	0.08	0.27	0.08	0.0084	0.0443	39.87	0.00	0.00	0.00	0.00	0.00	39.87	4610.00	39.87	0.00	0.00	0.00	0.00
4:30	0.7	0.10	0.27	0.09	0.0098	0.0517	46.51	0.00	0.00	0.00	0.00	0.00	46.51	4610.00	46.51	0.00	0.00	0.00	0.00
4:45	0.7	0.10	0.26	0.09	0.0098	0.0517	46.51	0.00	0.00	0.00	0.00	0.00	46.51	4610.00	46.51	0.00	0.00	0.00	0.00
5:00	0.8	0.11	0.26	0.10	0.0112	0.0591	53.16	0.00	0.00	0.00	0.00	0.00	53.16	4610.00	53.16	0.00	0.00	0.00	0.00
5:15	0.6	0.08	0.26	0.08	0.0084	0.0443	39.87	0.00	0.00	0.00	0.00	0.00	39.87	4610.00	39.87	0.00	0.00	0.00	0.00
5:30	0.7	0.10	0.25	0.09	0.0098	0.0517	46.51	0.00	0.00	0.00	0.00	0.00	46.51	4610.00	46.51	0.00	0.00	0.00	0.00
5:45	0.8	0.11	0.25	0.10	0.0112	0.0591	53.16	0.00	0.00	0.00	0.00	0.00	53.16	4610.00	53.16	0.00	0.00	0.00	0.00
6:00	0.8	0.11	0.25	0.10	0.0112	0.0591	53.16	0.00	0.00	0.00	0.00	0.00	53.16	4610.00	53.16	0.00	0.00	0.00	0.00
6:15	0.9	0.13	0.24	0.11	0.0126	0.0664	59.80	0.00	0.00	0.00	0.00	0.00	59.80	4610.00	59.80	0.00	0.00	0.00	0.00
6:30	0.9	0.13	0.24	0.11	0.0126	0.0664	59.80	0.00	0.00	0.00	0.00	0.00	59.80	4610.00	59.80	0.00	0.00	0.00	0.00
6:45	1	0.14	0.24	0.13	0.0140	0.0738	66.45	0.00	0.00	0.00	0.00	0.00	66.45	4610.00	66.45	0.00	0.00	0.00	0.00
7:00	1	0.14	0.23	0.13	0.0140	0.0738	66.45	0.00	0.00	0.00	0.00	0.00	66.45	4610.00	66.45	0.00	0.00	0.00	0.00
7:15	1	0.14	0.23	0.13	0.0140	0.0738	66.45	0.00	0.00	0.00	0.00	0.00	66.45	4610.00	66.45	0.00	0.00	0.00	0.00
7:30	1.1	0.15	0.23	0.14	0.0154	0.0812	73.09	0.00	0.00	0.00	0.00	0.00	73.09	4610.00	73.09	0.00	0.00	0.00	0.00
7:45	1.2	0.17	0.22	0.15	0.0168	0.0886	79.74	0.00	0.00	0.00	0.00	0.00	79.74	4610.00	79.74	0.00	0.00	0.00	0.00
8:00	1.3	0.18	0.22	0.16	0.0182	0.0960	86.38	0.00	0.00	0.00	0.00	0.00	86.38	4610.00	86.38	0.00	0.00	0.00	0.00
8:15	1.5	0.21	0.22	0.19	0.0210	0.1107	99.67	0.00	0.00	0.00	0.00	0.00	99.67	4610.00	99.67	0.00	0.00	0.00	0.00
8:30	1.5	0.21	0.21	0.19	0.0210	0.1107	99.67	0.00	0.00	0.00	0.00	0.00	99.67	4610.00	99.67	0.00	0.00	0.00	0.00
8:45	1.6	0.22	0.21	N/A	0.0121	0.0637	57.37	0.00	0.00	0.00	0.00	0.00	57.37	4610.00	57.37	0.00	0.00	0.00	0.00
9:00	1.7	0.24	0.21	N/A	0.0291	0.1534	138.02	0.00	0.00	0.00	0.00	0.00	138.02	4610.00	138.02	0.00	0.00	0.00	0.00
9:15	1.9	0.27	0.21	N/A	0.0600	0.3166	284.98	0.00	0.00	0.00	0.00	0.00	284.98	4610.00	284.98	0.00	0.00	0.00	0.00
9:30	2	0.28	0.20	N/A	0.0770	0.4060	365.37	0.00	0.00	0.00	0.00	0.00	365.37	4610.00	365.37	0.00	0.00	0.00	0.00
9:45	2.1	0.29	0.20	N/A	0.0939	0.4951	445.63	0.00	0.00	0.00	0.00	0.00	445.63	4610.00	384.17	61.47	0.01	0.00	0.00
10:00	2.2	0.31	0.20	N/A	0.1108	0.5842	525.76	0.00	0.00	0.00	0.00	0.00	525.76	4610.00	384.17	203.06	0.04	0.00	0.00
10:15	1.5	0.21	0.19	N/A	0.0156	0.0824	74.17	0.00	0.00	0.00	0.00	0.00	74.17	4610.00	384.17	0.00	0.00	0.00	0.00
10:30	1.5	0.21	0.19	N/A	0.0185	0.0973	87.58	0.00	0.00	0.00	0.00	0.00	87.58	4610.00	87.58	0.00	0.00	0.00	0.00
10:45	2	0.28	0.19	N/A	0.0913	0.4812	433.09	0.00	0.00	0.00	0.00	0.00	433.09	4610.00	384.17	48.93	0.01	0.00	0.00
11:00	2	0.28	0.19	N/A	0.0940	0.4958	446.23	0.00	0.00	0.00	0.00	0.00	446.23	4610.00	384.17	110.99	0.02	0.00	0.00
11:15	1.9	0.27	0.18	N/A	0.0828	0.4364	392.78	0.00	0.00	0.00	0.00	0.00	392.78	4610.00	384.17	119.61	0.03	0.00	0.00
11:30	1.9	0.27	0.18	N/A	0.0855	0.4507	405.64	0.00	0.00	0.00	0.00	0.00	405.64	4610.00	384.17	141.08	0.03	0.00	0.00
11:45	1.7	0.24	0.18	N/A	0.0601	0.3172	285.47	0.00	0.00	0.00	0.00	0.00	285.47	4610.00	384.17	42.38	0.01	0.00	0.00
12:00	1.8	0.25	0.18	N/A	0.0768	0.4050	364.49	0.00	0.00	0.00	0.00	0.00	364.49	4610.00	384.17	22.70	0.00	0.00	0.00

12:15	2.5	0.35	0.17	N/A		0.1774	0.9356	842.05	0.00	0.00	0.00	0.00	0.00	842.05	4610.00	384.17	480.59	0.10	0.00	0.00
12:30	2.6	0.36	0.17	N/A		0.1940	1.0231	920.79	0.00	0.00	0.00	0.00	0.00	920.79	4610.00	384.17	1017.21	0.22	0.00	0.00
12:45	2.8	0.39	0.17	N/A		0.2246	1.1843	1065.83	0.00	0.00	0.00	0.00	0.00	1065.83	4610.00	384.17	1698.87	0.37	0.00	0.00
13:00	2.9	0.41	0.16	N/A		0.2411	1.2714	1144.27	0.00	0.00	0.00	0.00	0.00	1144.27	4610.00	384.17	2458.98	0.53	0.00	0.00
13:15	3.4	0.48	0.16	N/A		0.3136	1.6537	1488.35	0.00	0.00	0.00	0.00	0.00	1488.35	4610.00	384.17	3563.16	0.77	0.00	0.00
13:30	3.4	0.48	0.16	N/A		0.3161	**1.6667**	**1500.05**	0.00	0.00	0.00	0.00	0.00	1500.05	4610.00	384.17	4679.04	1.01	**0.00**	**0.00**
13:45	2.3	0.32	0.16	N/A		0.1645	0.8674	780.67	0.00	0.00	0.00	0.00	0.00	780.67	4610.00	384.17	5075.55	1.10	0.00	0.00
14:00	2.3	0.32	0.16	N/A		0.1669	0.8801	792.06	0.00	0.00	0.00	0.00	0.00	792.06	4610.00	384.17	5483.44	1.19	0.00	0.00
14:15	2.7	0.38	0.15	N/A		0.2252	1.1879	1069.08	0.00	0.00	0.00	0.00	0.00	1069.08	4610.00	384.17	6168.36	1.34	0.00	0.00
14:30	2.6	0.36	0.15	N/A		0.2136	1.1263	1013.71	0.00	0.00	0.00	0.00	0.00	1013.71	4610.00	384.17	6797.91	1.47	0.00	0.00
14:45	2.6	0.36	0.15	N/A		0.2159	1.1385	1024.63	0.00	0.00	0.00	0.00	0.00	1024.63	4610.00	384.17	7438.37	1.61	0.00	0.00
15:00	2.5	0.35	0.15	N/A		0.2041	1.0766	968.94	0.00	0.00	0.00	0.00	0.00	968.94	4610.00	384.17	8023.15	1.74	0.00	0.00
15:15	2.4	0.34	0.14	N/A		0.1924	1.0145	913.09	0.00	0.00	0.00	0.00	0.00	913.09	4610.00	384.17	8552.07	1.86	0.00	0.00
15:30	2.3	0.32	0.14	N/A		0.1806	0.9523	857.07	0.00	0.00	0.00	0.00	0.00	857.07	4610.00	384.17	9024.97	1.96	0.00	0.00
15:45	1.9	0.27	0.14	N/A		0.1267	0.6684	601.54	0.00	0.00	0.00	0.00	0.00	601.54	4610.00	384.17	9242.34	2.00	0.00	0.00
16:00	1.9	0.27	0.14	N/A		0.1289	0.6796	611.63	0.00	0.00	0.00	0.00	0.00	611.63	4610.00	384.17	9469.81	2.05	0.00	0.00
16:15	0.4	0.06	0.14	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	9112.22	1.98	0.00	0.00
16:30	0.4	0.06	0.13	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	8754.63	1.90	0.00	0.00
16:45	0.3	0.04	0.13	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	8390.40	1.82	0.00	0.00
17:00	0.3	0.04	0.13	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	8026.17	1.74	0.00	0.00
17:15	0.5	0.07	0.13	0.06		0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	384.17	7675.22	1.66	0.00	0.00
17:30	0.5	0.07	0.13	0.06		0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	384.17	7324.28	1.59	0.00	0.00
17:45	0.5	0.07	0.12	0.06		0.0070	0.0369	33.22	0.00	0.00	0.00	0.00	0.00	33.22	4610.00	384.17	6973.34	1.51	0.00	0.00
18:00	0.4	0.06	0.12	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	6615.75	1.44	0.00	0.00
18:15	0.4	0.06	0.12	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	6258.16	1.36	0.00	0.00
18:30	0.4	0.06	0.12	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	5900.57	1.28	0.00	0.00
18:45	0.3	0.04	0.12	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	5536.34	1.20	0.00	0.00
19:00	0.2	0.03	0.11	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	5165.46	1.12	0.00	0.00
19:15	0.3	0.04	0.11	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	4801.23	1.04	0.00	0.00
19:30	0.4	0.06	0.11	0.05		0.0056	0.0295	26.58	0.00	0.00	0.00	0.00	0.00	26.58	4610.00	384.17	4443.64	0.96	0.00	0.00
19:45	0.3	0.04	0.11	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	4079.41	0.88	0.00	0.00
20:00	0.2	0.03	0.11	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	3708.53	0.80	0.00	0.00
20:15	0.3	0.04	0.11	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	3344.30	0.73	0.00	0.00
20:30	0.3	0.04	0.11	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	2980.07	0.65	0.00	0.00
20:45	0.3	0.04	0.10	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	2615.84	0.57	0.00	0.00
21:00	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	2244.96	0.49	0.00	0.00
21:15	0.3	0.04	0.10	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	1880.73	0.41	0.00	0.00
21:30	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	1509.85	0.33	0.00	0.00
21:45	0.3	0.04	0.10	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	1145.62	0.25	0.00	0.00
22:00	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	774.74	0.17	0.00	0.00
22:15	0.3	0.04	0.10	0.04		0.0042	0.0221	19.93	0.00	0.00	0.00	0.00	0.00	19.93	4610.00	384.17	410.51	0.09	0.00	0.00
22:30	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	39.63	0.01	0.00	0.00
22:45	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	384.17	0.00	0.00	0.00	0.00
23:00	0.2	0.03	0.10	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
23:15	0.2	0.03	0.09	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
23:30	0.2	0.03	0.09	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
23:45	0.2	0.03	0.09	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
24:00	0.2	0.03	0.09	0.03		0.0028	0.0148	13.29	0.00	0.00	0.00	0.00	0.00	13.29	4610.00	13.29	0.00	0.00	0.00	0.00
01:00:15	0	0.00	0.09	0.00		0.0000	0.0000	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
					Total volume (cf)			**22099.76**								**Total Overflow (cf)**			**0.00**	

HYDROLOGY CALCULATIONS - Rancho Mirage Affordable Apartments - BMP 2 **Program Updated 04/05/2024 by LZ**

Using the RCFC&WCD Short Cut Unit Hydrograph Method
Area Designations **BMP 2 - Area P4**

	Area 1				
Drainage Area (ac.)	**15.5400**				
Unit time (minutes)	**5**	**5**	**5**	**15**	
100 Year Storm Duration (hrs)	1	3	6	24	
Total Precipitation (Plates D-4.4,E-5.2, 5.4, 5.6)(in.)	**1.6**	**2.00**	**2.50**	**3.50**	Or data from NOAA interactive website
Soils Group	A				
AMC index II Runoff Number (plate E-6.1)	32				
Plate E-6.2 Pervious Area Loss Rate (Fp)(in/hr)	0.74	(AMC II)			
Percentage of Impervious Cover (Ai)(%) (plate E-6.3)		**0**			
Weighted Average Loss Rate (F=Fp(1-.9Ai))(in./hr.)	0.74	(used for 1, 3, and 6 hour storm, the 24 hour storm uses variable maximum loss rate per plate E-1.1 (3 of 6))			
Low Loss Rate Percent (%)	90	(typically 80-90%)			
Minimum value percentage on loss rate curve (Fm)(int/hr)		50	(typically 50-75%)		
Retention Basin Infiltration Rate (in/hr)	**4**	(also used for drywell percolation rate)			

Percolation is taken incrementally.
Basin volume is calculated using the "truncated pyramid" formula, a more conservative estimate than "averaged end areas" sometimes used

Basin is zeroed out by reducing variables to 0.001, Zero would crash spreadsheet.

(Drywell can be "zeroed out" by reducing numbers to less than .001, but should not entered as zeros or program chokes.)
Drywell storage includes 40% of the 1' wide rock bed surrounding the drywell: formula (upper)*PI()*(diam/2)^2+(lower)*PI()*((diam/2)^2+0.4*((diam/2+(grav+0.4166))^2-(diam/2+0.4166)^2))
The drywell wall thickness is assumed at 5" (0.4166) and the gravel bed width is variable "grav"

Drywell design factors **Upper sec. (ft.)=** **0.001** **Lower sec. (ft.)=** **0.001** **Ring diam. (ft.) =** **0.001** **Drywell lower max. (cf)=** **0.00** **Upper max.(cf)=** **0.00**
Gravel bed width around drywell= **0.001** **Drywell total(cf)=** **0.00**

Ret. Basin design (area, depth) **Top =** **40000** s.f. **Bot. =** **37000** **s.f.** **Max. Depth (d)=** **1** **Max. storage=** **38490.26** (d/3)*(bottom+top+(bottom*top)^0.50)
Formulas **vol=(h/3)*(bottom+top+(bottom*top)^0.50)** **area=bottom+(h/d)*(top-bottom)** **h=(vol*3)/(bottom+top+(bottom*top)^0.5)** **(values must be non-zero or error occurs)**
Outside input from: **N/A** (Max. depth excludes the freeboard. Freeboard provided is on top of max. depth.)

1 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	3.7	0.71	0.74	0.64	0.0710	1.1132	333.95	0.00	0.00	0.00	0.00	0.00	333.95	37000.00	333.95	0.00	0.00	0.00	0.00
0:10	4.8	0.92	0.74	N/A	0.1816	2.8456	853.67	0.00	0.00	0.00	0.00	0.00	853.67	37000.00	853.67	0.00	0.00	0.00	0.00
0:15	5.1	0.98	0.74	N/A	0.2392	3.7481	1124.44	0.00	0.00	0.00	0.00	0.00	1124.44	37000.00	1027.78	96.67	0.00	0.00	0.00
0:20	4.9	0.94	0.74	N/A	0.2008	3.1464	943.93	0.00	0.00	0.00	0.00	0.00	943.93	37007.53	1027.99	12.61	0.00	0.00	0.00
0:25	6.6	1.27	0.74	N/A	0.5272	8.2610	2478.29	0.00	0.00	0.00	0.00	0.00	2478.29	37000.98	1027.81	1463.09	0.04	0.00	0.00
0:30	7.3	1.40	0.74	N/A	0.6616	10.3669	3110.08	0.00	0.00	0.00	0.00	0.00	3110.08	37114.04	1030.95	3542.23	0.09	0.00	0.00
0:35	8.4	1.61	0.74	N/A	0.8728	13.6763	4102.90	0.00	0.00	0.00	0.00	0.00	4102.90	37276.09	1035.45	6609.68	0.17	0.00	0.00
0:40	9	1.73	0.74	N/A	0.9880	15.4815	4644.44	0.00	0.00	0.00	0.00	0.00	4644.44	37515.17	1042.09	10212.04	0.27	0.00	0.00
0:45	12.3	2.36	0.74	N/A	1.6216	25.4097	7622.90	0.00	0.00	0.00	0.00	0.00	7622.90	37795.94	1049.89	16785.05	0.44	0.00	0.00
0:50	17.6	3.38	0.74	N/A	2.6392	**41.3549**	**12406.48**	0.00	0.00	0.00	0.00	0.00	12406.48	38308.26	1064.12	28127.41	0.73	**0.00**	**0.00**
0:55	16.1	3.09	0.74	N/A	2.3512	36.8421	11052.64	0.00	0.00	0.00	0.00	0.00	11052.64	39192.30	1088.68	38091.38	0.99	0.00	0.00
1:00	4.2	0.81	0.74	N/A	0.0664	1.0405	312.14	0.00	0.00	0.00	0.00	0.00	312.14	39968.91	1110.25	37293.26	0.97	0.00	0.00
1:05	0	0.00	0.74	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39906.70	1108.52	36184.74	0.94	0.00	0.00
					Total volume (cf)		**48985.87**								**Total Overflow (cf)**			**0.00**	

3 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	1.3	0.31	0.74	0.28	0.0312	0.4889	146.67	0.00	0.00	0.00	0.00	0.00	146.67	37000.00	146.67	0.00	0.00	0.00	0.00
0:10	1.3	0.31	0.74	0.28	0.0312	0.4889	146.67	0.00	0.00	0.00	0.00	0.00	146.67	37000.00	146.67	0.00	0.00	0.00	0.00
0:15	1.1	0.26	0.74	0.24	0.0264	0.4137	124.10	0.00	0.00	0.00	0.00	0.00	124.10	37000.00	124.10	0.00	0.00	0.00	0.00
0:20	1.5	0.36	0.74	0.32	0.0360	0.5641	169.23	0.00	0.00	0.00	0.00	0.00	169.23	37000.00	169.23	0.00	0.00	0.00	0.00
0:25	1.5	0.36	0.74	0.32	0.0360	0.5641	169.23	0.00	0.00	0.00	0.00	0.00	169.23	37000.00	169.23	0.00	0.00	0.00	0.00
0:30	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	37000.00	203.08	0.00	0.00	0.00	0.00
0:35	1.5	0.36	0.74	0.32	0.0360	0.5641	169.23	0.00	0.00	0.00	0.00	0.00	169.23	37000.00	169.23	0.00	0.00	0.00	0.00
0:40	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	37000.00	203.08	0.00	0.00	0.00	0.00
0:45	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	37000.00	203.08	0.00	0.00	0.00	0.00
0:50	1.5	0.36	0.74	0.32	0.0360	0.5641	169.23	0.00	0.00	0.00	0.00	0.00	169.23	37000.00	169.23	0.00	0.00	0.00	0.00
0:55	1.6	0.38	0.74	0.35	0.0384	0.6017	180.51	0.00	0.00	0.00	0.00	0.00	180.51	37000.00	180.51	0.00	0.00	0.00	0.00
1:00	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	37000.00	203.08	0.00	0.00	0.00	0.00
1:05	2.2	0.53	0.74	0.48	0.0528	0.8273	248.20	0.00	0.00	0.00	0.00	0.00	248.20	37000.00	248.20	0.00	0.00	0.00	0.00
1:10	2.2	0.53	0.74	0.48	0.0528	0.8273	248.20	0.00	0.00	0.00	0.00	0.00	248.20	37000.00	248.20	0.00	0.00	0.00	0.00
1:15	2.2	0.53	0.74	0.48	0.0528	0.8273	248.20	0.00	0.00	0.00	0.00	0.00	248.20	37000.00	248.20	0.00	0.00	0.00	0.00
1:20	2	0.48	0.74	0.43	0.0480	0.7521	225.64	0.00	0.00	0.00	0.00	0.00	225.64	37000.00	225.64	0.00	0.00	0.00	0.00
1:25	2.6	0.62	0.74	0.56	0.0624	0.9778	293.33	0.00	0.00	0.00	0.00	0.00	293.33	37000.00	293.33	0.00	0.00	0.00	0.00
1:30	2.7	0.65	0.74	0.58	0.0648	1.0154	304.62	0.00	0.00	0.00	0.00	0.00	304.62	37000.00	304.62	0.00	0.00	0.00	0.00
1:35	2.4	0.58	0.74	0.52	0.0576	0.9026	270.77	0.00	0.00	0.00	0.00	0.00	270.77	37000.00	270.77	0.00	0.00	0.00	0.00
1:40	2.7	0.65	0.74	0.58	0.0648	1.0154	304.62	0.00	0.00	0.00	0.00	0.00	304.62	37000.00	304.62	0.00	0.00	0.00	0.00
1:45	3.3	0.79	0.74	N/A	0.0520	0.8148	244.44	0.00	0.00	0.00	0.00	0.00	244.44	37000.00	244.44	0.00	0.00	0.00	0.00
1:50	3.1	0.74	0.74	N/A	0.0040	0.0627	18.80	0.00	0.00	0.00	0.00	0.00	18.80	37000.00	18.80	0.00	0.00	0.00	0.00
1:55	2.9	0.70	0.74	0.63	0.0696	1.0906	327.18	0.00	0.00	0.00	0.00	0.00	327.18	37000.00	327.18	0.00	0.00	0.00	0.00
2:00	3	0.72	0.74	0.65	0.0720	1.1282	338.46	0.00	0.00	0.00	0.00	0.00	338.46	37000.00	338.46	0.00	0.00	0.00	0.00
2:05	3.1	0.74	0.74	N/A	0.0040	0.0627	18.80	0.00	0.00	0.00	0.00	0.00	18.80	37000.00	18.80	0.00	0.00	0.00	0.00
2:10	4.2	1.01	0.74	N/A	0.2680	4.1994	1259.83	0.00	0.00	0.00	0.00	0.00	1259.83	37000.00	1027.78	232.05	0.01	0.00	0.00
2:15	5	1.20	0.74	N/A	0.4600	7.2080	2162.39	0.00	0.00	0.00	0.00	0.00	2162.39	37018.09	1028.28	1366.16	0.04	0.00	0.00
2:20	3.5	0.84	0.74	N/A	0.1000	1.5670	470.09	0.00	0.00	0.00	0.00	0.00	470.09	37106.48	1030.74	805.51	0.02	0.00	0.00
2:25	6.8	1.63	0.74	N/A	0.8920	13.9772	4193.16	0.00	0.00	0.00	0.00	0.00	4193.16	37062.78	1029.52	3969.15	0.10	0.00	0.00
2:30	7.3	1.75	0.74	N/A	1.0120	15.8575	4757.26	0.00	0.00	0.00	0.00	0.00	4757.26	37309.36	1036.37	7690.04	0.20	0.00	0.00
2:35	8.2	1.97	0.74	N/A	1.2280	**19.2421**	**5772.64**	0.00	0.00	0.00	0.00	0.00	5772.64	37599.38	1044.43	12418.25	0.32	**0.00**	**0.00**
2:40	5.9	1.42	0.74	N/A	0.6760	10.5926	3177.77	0.00	0.00	0.00	0.00	0.00	3177.77	37967.90	1054.66	14541.36	0.38	0.00	0.00
2:45	2	0.48	0.74	0.43	0.0480	0.7521	225.64	0.00	0.00	0.00	0.00	0.00	225.64	38133.38	1059.26	13707.74	0.36	0.00	0.00
2:50	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	38068.41	1057.46	12853.36	0.33	0.00	0.00
2:55	1.8	0.43	0.74	0.39	0.0432	0.6769	203.08	0.00	0.00	0.00	0.00	0.00	203.08	38001.81	1055.61	12000.84	0.31	0.00	0.00
3:00	0.6	0.14	0.74	0.13	0.0144	0.2256	67.69	0.00	0.00	0.00	0.00	0.00	67.69	37935.37	1053.76	11014.77	0.29	0.00	0.00
3:05	0	0.00	0.74	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37858.51	1051.63	9963.14	0.26	0.00	0.00
					Total volume (cf)		**27671.08**								**Total Overflow (cf)**			**0.00**	

6 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	0.5	0.15	0.74	0.14	0.0150	0.2350	70.51	0.00	0.00	0.00	0.00	0.00	70.51	37000.00	70.51	0.00	0.00	0.00	0.00
0:10	0.6	0.18	0.74	0.16	0.0180	0.2821	84.62	0.00	0.00	0.00	0.00	0.00	84.62	37000.00	84.62	0.00	0.00	0.00	0.00
0:15	0.6	0.18	0.74	0.16	0.0180	0.2821	84.62	0.00	0.00	0.00	0.00	0.00	84.62	37000.00	84.62	0.00	0.00	0.00	0.00
0:20	0.6	0.18	0.74	0.16	0.0180	0.2821	84.62	0.00	0.00	0.00	0.00	0.00	84.62	37000.00	84.62	0.00	0.00	0.00	0.00
0:25	0.6	0.18	0.74	0.16	0.0180	0.2821	84.62	0.00	0.00	0.00	0.00	0.00	84.62	37000.00	84.62	0.00	0.00	0.00	0.00
0:30	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
0:35	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
0:40	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
0:45	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
0:50	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
0:55	0.7	0.21	0.74	0.19	0.0210	0.3291	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
1:00	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:05	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:10	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:15	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:20	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:25	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:30	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:35	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:40	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:45	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:50	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
1:55	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
2:00	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:05	0.8	0.24	0.74	0.22	0.0240	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	37000.00	112.82	0.00	0.00	0.00	0.00
2:10	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:15	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:20	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:25	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:30	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:35	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:40	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37000.00	126.92	0.00	0.00	0.00	0.00
2:45	1	0.30	0.74	0.27	0.0300	0.4701	141.03	0.00	0.00	0.00	0.00	0.00	141.03	37000.00	141.03	0.00	0.00	0.00	0.00
2:50	1	0.30	0.74	0.27	0.0300	0.4701	141.03	0.00	0.00	0.00	0.00	0.00	141.03	37000.00	141.03	0.00	0.00	0.00	0.00
2:55	1	0.30	0.74	0.27	0.0300	0.4701	141.03	0.00	0.00	0.00	0.00	0.00	141.03	37000.00	141.03	0.00	0.00	0.00	0.00
3:00	1	0.30	0.74	0.27	0.0300	0.4701	141.03	0.00	0.00	0.00	0.00	0.00	141.03	37000.00	141.03	0.00	0.00	0.00	0.00
3:05	1	0.30	0.74	0.27	0.0300	0.4701	141.03	0.00	0.00	0.00	0.00	0.00	141.03	37000.00	141.03	0.00	0.00	0.00	0.00
3:10	1.1	0.33	0.74	0.30	0.0330	0.5171	155.13	0.00	0.00	0.00	0.00	0.00	155.13	37000.00	155.13	0.00	0.00	0.00	0.00
3:15	1.1	0.33	0.74	0.30	0.0330	0.5171	155.13	0.00	0.00	0.00	0.00	0.00	155.13	37000.00	155.13	0.00	0.00	0.00	0.00
3:20	1.1	0.33	0.74	0.30	0.0330	0.5171	155.13	0.00	0.00	0.00	0.00	0.00	155.13	37000.00	155.13	0.00	0.00	0.00	0.00
3:25	1.2	0.36	0.74	0.32	0.0360	0.5641	169.23	0.00	0.00	0.00	0.00	0.00	169.23	37000.00	169.23	0.00	0.00	0.00	0.00
3:30	1.3	0.39	0.74	0.35	0.0390	0.6111	183.33	0.00	0.00	0.00	0.00	0.00	183.33	37000.00	183.33	0.00	0.00	0.00	0.00
3:35	1.4	0.42	0.74	0.38	0.0420	0.6581	197.44	0.00	0.00	0.00	0.00	0.00	197.44	37000.00	197.44	0.00	0.00	0.00	0.00
3:40	1.4	0.42	0.74	0.38	0.0420	0.6581	197.44	0.00	0.00	0.00	0.00	0.00	197.44	37000.00	197.44	0.00	0.00	0.00	0.00
3:45	1.5	0.45	0.74	0.41	0.0450	0.7051	211.54	0.00	0.00	0.00	0.00	0.00	211.54	37000.00	211.54	0.00	0.00	0.00	0.00
3:50	1.5	0.45	0.74	0.41	0.0450	0.7051	211.54	0.00	0.00	0.00	0.00	0.00	211.54	37000.00	211.54	0.00	0.00	0.00	0.00
3:55	1.6	0.48	0.74	0.43	0.0480	0.7521	225.64	0.00	0.00	0.00	0.00	0.00	225.64	37000.00	225.64	0.00	0.00	0.00	0.00
4:00	1.6	0.48	0.74	0.43	0.0480	0.7521	225.64	0.00	0.00	0.00	0.00	0.00	225.64	37000.00	225.64	0.00	0.00	0.00	0.00

4:05	1.7	0.51	0.74	0.46	0.0510	0.7991	239.74	0.00	0.00	0.00	0.00	0.00	239.74	37000.00	239.74	0.00	0.00	0.00	0.00
4:10	1.8	0.54	0.74	0.49	0.0540	0.8462	253.85	0.00	0.00	0.00	0.00	0.00	253.85	37000.00	253.85	0.00	0.00	0.00	0.00
4:15	1.9	0.57	0.74	0.51	0.0570	0.8932	267.95	0.00	0.00	0.00	0.00	0.00	267.95	37000.00	267.95	0.00	0.00	0.00	0.00
4:20	2	0.60	0.74	0.54	0.0600	0.9402	282.05	0.00	0.00	0.00	0.00	0.00	282.05	37000.00	282.05	0.00	0.00	0.00	0.00
4:25	2.1	0.63	0.74	0.57	0.0630	0.9872	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
4:30	2.1	0.63	0.74	0.57	0.0630	0.9872	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
4:35	2.2	0.66	0.74	0.59	0.0660	1.0342	310.26	0.00	0.00	0.00	0.00	0.00	310.26	37000.00	310.26	0.00	0.00	0.00	0.00
4:40	2.3	0.69	0.74	0.62	0.0690	1.0812	324.36	0.00	0.00	0.00	0.00	0.00	324.36	37000.00	324.36	0.00	0.00	0.00	0.00
4:45	2.4	0.72	0.74	0.65	0.0720	1.1282	338.46	0.00	0.00	0.00	0.00	0.00	338.46	37000.00	338.46	0.00	0.00	0.00	0.00
4:50	2.4	0.72	0.74	0.65	0.0720	1.1282	338.46	0.00	0.00	0.00	0.00	0.00	338.46	37000.00	338.46	0.00	0.00	0.00	0.00
4:55	2.5	0.75	0.74	N/A		0.0100	0.1567	47.01	0.00	0.00	0.00	0.00	0.00	47.01	37000.00	47.01	0.00	0.00	0.00	0.00
5:00	2.6	0.78	0.74	N/A		0.0400	0.6268	188.03	0.00	0.00	0.00	0.00	0.00	188.03	37000.00	188.03	0.00	0.00	0.00	0.00
5:05	3.1	0.93	0.74	N/A		0.1900	2.9772	893.16	0.00	0.00	0.00	0.00	0.00	893.16	37000.00	893.16	0.00	0.00	0.00	0.00
5:10	3.6	1.08	0.74	N/A		0.3400	5.3276	1598.29	0.00	0.00	0.00	0.00	0.00	1598.29	37000.00	1027.78	570.51	0.01	0.00	0.00
5:15	3.9	1.17	0.74	N/A		0.4300	6.7379	2021.37	0.00	0.00	0.00	0.00	0.00	2021.37	37044.47	1029.01	1562.86	0.04	0.00	0.00
5:20	4.2	1.26	0.74	N/A		0.5200	8.1481	2444.44	0.00	0.00	0.00	0.00	0.00	2444.44	37121.81	1031.16	2976.14	0.08	0.00	0.00
5:25	4.7	1.41	0.74	N/A		0.6700	10.4986	3149.57	0.00	0.00	0.00	0.00	0.00	3149.57	37231.97	1034.22	5091.49	0.13	0.00	0.00
5:30	5.6	1.68	0.74	N/A		0.9400	**14.7293**	**4418.80**	0.00	0.00	0.00	0.00	0.00	4418.80	37396.84	1038.80	8471.49	0.22	**0.00**	**0.00**
5:35	1.9	0.57	0.74	0.51	0.0570	0.8932	267.95	0.00	0.00	0.00	0.00	0.00	267.95	37660.28	1046.12	7693.32	0.20	0.00	0.00
5:40	0.9	0.27	0.74	0.24	0.0270	0.4231	126.92	0.00	0.00	0.00	0.00	0.00	126.92	37599.63	1044.43	6775.81	0.18	0.00	0.00
5:45	0.6	0.18	0.74	0.16	0.0180	0.2821	84.62	0.00	0.00	0.00	0.00	0.00	84.62	37528.12	1042.45	5817.98	0.15	0.00	0.00
5:50	0.5	0.15	0.74	0.14	0.0150	0.2350	70.51	0.00	0.00	0.00	0.00	0.00	70.51	37453.46	1040.37	4848.11	0.13	0.00	0.00
5:55	0.3	0.09	0.74	0.08	0.0090	0.1410	42.31	0.00	0.00	0.00	0.00	0.00	42.31	37377.87	1038.27	3852.15	0.10	0.00	0.00
6:00	0.2	0.06	0.74	0.05	0.0060	0.0940	28.21	0.00	0.00	0.00	0.00	0.00	28.21	37300.24	1036.12	2844.24	0.07	0.00	0.00
6:05	0	0.00	0.74	0.00	0.0000	0.0000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37221.68	1033.94	1810.30	0.05	0.00	0.00
					Total volume (cf)		**24604.25**								**Total Overflow (cf)**				**0.00**	

24 Hour Storm in 15 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:15	0.2	0.03	1.30	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
0:30	0.3	0.04	1.28	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
0:45	0.3	0.04	1.27	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
1:00	0.4	0.06	1.25	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
1:15	0.3	0.04	1.24	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
1:30	0.3	0.04	1.22	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
1:45	0.3	0.04	1.21	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
2:00	0.4	0.06	1.20	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
2:15	0.4	0.06	1.18	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
2:30	0.4	0.06	1.17	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
2:45	0.5	0.07	1.15	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
3:00	0.5	0.07	1.14	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
3:15	0.5	0.07	1.12	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
3:30	0.5	0.07	1.11	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
3:45	0.5	0.07	1.10	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
4:00	0.6	0.08	1.08	0.08	0.0084	0.1316	118.46	0.00	0.00	0.00	0.00	0.00	118.46	37000.00	118.46	0.00	0.00	0.00	0.00
4:15	0.6	0.08	1.07	0.08	0.0084	0.1316	118.46	0.00	0.00	0.00	0.00	0.00	118.46	37000.00	118.46	0.00	0.00	0.00	0.00
4:30	0.7	0.10	1.05	0.09	0.0098	0.1536	138.20	0.00	0.00	0.00	0.00	0.00	138.20	37000.00	138.20	0.00	0.00	0.00	0.00
4:45	0.7	0.10	1.04	0.09	0.0098	0.1536	138.20	0.00	0.00	0.00	0.00	0.00	138.20	37000.00	138.20	0.00	0.00	0.00	0.00
5:00	0.8	0.11	1.03	0.10	0.0112	0.1755	157.95	0.00	0.00	0.00	0.00	0.00	157.95	37000.00	157.95	0.00	0.00	0.00	0.00
5:15	0.6	0.08	1.01	0.08	0.0084	0.1316	118.46	0.00	0.00	0.00	0.00	0.00	118.46	37000.00	118.46	0.00	0.00	0.00	0.00
5:30	0.7	0.10	1.00	0.09	0.0098	0.1536	138.20	0.00	0.00	0.00	0.00	0.00	138.20	37000.00	138.20	0.00	0.00	0.00	0.00
5:45	0.8	0.11	0.99	0.10	0.0112	0.1755	157.95	0.00	0.00	0.00	0.00	0.00	157.95	37000.00	157.95	0.00	0.00	0.00	0.00
6:00	0.8	0.11	0.97	0.10	0.0112	0.1755	157.95	0.00	0.00	0.00	0.00	0.00	157.95	37000.00	157.95	0.00	0.00	0.00	0.00
6:15	0.9	0.13	0.96	0.11	0.0126	0.1974	177.69	0.00	0.00	0.00	0.00	0.00	177.69	37000.00	177.69	0.00	0.00	0.00	0.00
6:30	0.9	0.13	0.95	0.11	0.0126	0.1974	177.69	0.00	0.00	0.00	0.00	0.00	177.69	37000.00	177.69	0.00	0.00	0.00	0.00
6:45	1	0.14	0.94	0.13	0.0140	0.2194	197.44	0.00	0.00	0.00	0.00	0.00	197.44	37000.00	197.44	0.00	0.00	0.00	0.00
7:00	1	0.14	0.92	0.13	0.0140	0.2194	197.44	0.00	0.00	0.00	0.00	0.00	197.44	37000.00	197.44	0.00	0.00	0.00	0.00
7:15	1	0.14	0.91	0.13	0.0140	0.2194	197.44	0.00	0.00	0.00	0.00	0.00	197.44	37000.00	197.44	0.00	0.00	0.00	0.00
7:30	1.1	0.15	0.90	0.14	0.0154	0.2413	217.18	0.00	0.00	0.00	0.00	0.00	217.18	37000.00	217.18	0.00	0.00	0.00	0.00
7:45	1.2	0.17	0.89	0.15	0.0168	0.2632	236.92	0.00	0.00	0.00	0.00	0.00	236.92	37000.00	236.92	0.00	0.00	0.00	0.00
8:00	1.3	0.18	0.87	0.16	0.0182	0.2852	256.67	0.00	0.00	0.00	0.00	0.00	256.67	37000.00	256.67	0.00	0.00	0.00	0.00
8:15	1.5	0.21	0.86	0.19	0.0210	0.3291	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
8:30	1.5	0.21	0.85	0.19	0.0210	0.3291	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
8:45	1.6	0.22	0.84	0.20	0.0224	0.3510	315.90	0.00	0.00	0.00	0.00	0.00	315.90	37000.00	315.90	0.00	0.00	0.00	0.00
9:00	1.7	0.24	0.83	0.21	0.0238	0.3729	335.64	0.00	0.00	0.00	0.00	0.00	335.64	37000.00	335.64	0.00	0.00	0.00	0.00
9:15	1.9	0.27	0.81	0.24	0.0266	0.4168	375.13	0.00	0.00	0.00	0.00	0.00	375.13	37000.00	375.13	0.00	0.00	0.00	0.00
9:30	2	0.28	0.80	0.25	0.0280	0.4387	394.87	0.00	0.00	0.00	0.00	0.00	394.87	37000.00	394.87	0.00	0.00	0.00	0.00
9:45	2.1	0.29	0.79	0.26	0.0294	0.4607	414.61	0.00	0.00	0.00	0.00	0.00	414.61	37000.00	414.61	0.00	0.00	0.00	0.00
10:00	2.2	0.31	0.78	0.28	0.0308	0.4826	434.36	0.00	0.00	0.00	0.00	0.00	434.36	37000.00	434.36	0.00	0.00	0.00	0.00
10:15	1.5	0.21	0.77	0.19	0.0210	0.3291	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
10:30	1.5	0.21	0.76	0.19	0.0210	0.3291	296.15	0.00	0.00	0.00	0.00	0.00	296.15	37000.00	296.15	0.00	0.00	0.00	0.00
10:45	2	0.28	0.75	0.25	0.0280	0.4387	394.87	0.00	0.00	0.00	0.00	0.00	394.87	37000.00	394.87	0.00	0.00	0.00	0.00
11:00	2	0.28	0.74	0.25	0.0280	0.4387	394.87	0.00	0.00	0.00	0.00	0.00	394.87	37000.00	394.87	0.00	0.00	0.00	0.00
11:15	1.9	0.27	0.72	0.24	0.0266	0.4168	375.13	0.00	0.00	0.00	0.00	0.00	375.13	37000.00	375.13	0.00	0.00	0.00	0.00
11:30	1.9	0.27	0.71	0.24	0.0266	0.4168	375.13	0.00	0.00	0.00	0.00	0.00	375.13	37000.00	375.13	0.00	0.00	0.00	0.00
11:45	1.7	0.24	0.70	0.21	0.0238	0.3729	335.64	0.00	0.00	0.00	0.00	0.00	335.64	37000.00	335.64	0.00	0.00	0.00	0.00
12:00	1.8	0.25	0.69	0.23	0.0252	0.3949	355.38	0.00	0.00	0.00	0.00	0.00	355.38	37000.00	355.38	0.00	0.00	0.00	0.00

12:15	2.5	0.35	0.68	0.32	0.0350	0.5484	493.59	0.00	0.00	0.00	0.00	0.00	493.59	37000.00	493.59	0.00	0.00	0.00	0.00
12:30	2.6	0.36	0.67	0.33	0.0364	0.5704	513.33	0.00	0.00	0.00	0.00	0.00	513.33	37000.00	513.33	0.00	0.00	0.00	0.00
12:45	2.8	0.39	0.66	0.35	0.0392	0.6142	552.82	0.00	0.00	0.00	0.00	0.00	552.82	37000.00	552.82	0.00	0.00	0.00	0.00
13:00	2.9	0.41	0.65	0.37	0.0406	0.6362	572.56	0.00	0.00	0.00	0.00	0.00	572.56	37000.00	572.56	0.00	0.00	0.00	0.00
13:15	3.4	0.48	0.64	0.43	0.0476	0.7459	671.28	0.00	0.00	0.00	0.00	0.00	671.28	37000.00	671.28	0.00	0.00	0.00	0.00
13:30	3.4	0.48	0.63	0.43	0.0476	**0.7459**	**671.28**	0.00	0.00	0.00	0.00	0.00	671.28	37000.00	671.28	0.00	0.00	**0.00**	**0.00**
13:45	2.3	0.32	0.62	0.29	0.0322	0.5046	454.10	0.00	0.00	0.00	0.00	0.00	454.10	37000.00	454.10	0.00	0.00	0.00	0.00
14:00	2.3	0.32	0.61	0.29	0.0322	0.5046	454.10	0.00	0.00	0.00	0.00	0.00	454.10	37000.00	454.10	0.00	0.00	0.00	0.00
14:15	2.7	0.38	0.60	0.34	0.0378	0.5923	533.08	0.00	0.00	0.00	0.00	0.00	533.08	37000.00	533.08	0.00	0.00	0.00	0.00
14:30	2.6	0.36	0.59	0.33	0.0364	0.5704	513.33	0.00	0.00	0.00	0.00	0.00	513.33	37000.00	513.33	0.00	0.00	0.00	0.00
14:45	2.6	0.36	0.59	0.33	0.0364	0.5704	513.33	0.00	0.00	0.00	0.00	0.00	513.33	37000.00	513.33	0.00	0.00	0.00	0.00
15:00	2.5	0.35	0.58	0.32	0.0350	0.5484	493.59	0.00	0.00	0.00	0.00	0.00	493.59	37000.00	493.59	0.00	0.00	0.00	0.00
15:15	2.4	0.34	0.57	0.30	0.0336	0.5265	473.85	0.00	0.00	0.00	0.00	0.00	473.85	37000.00	473.85	0.00	0.00	0.00	0.00
15:30	2.3	0.32	0.56	0.29	0.0322	0.5046	454.10	0.00	0.00	0.00	0.00	0.00	454.10	37000.00	454.10	0.00	0.00	0.00	0.00
15:45	1.9	0.27	0.55	0.24	0.0266	0.4168	375.13	0.00	0.00	0.00	0.00	0.00	375.13	37000.00	375.13	0.00	0.00	0.00	0.00
16:00	1.9	0.27	0.54	0.24	0.0266	0.4168	375.13	0.00	0.00	0.00	0.00	0.00	375.13	37000.00	375.13	0.00	0.00	0.00	0.00
16:15	0.4	0.06	0.53	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
16:30	0.4	0.06	0.53	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
16:45	0.3	0.04	0.52	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
17:00	0.3	0.04	0.51	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
17:15	0.5	0.07	0.50	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
17:30	0.5	0.07	0.49	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
17:45	0.5	0.07	0.49	0.06	0.0070	0.1097	98.72	0.00	0.00	0.00	0.00	0.00	98.72	37000.00	98.72	0.00	0.00	0.00	0.00
18:00	0.4	0.06	0.48	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
18:15	0.4	0.06	0.47	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
18:30	0.4	0.06	0.47	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
18:45	0.3	0.04	0.46	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
19:00	0.2	0.03	0.45	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
19:15	0.3	0.04	0.45	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
19:30	0.4	0.06	0.44	0.05	0.0056	0.0877	78.97	0.00	0.00	0.00	0.00	0.00	78.97	37000.00	78.97	0.00	0.00	0.00	0.00
19:45	0.3	0.04	0.43	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
20:00	0.2	0.03	0.43	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
20:15	0.3	0.04	0.42	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
20:30	0.3	0.04	0.42	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
20:45	0.3	0.04	0.41	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
21:00	0.2	0.03	0.41	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
21:15	0.3	0.04	0.40	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
21:30	0.2	0.03	0.40	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
21:45	0.3	0.04	0.39	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
22:00	0.2	0.03	0.39	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
22:15	0.3	0.04	0.39	0.04	0.0042	0.0658	59.23	0.00	0.00	0.00	0.00	0.00	59.23	37000.00	59.23	0.00	0.00	0.00	0.00
22:30	0.2	0.03	0.38	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
22:45	0.2	0.03	0.38	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
23:00	0.2	0.03	0.38	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
23:15	0.2	0.03	0.37	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
23:30	0.2	0.03	0.37	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
23:45	0.2	0.03	0.37	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
24:00	0.2	0.03	0.37	0.03	0.0028	0.0439	39.49	0.00	0.00	0.00	0.00	0.00	39.49	37000.00	39.49	0.00	0.00	0.00	0.00
01:00:15	0	0.00	0.37	0.00	0.0000	0.0000	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
					Total volume (cf)		**19743.57**								**Total Overflow (cf)**			**0.00**	

HYDROLOGY CALCULATIONS - Rancho Mirage Affordable Apartments - Area P5 **Program Updated 04/05/2024 by LZ**

Using the RCFC&WCD Short Cut Unit Hydrograph Method
Area Designations **Area P5**

Note: Basin not modeled. Drainage flows to offsite basin designed for this area proposed per separate project.

	Area 1				
Drainage Area (ac.)	**0.2300**				
Unit time (minutes)	**5**	**5**	**5**	**15**	
100 Year Storm Duration (hrs)	1	3	6	24	
Total Precipitation (Plates D-4.4,E-5.2, 5.4, 5.6)(in.)	**1.6**	**2.00**	**2.50**	**3.50**	Or data from NOAA interactive website
Soils Group	A				
AMC index II Runoff Number (plate E-6.1)	32				
Plate E-6.2 Pervious Area Loss Rate (Fp)(in/hr)	0.74	(AMC II)			
Percentage of Impervious Cover (Ai)(%) (plate E-6.3)		**0**			
Weighted Average Loss Rate (F=Fp(1-.9Ai))(in./hr.)	0.74	(used for 1, 3, and 6 hour storm, the 24 hour storm uses variable maximum loss rate per plate E-1.1 (3 of 6))			
Low Loss Rate Percent (%)	90	(typically 80-90%)			
Minimum value percentage on loss rate curve (Fm)(int/hr)		50	(typically 50-75%)		
Retention Basin Infiltration Rate (in/hr)	**4**	(also used for drywell percolation rate)			

Percolation is taken incrementally.
Basin volume is calculated using the "truncated pyramid" formula, a more conservative estimate than "averaged end areas" sometimes used

Basin is zeroed out by reducing variables to 0.001, Zero would crash spreadsheet.

(Drywell can be "zeroed out" by reducing numbers to less than .001, but should not entered as zeros or program chokes.)
Drywell storage includes 40% of the 1' wide rock bed surrounding the drywell: formula (upper)*PI()*(diam/2)^2+(lower)*PI()*((diam/2)^2+0.4*((diam/2+(grav+0.4166))^2-(diam/2+0.4166)^2))
The drywell wall thickness is assumed at 5" (0.4166) and the gravel bed width is variable "grav"

Drywell design factors **Upper sec. (ft.)=** **0.001** **Lower sec. (ft.)=** **0.001** **Ring diam. (ft.) =** **0.001** **Drywell lower max. (cf)=** **0.00** **Upper max.(cf)=** **0.00**
Gravel bed width around drywell= **0.001** **Drywell total(cf)=** **0.00**

Ret. Basin design (area, depth) **Top =** **0.001** s.f. **Bot. =** **0.001** **s.f.** **Max. Depth (d)=** **0.001** **Max. storage=** **0.00** (d/3)*(bottom+top+(bottom*top)^0.50)
Formulas **vol=(h/3)*(bottom+top+(bottom*top)^0.50)** **area=bottom+(h/d)*(top-bottom)** **h=(vol*3)/(bottom+top+(bottom*top)^0.5)** **(values must be non-zero or error occurs)**
Outside input from: **N/A** (Max. depth excludes the freeboard. Freeboard provided is on top of max. depth.)

1 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	3.7	0.71	0.74	0.64	0.0710	0.0165	4.94	0.00	0.00	0.00	0.00	0.00	4.94	0.00	0.00	0.00	0.00	4.94	0.02
0:10	4.8	0.92	0.74	N/A	0.1816	0.0421	12.63	0.00	0.00	0.00	0.00	0.00	12.63	0.00	0.00	0.00	0.00	12.63	0.04
0:15	5.1	0.98	0.74	N/A	0.2392	0.0555	16.64	0.00	0.00	0.00	0.00	0.00	16.64	0.00	0.00	0.00	0.00	16.64	0.06
0:20	4.9	0.94	0.74	N/A	0.2008	0.0466	13.97	0.00	0.00	0.00	0.00	0.00	13.97	0.00	0.00	0.00	0.00	13.97	0.05
0:25	6.6	1.27	0.74	N/A	0.5272	0.1223	36.68	0.00	0.00	0.00	0.00	0.00	36.68	0.00	0.00	0.00	0.00	36.68	0.12
0:30	7.3	1.40	0.74	N/A	0.6616	0.1534	46.03	0.00	0.00	0.00	0.00	0.00	46.03	0.00	0.00	0.00	0.00	46.03	0.15
0:35	8.4	1.61	0.74	N/A	0.8728	0.2024	60.73	0.00	0.00	0.00	0.00	0.00	60.73	0.00	0.00	0.00	0.00	60.73	0.20
0:40	9	1.73	0.74	N/A	0.9880	0.2291	68.74	0.00	0.00	0.00	0.00	0.00	68.74	0.00	0.00	0.00	0.00	68.74	0.23
0:45	12.3	2.36	0.74	N/A	1.6216	0.3761	112.82	0.00	0.00	0.00	0.00	0.00	112.82	0.00	0.00	0.00	0.00	112.82	0.38
0:50	17.6	3.38	0.74	N/A	2.6392	**0.6121**	**183.62**	0.00	0.00	0.00	0.00	0.00	183.62	0.00	0.00	0.00	0.00	**183.62**	**0.61**
0:55	16.1	3.09	0.74	N/A	2.3512	0.5453	163.58	0.00	0.00	0.00	0.00	0.00	163.58	0.00	0.00	0.00	0.00	163.58	0.55
1:00	4.2	0.81	0.74	N/A	0.0664	0.0154	4.62	0.00	0.00	0.00	0.00	0.00	4.62	0.00	0.00	0.00	0.00	4.62	0.02
1:05	0	0.00	0.74	0.00	0.0000	0.0000	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
					Total volume (cf)		**725.02**								**Total Overflow (cf)**			**725.02**	

3 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	1.3	0.31	0.74	0.28	0.0312	0.0072	2.17	0.00	0.00	0.00	0.00	0.00	2.17	0.00	0.00	0.00	0.00	2.17	0.01
0:10	1.3	0.31	0.74	0.28	0.0312	0.0072	2.17	0.00	0.00	0.00	0.00	0.00	2.17	0.00	0.00	0.00	0.00	2.17	0.01
0:15	1.1	0.26	0.74	0.24	0.0264	0.0061	1.84	0.00	0.00	0.00	0.00	0.00	1.84	0.00	0.00	0.00	0.00	1.84	0.01
0:20	1.5	0.36	0.74	0.32	0.0360	0.0083	2.50	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	0.01
0:25	1.5	0.36	0.74	0.32	0.0360	0.0083	2.50	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	0.01
0:30	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
0:35	1.5	0.36	0.74	0.32	0.0360	0.0083	2.50	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	0.01
0:40	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
0:45	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
0:50	1.5	0.36	0.74	0.32	0.0360	0.0083	2.50	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	0.01
0:55	1.6	0.38	0.74	0.35	0.0384	0.0089	2.67	0.00	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	2.67	0.01
1:00	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
1:05	2.2	0.53	0.74	0.48	0.0528	0.0122	3.67	0.00	0.00	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	3.67	0.01
1:10	2.2	0.53	0.74	0.48	0.0528	0.0122	3.67	0.00	0.00	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	3.67	0.01
1:15	2.2	0.53	0.74	0.48	0.0528	0.0122	3.67	0.00	0.00	0.00	0.00	0.00	3.67	0.00	0.00	0.00	0.00	3.67	0.01
1:20	2	0.48	0.74	0.43	0.0480	0.0111	3.34	0.00	0.00	0.00	0.00	0.00	3.34	0.00	0.00	0.00	0.00	3.34	0.01
1:25	2.6	0.62	0.74	0.56	0.0624	0.0145	4.34	0.00	0.00	0.00	0.00	0.00	4.34	0.00	0.00	0.00	0.00	4.34	0.01
1:30	2.7	0.65	0.74	0.58	0.0648	0.0150	4.51	0.00	0.00	0.00	0.00	0.00	4.51	0.00	0.00	0.00	0.00	4.51	0.02
1:35	2.4	0.58	0.74	0.52	0.0576	0.0134	4.01	0.00	0.00	0.00	0.00	0.00	4.01	0.00	0.00	0.00	0.00	4.01	0.01
1:40	2.7	0.65	0.74	0.58	0.0648	0.0150	4.51	0.00	0.00	0.00	0.00	0.00	4.51	0.00	0.00	0.00	0.00	4.51	0.02
1:45	3.3	0.79	0.74	N/A	0.0520	0.0121	3.62	0.00	0.00	0.00	0.00	0.00	3.62	0.00	0.00	0.00	0.00	3.62	0.01
1:50	3.1	0.74	0.74	N/A	0.0040	0.0009	0.28	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.28	0.00
1:55	2.9	0.70	0.74	0.63	0.0696	0.0161	4.84	0.00	0.00	0.00	0.00	0.00	4.84	0.00	0.00	0.00	0.00	4.84	0.02
2:00	3	0.72	0.74	0.65	0.0720	0.0167	5.01	0.00	0.00	0.00	0.00	0.00	5.01	0.00	0.00	0.00	0.00	5.01	0.02
2:05	3.1	0.74	0.74	N/A	0.0040	0.0009	0.28	0.00	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.00	0.00	0.28	0.00
2:10	4.2	1.01	0.74	N/A	0.2680	0.0622	18.65	0.00	0.00	0.00	0.00	0.00	18.65	0.00	0.00	0.00	0.00	18.65	0.06
2:15	5	1.20	0.74	N/A	0.4600	0.1067	32.00	0.00	0.00	0.00	0.00	0.00	32.00	0.00	0.00	0.00	0.00	32.00	0.11
2:20	3.5	0.84	0.74	N/A	0.1000	0.0232	6.96	0.00	0.00	0.00	0.00	0.00	6.96	0.00	0.00	0.00	0.00	6.96	0.02
2:25	6.8	1.63	0.74	N/A	0.8920	0.2069	62.06	0.00	0.00	0.00	0.00	0.00	62.06	0.00	0.00	0.00	0.00	62.06	0.21
2:30	7.3	1.75	0.74	N/A	1.0120	0.2347	70.41	0.00	0.00	0.00	0.00	0.00	70.41	0.00	0.00	0.00	0.00	70.41	0.23
2:35	8.2	1.97	0.74	N/A	1.2280	**0.2848**	**85.44**	0.00	0.00	0.00	0.00	0.00	85.44	0.00	0.00	0.00	0.00	**85.44**	**0.28**
2:40	5.9	1.42	0.74	N/A	0.6760	0.1568	47.03	0.00	0.00	0.00	0.00	0.00	47.03	0.00	0.00	0.00	0.00	47.03	0.16
2:45	2	0.48	0.74	0.43	0.0480	0.0111	3.34	0.00	0.00	0.00	0.00	0.00	3.34	0.00	0.00	0.00	0.00	3.34	0.01
2:50	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
2:55	1.8	0.43	0.74	0.39	0.0432	0.0100	3.01	0.00	0.00	0.00	0.00	0.00	3.01	0.00	0.00	0.00	0.00	3.01	0.01
3:00	0.6	0.14	0.74	0.13	0.0144	0.0033	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00
3:05	0	0.00	0.74	0.00	0.0000	0.0000	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
					Total volume (cf)		**409.55**											**409.55**	

6 Hour Storm in 5 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:05	0.5	0.15	0.74	0.14	0.0150	0.0035	1.04	0.00	0.00	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	1.04	0.00
0:10	0.6	0.18	0.74	0.16	0.0180	0.0042	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.25	0.00
0:15	0.6	0.18	0.74	0.16	0.0180	0.0042	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.25	0.00
0:20	0.6	0.18	0.74	0.16	0.0180	0.0042	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.25	0.00
0:25	0.6	0.18	0.74	0.16	0.0180	0.0042	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.25	0.00
0:30	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
0:35	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
0:40	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
0:45	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
0:50	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
0:55	0.7	0.21	0.74	0.19	0.0210	0.0049	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
1:00	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:05	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:10	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:15	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:20	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:25	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:30	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:35	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:40	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:45	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:50	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
1:55	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
2:00	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:05	0.8	0.24	0.74	0.22	0.0240	0.0056	1.67	0.00	0.00	0.00	0.00	0.00	1.67	0.00	0.00	0.00	0.00	1.67	0.01
2:10	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:15	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:20	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:25	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:30	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:35	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:40	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
2:45	1	0.30	0.74	0.27	0.0300	0.0070	2.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	0.00	0.00	2.09	0.01
2:50	1	0.30	0.74	0.27	0.0300	0.0070	2.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	0.00	0.00	2.09	0.01
2:55	1	0.30	0.74	0.27	0.0300	0.0070	2.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	0.00	0.00	2.09	0.01
3:00	1	0.30	0.74	0.27	0.0300	0.0070	2.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	0.00	0.00	2.09	0.01
3:05	1	0.30	0.74	0.27	0.0300	0.0070	2.09	0.00	0.00	0.00	0.00	0.00	2.09	0.00	0.00	0.00	0.00	2.09	0.01
3:10	1.1	0.33	0.74	0.30	0.0330	0.0077	2.30	0.00	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	2.30	0.01
3:15	1.1	0.33	0.74	0.30	0.0330	0.0077	2.30	0.00	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	2.30	0.01
3:20	1.1	0.33	0.74	0.30	0.0330	0.0077	2.30	0.00	0.00	0.00	0.00	0.00	2.30	0.00	0.00	0.00	0.00	2.30	0.01
3:25	1.2	0.36	0.74	0.32	0.0360	0.0083	2.50	0.00	0.00	0.00	0.00	0.00	2.50	0.00	0.00	0.00	0.00	2.50	0.01
3:30	1.3	0.39	0.74	0.35	0.0390	0.0090	2.71	0.00	0.00	0.00	0.00	0.00	2.71	0.00	0.00	0.00	0.00	2.71	0.01
3:35	1.4	0.42	0.74	0.38	0.0420	0.0097	2.92	0.00	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	2.92	0.01
3:40	1.4	0.42	0.74	0.38	0.0420	0.0097	2.92	0.00	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	2.92	0.01
3:45	1.5	0.45	0.74	0.41	0.0450	0.0104	3.13	0.00	0.00	0.00	0.00	0.00	3.13	0.00	0.00	0.00	0.00	3.13	0.01
3:50	1.5	0.45	0.74	0.41	0.0450	0.0104	3.13	0.00	0.00	0.00	0.00	0.00	3.13	0.00	0.00	0.00	0.00	3.13	0.01
3:55	1.6	0.48	0.74	0.43	0.0480	0.0111	3.34	0.00	0.00	0.00	0.00	0.00	3.34	0.00	0.00	0.00	0.00	3.34	0.01
4:00	1.6	0.48	0.74	0.43	0.0480	0.0111	3.34	0.00	0.00	0.00	0.00	0.00	3.34	0.00	0.00	0.00	0.00	3.34	0.01

4:05	1.7	0.51	0.74	0.46	0.0510	0.0118	3.55	0.00	0.00	0.00	0.00	0.00	3.55	0.00	0.00	0.00	0.00	3.55	0.01
4:10	1.8	0.54	0.74	0.49	0.0540	0.0125	3.76	0.00	0.00	0.00	0.00	0.00	3.76	0.00	0.00	0.00	0.00	3.76	0.01
4:15	1.9	0.57	0.74	0.51	0.0570	0.0132	3.97	0.00	0.00	0.00	0.00	0.00	3.97	0.00	0.00	0.00	0.00	3.97	0.01
4:20	2	0.60	0.74	0.54	0.0600	0.0139	4.17	0.00	0.00	0.00	0.00	0.00	4.17	0.00	0.00	0.00	0.00	4.17	0.01
4:25	2.1	0.63	0.74	0.57	0.0630	0.0146	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.01
4:30	2.1	0.63	0.74	0.57	0.0630	0.0146	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.01
4:35	2.2	0.66	0.74	0.59	0.0660	0.0153	4.59	0.00	0.00	0.00	0.00	0.00	4.59	0.00	0.00	0.00	0.00	4.59	0.02
4:40	2.3	0.69	0.74	0.62	0.0690	0.0160	4.80	0.00	0.00	0.00	0.00	0.00	4.80	0.00	0.00	0.00	0.00	4.80	0.02
4:45	2.4	0.72	0.74	0.65	0.0720	0.0167	5.01	0.00	0.00	0.00	0.00	0.00	5.01	0.00	0.00	0.00	0.00	5.01	0.02
4:50	2.4	0.72	0.74	0.65	0.0720	0.0167	5.01	0.00	0.00	0.00	0.00	0.00	5.01	0.00	0.00	0.00	0.00	5.01	0.02
4:55	2.5	0.75	0.74	N/A	0.0100	0.0023	0.70	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.70	0.00
5:00	2.6	0.78	0.74	N/A	0.0400	0.0093	2.78	0.00	0.00	0.00	0.00	0.00	2.78	0.00	0.00	0.00	0.00	2.78	0.01
5:05	3.1	0.93	0.74	N/A	0.1900	0.0441	13.22	0.00	0.00	0.00	0.00	0.00	13.22	0.00	0.00	0.00	0.00	13.22	0.04
5:10	3.6	1.08	0.74	N/A	0.3400	0.0789	23.66	0.00	0.00	0.00	0.00	0.00	23.66	0.00	0.00	0.00	0.00	23.66	0.08
5:15	3.9	1.17	0.74	N/A	0.4300	0.0997	29.92	0.00	0.00	0.00	0.00	0.00	29.92	0.00	0.00	0.00	0.00	29.92	0.10
5:20	4.2	1.26	0.74	N/A	0.5200	0.1206	36.18	0.00	0.00	0.00	0.00	0.00	36.18	0.00	0.00	0.00	0.00	36.18	0.12
5:25	4.7	1.41	0.74	N/A	0.6700	0.1554	46.62	0.00	0.00	0.00	0.00	0.00	46.62	0.00	0.00	0.00	0.00	46.62	0.16
5:30	5.6	1.68	0.74	N/A	0.9400	**0.2180**	**65.40**	0.00	0.00	0.00	0.00	0.00	65.40	0.00	0.00	0.00	0.00	**65.40**	**0.22**
5:35	1.9	0.57	0.74	0.51	0.0570	0.0132	3.97	0.00	0.00	0.00	0.00	0.00	3.97	0.00	0.00	0.00	0.00	3.97	0.01
5:40	0.9	0.27	0.74	0.24	0.0270	0.0063	1.88	0.00	0.00	0.00	0.00	0.00	1.88	0.00	0.00	0.00	0.00	1.88	0.01
5:45	0.6	0.18	0.74	0.16	0.0180	0.0042	1.25	0.00	0.00	0.00	0.00	0.00	1.25	0.00	0.00	0.00	0.00	1.25	0.00
5:50	0.5	0.15	0.74	0.14	0.0150	0.0035	1.04	0.00	0.00	0.00	0.00	0.00	1.04	0.00	0.00	0.00	0.00	1.04	0.00
5:55	0.3	0.09	0.74	0.08	0.0090	0.0021	0.63	0.00	0.00	0.00	0.00	0.00	0.63	0.00	0.00	0.00	0.00	0.63	0.00
6:00	0.2	0.06	0.74	0.05	0.0060	0.0014	0.42	0.00	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.42	0.00
6:05	0	0.00	0.74	0.00	0.0000	0.0000	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
					Total volume (cf)		**364.16**							**Total Overflow (cf)**				**364.15**	

24 Hour Storm in 15 minute increments

Time	Pattern %	Storm Rain (in/hr)	Loss Rate Value Max.	Min.	Effective Rain (in/hr	Flow Rate (cfs)	Flow Vol. (cf)	Outside Input (cf)	Drywell Retention Area (sf)	Drywell Period Perc. (cf)	Drywell Storage Vol. (cf)	Drywell Storage Depth (ft)	Overflow To Basin (cf)	Retention Area (sf)	Basin Period Perc. (cf)	Basin Storage Vol. (cf)	Basin Storage Depth (ft	Overflow Vol. (cf)	Overflow Rate (cfs)
0:15	0.2	0.03	1.30	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
0:30	0.3	0.04	1.28	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
0:45	0.3	0.04	1.27	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
1:00	0.4	0.06	1.25	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
1:15	0.3	0.04	1.24	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
1:30	0.3	0.04	1.22	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
1:45	0.3	0.04	1.21	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
2:00	0.4	0.06	1.20	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
2:15	0.4	0.06	1.18	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
2:30	0.4	0.06	1.17	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
2:45	0.5	0.07	1.15	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
3:00	0.5	0.07	1.14	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
3:15	0.5	0.07	1.12	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
3:30	0.5	0.07	1.11	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
3:45	0.5	0.07	1.10	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
4:00	0.6	0.08	1.08	0.08	0.0084	0.0019	1.75	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	1.75	0.00
4:15	0.6	0.08	1.07	0.08	0.0084	0.0019	1.75	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	1.75	0.00
4:30	0.7	0.10	1.05	0.09	0.0098	0.0023	2.05	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	2.05	0.00
4:45	0.7	0.10	1.04	0.09	0.0098	0.0023	2.05	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	2.05	0.00
5:00	0.8	0.11	1.03	0.10	0.0112	0.0026	2.34	0.00	0.00	0.00	0.00	0.00	2.34	0.00	0.00	0.00	0.00	2.34	0.00
5:15	0.6	0.08	1.01	0.08	0.0084	0.0019	1.75	0.00	0.00	0.00	0.00	0.00	1.75	0.00	0.00	0.00	0.00	1.75	0.00
5:30	0.7	0.10	1.00	0.09	0.0098	0.0023	2.05	0.00	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	2.05	0.00
5:45	0.8	0.11	0.99	0.10	0.0112	0.0026	2.34	0.00	0.00	0.00	0.00	0.00	2.34	0.00	0.00	0.00	0.00	2.34	0.00
6:00	0.8	0.11	0.97	0.10	0.0112	0.0026	2.34	0.00	0.00	0.00	0.00	0.00	2.34	0.00	0.00	0.00	0.00	2.34	0.00
6:15	0.9	0.13	0.96	0.11	0.0126	0.0029	2.63	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	2.63	0.00
6:30	0.9	0.13	0.95	0.11	0.0126	0.0029	2.63	0.00	0.00	0.00	0.00	0.00	2.63	0.00	0.00	0.00	0.00	2.63	0.00
6:45	1	0.14	0.94	0.13	0.0140	0.0032	2.92	0.00	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	2.92	0.00
7:00	1	0.14	0.92	0.13	0.0140	0.0032	2.92	0.00	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	2.92	0.00
7:15	1	0.14	0.91	0.13	0.0140	0.0032	2.92	0.00	0.00	0.00	0.00	0.00	2.92	0.00	0.00	0.00	0.00	2.92	0.00
7:30	1.1	0.15	0.90	0.14	0.0154	0.0036	3.21	0.00	0.00	0.00	0.00	0.00	3.21	0.00	0.00	0.00	0.00	3.21	0.00
7:45	1.2	0.17	0.89	0.15	0.0168	0.0039	3.51	0.00	0.00	0.00	0.00	0.00	3.51	0.00	0.00	0.00	0.00	3.51	0.00
8:00	1.3	0.18	0.87	0.16	0.0182	0.0042	3.80	0.00	0.00	0.00	0.00	0.00	3.80	0.00	0.00	0.00	0.00	3.80	0.00
8:15	1.5	0.21	0.86	0.19	0.0210	0.0049	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.00
8:30	1.5	0.21	0.85	0.19	0.0210	0.0049	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.00
8:45	1.6	0.22	0.84	0.20	0.0224	0.0052	4.68	0.00	0.00	0.00	0.00	0.00	4.68	0.00	0.00	0.00	0.00	4.68	0.01
9:00	1.7	0.24	0.83	0.21	0.0238	0.0055	4.97	0.00	0.00	0.00	0.00	0.00	4.97	0.00	0.00	0.00	0.00	4.97	0.01
9:15	1.9	0.27	0.81	0.24	0.0266	0.0062	5.55	0.00	0.00	0.00	0.00	0.00	5.55	0.00	0.00	0.00	0.00	5.55	0.01
9:30	2	0.28	0.80	0.25	0.0280	0.0065	5.84	0.00	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00	5.84	0.01
9:45	2.1	0.29	0.79	0.26	0.0294	0.0068	6.14	0.00	0.00	0.00	0.00	0.00	6.14	0.00	0.00	0.00	0.00	6.14	0.01
10:00	2.2	0.31	0.78	0.28	0.0308	0.0071	6.43	0.00	0.00	0.00	0.00	0.00	6.43	0.00	0.00	0.00	0.00	6.43	0.01
10:15	1.5	0.21	0.77	0.19	0.0210	0.0049	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.00
10:30	1.5	0.21	0.76	0.19	0.0210	0.0049	4.38	0.00	0.00	0.00	0.00	0.00	4.38	0.00	0.00	0.00	0.00	4.38	0.00
10:45	2	0.28	0.75	0.25	0.0280	0.0065	5.84	0.00	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00	5.84	0.01
11:00	2	0.28	0.74	0.25	0.0280	0.0065	5.84	0.00	0.00	0.00	0.00	0.00	5.84	0.00	0.00	0.00	0.00	5.84	0.01
11:15	1.9	0.27	0.72	0.24	0.0266	0.0062	5.55	0.00	0.00	0.00	0.00	0.00	5.55	0.00	0.00	0.00	0.00	5.55	0.01
11:30	1.9	0.27	0.71	0.24	0.0266	0.0062	5.55	0.00	0.00	0.00	0.00	0.00	5.55	0.00	0.00	0.00	0.00	5.55	0.01
11:45	1.7	0.24	0.70	0.21	0.0238	0.0055	4.97	0.00	0.00	0.00	0.00	0.00	4.97	0.00	0.00	0.00	0.00	4.97	0.01
12:00	1.8	0.25	0.69	0.23	0.0252	0.0058	5.26	0.00	0.00	0.00	0.00	0.00	5.26	0.00	0.00	0.00	0.00	5.26	0.01

12:15	2.5	0.35	0.68	0.32	0.0350	0.0081	7.31	0.00	0.00	0.00	0.00	0.00	7.31	0.00	0.00	0.00	0.00	7.31	0.01
12:30	2.6	0.36	0.67	0.33	0.0364	0.0084	7.60	0.00	0.00	0.00	0.00	0.00	7.60	0.00	0.00	0.00	0.00	7.60	0.01
12:45	2.8	0.39	0.66	0.35	0.0392	0.0091	8.18	0.00	0.00	0.00	0.00	0.00	8.18	0.00	0.00	0.00	0.00	8.18	0.01
13:00	2.9	0.41	0.65	0.37	0.0406	0.0094	8.47	0.00	0.00	0.00	0.00	0.00	8.47	0.00	0.00	0.00	0.00	8.47	0.01
13:15	3.4	0.48	0.64	0.43	0.0476	0.0110	9.94	0.00	0.00	0.00	0.00	0.00	9.94	0.00	0.00	0.00	0.00	9.94	0.01
13:30	3.4	0.48	0.63	0.43	0.0476	**0.0110**	**9.94**	0.00	0.00	0.00	0.00	0.00	9.94	0.00	0.00	0.00	0.00	**9.94**	**0.01**
13:45	2.3	0.32	0.62	0.29	0.0322	0.0075	6.72	0.00	0.00	0.00	0.00	0.00	6.72	0.00	0.00	0.00	0.00	6.72	0.01
14:00	2.3	0.32	0.61	0.29	0.0322	0.0075	6.72	0.00	0.00	0.00	0.00	0.00	6.72	0.00	0.00	0.00	0.00	6.72	0.01
14:15	2.7	0.38	0.60	0.34	0.0378	0.0088	7.89	0.00	0.00	0.00	0.00	0.00	7.89	0.00	0.00	0.00	0.00	7.89	0.01
14:30	2.6	0.36	0.59	0.33	0.0364	0.0084	7.60	0.00	0.00	0.00	0.00	0.00	7.60	0.00	0.00	0.00	0.00	7.60	0.01
14:45	2.6	0.36	0.59	0.33	0.0364	0.0084	7.60	0.00	0.00	0.00	0.00	0.00	7.60	0.00	0.00	0.00	0.00	7.60	0.01
15:00	2.5	0.35	0.58	0.32	0.0350	0.0081	7.31	0.00	0.00	0.00	0.00	0.00	7.31	0.00	0.00	0.00	0.00	7.31	0.01
15:15	2.4	0.34	0.57	0.30	0.0336	0.0078	7.01	0.00	0.00	0.00	0.00	0.00	7.01	0.00	0.00	0.00	0.00	7.01	0.01
15:30	2.3	0.32	0.56	0.29	0.0322	0.0075	6.72	0.00	0.00	0.00	0.00	0.00	6.72	0.00	0.00	0.00	0.00	6.72	0.01
15:45	1.9	0.27	0.55	0.24	0.0266	0.0062	5.55	0.00	0.00	0.00	0.00	0.00	5.55	0.00	0.00	0.00	0.00	5.55	0.01
16:00	1.9	0.27	0.54	0.24	0.0266	0.0062	5.55	0.00	0.00	0.00	0.00	0.00	5.55	0.00	0.00	0.00	0.00	5.55	0.01
16:15	0.4	0.06	0.53	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
16:30	0.4	0.06	0.53	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
16:45	0.3	0.04	0.52	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
17:00	0.3	0.04	0.51	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
17:15	0.5	0.07	0.50	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
17:30	0.5	0.07	0.49	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
17:45	0.5	0.07	0.49	0.06	0.0070	0.0016	1.46	0.00	0.00	0.00	0.00	0.00	1.46	0.00	0.00	0.00	0.00	1.46	0.00
18:00	0.4	0.06	0.48	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
18:15	0.4	0.06	0.47	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
18:30	0.4	0.06	0.47	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
18:45	0.3	0.04	0.46	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
19:00	0.2	0.03	0.45	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
19:15	0.3	0.04	0.45	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
19:30	0.4	0.06	0.44	0.05	0.0056	0.0013	1.17	0.00	0.00	0.00	0.00	0.00	1.17	0.00	0.00	0.00	0.00	1.17	0.00
19:45	0.3	0.04	0.43	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
20:00	0.2	0.03	0.43	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
20:15	0.3	0.04	0.42	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
20:30	0.3	0.04	0.42	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
20:45	0.3	0.04	0.41	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
21:00	0.2	0.03	0.41	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
21:15	0.3	0.04	0.40	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
21:30	0.2	0.03	0.40	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
21:45	0.3	0.04	0.39	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
22:00	0.2	0.03	0.39	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
22:15	0.3	0.04	0.39	0.04	0.0042	0.0010	0.88	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.88	0.00
22:30	0.2	0.03	0.38	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
22:45	0.2	0.03	0.38	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
23:00	0.2	0.03	0.38	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
23:15	0.2	0.03	0.37	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
23:30	0.2	0.03	0.37	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
23:45	0.2	0.03	0.37	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
24:00	0.2	0.03	0.37	0.03	0.0028	0.0006	0.58	0.00	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00
01:00:15	0	0.00	0.37	0.00	0.0000	0.0000	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
					Total volume (cf)		**292.22**							**Total Overflow (cf)**				**292.21**	

Rancho Mirage Affordable Apartments - Drawdown Calculations

Basin	High Water Level[1] (ft)	Design Infiltration Rate[2] (in/hr)	Drawdown Time[3] (hr)
1	5.5	4.00	16.5
2	1.0	4.00	3.0

[1] Maximum water depth in basin per routing calculations.

[2] See design infiltration rate calculations.

[3] Calculated as high water depth divided by design infiltration rate.

APPENDIX C

Reference Material

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

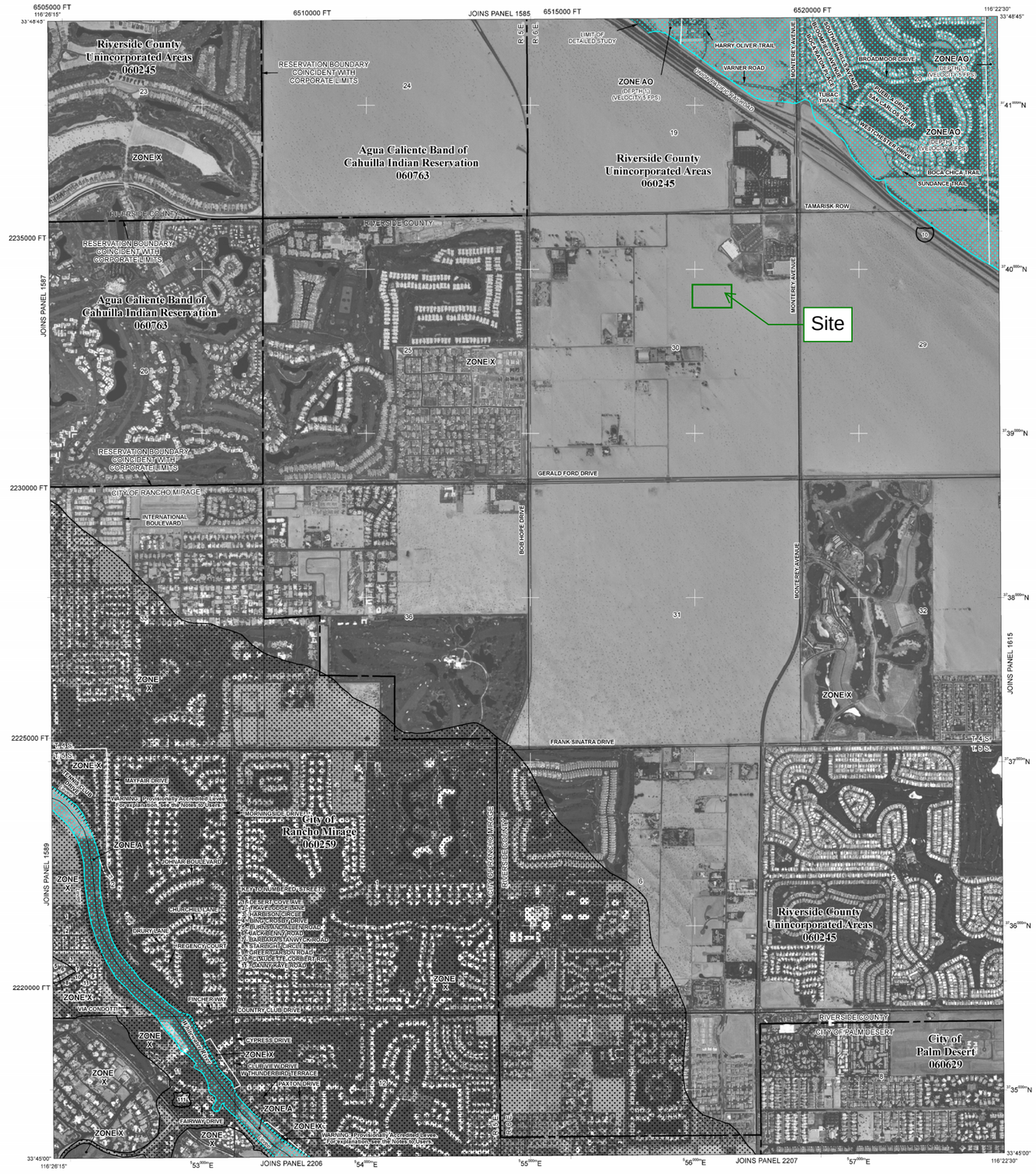
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

WARNING: This map contains levees, dikes, or other structures that have been provisionally accredited and mapped as providing protection from the 1-percent–annual-chance flood. To maintain accreditation, the levee owner or community is required to submit documentation necessary to comply with 44 CFR Section 65.10 by August 8, 2009. Because of the risk of overtopping or failure of the structure, communities should take proper precautions to protect lives and minimize damages in these areas, such as issuing an evacuation plan and encouraging property owners to purchase flood insurance.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

- (A)—(A) Cross section line
- (23)—(23) Transect line
- 87°07'45", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 3776000mN — 1000-meter Universal Transverse Mercator grid values, zone 11N
- 600000 FT — 5000-foot grid ticks: California State Plane coordinate system, zone VI (FIPSZONE 0406), Lambert Conformal Conic projection
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
August 28, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP

PANEL 1595G

FIRM
FLOOD INSURANCE RATE MAP

RIVERSIDE COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1595 OF 3805
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
AGUA CALIENTE BAND OF CAHUILLA INDIAN RESERVATION	060763	1595	G
PALM DESERT, CITY OF	060629	1595	G
RANCHO MIRAGE, CITY OF	060259	1595	G
RIVERSIDE COUNTY	060245	1595	G

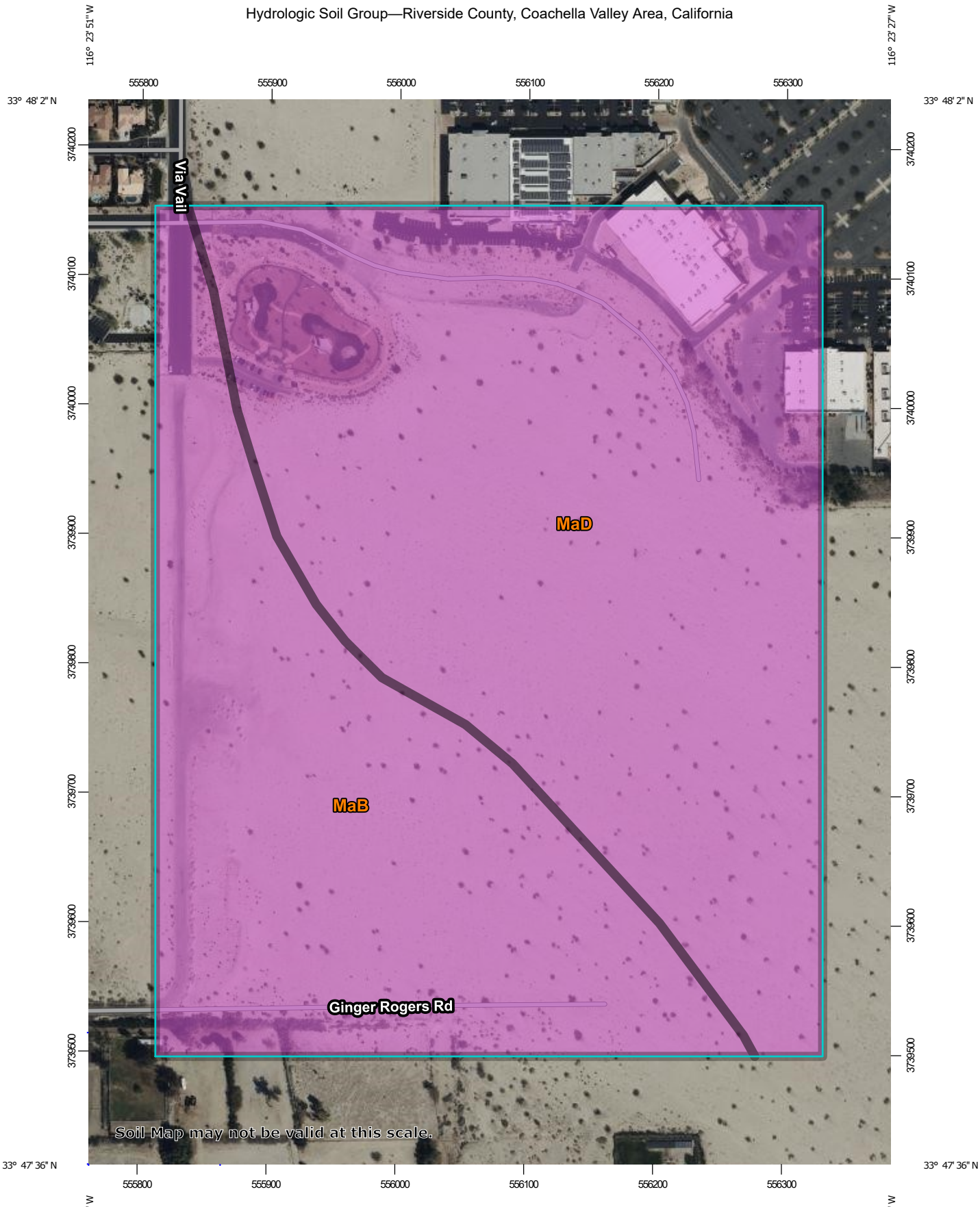
Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06065C1595G

EFFECTIVE DATE
AUGUST 28, 2008

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM



Map Scale: 1:4,010 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Riverside County, Coachella Valley Area, California
Survey Area Data: Version 15, Aug 30, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 15, 2022—May 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
MaB	Myoma fine sand, 0 to 5 percent slopes	A	32.2	38.2%
MaD	Myoma fine sand, 5 to 15 percent slopes	A	52.2	61.8%
Totals for Area of Interest			**84.4**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

INSTRUCTIONS FOR SYNTHETIC UNIT HYDROGRAPH METHOD HYDROLOGY CALCULATIONS

A. Synthetic Unit Hydrograph Development

1. On a USGS topographic quandrangle sheet or other map of suitable scale, outline the proposed drainage system and outline the area or subareas tributary to it.

2. From the map of the drainage system, determine the following basin physical factors and enter them on Sheet 1 of Plate E-2.1.

   A = Drainage area - square miles

   L = Length of longest watercourse - miles

   L_{ca} = Length along the longest watercourse, measured upstream to a point opposite the centroid of the area - miles

   H = Difference in elevation between the concentration point and the most remote point of the basin-feet

   S = Overall slope of longest watercourse between headwaters and concentration point - feet per mile (S = H/L)

3. Determine lag time using Plate E-3 or the following expression (See Sheet 1 of Plate E-2.1):

$$\text{Lag (hours)} = 24\bar{n}\left[\frac{L \cdot Lca}{S^{\frac{1}{2}}}\right]^{(.38)}$$

   where:

   $\bar{n}$ = The visually estimated mean of the n (Mannings formula) values of all collection streams and channels within the watershed.

4. Select a unit time period. To adequately define the unit hydrograph the unit time period should be about 25-percent of lag time, and never more than 40-percent of lag time. For ease of calculation, the unit time should match the times for which precipitation patterns are available (Plate E-5.9). Also see Sheet 1 of Plate E-2.1.

5. Utilizing the S-graph applicable to the drainage basin (Plates E-4.1 through E-4.4), determine the average percentage of the ultimate discharge for each unit period. In reading the percentage of discharge from the S-graph, the average ordinate over the time

5. (continued)

increment should be determined rather than the mean of the ordinates at the beginning and end of the time increment. See Columns 16 and 17 of Plate E-2.2.

6. Compute the unit distribution graph by subtracting from the percentage of ultimate discharge for each unit time period, the percentage of ultimate discharge for the previous time period. See Column 18 of Plate E-2.2.

7. Compute the ordinates of the synthetic unit hydrograph (unit graph) by multiplying the distribution graph values by the ultimate discharge K, using:

$$K \text{ (cfs-hours/inch)} = 645A$$

where:

A = Drainage area - square miles

See Column 19 of Plate E-2.2.

B. Flood Hydrograph Development

1. Determine the average point rainfall over the area for the storm duration and frequency desired using Plates E-5.1 through E-5.7. Adjust the average point rainfall for areal effect using Plate E-5.8. See Sheet 1 of Plate E-2.1.

2. Determine the unit period rainfall amounts using the pattern percentages from Plate E-5.9 times the adjusted average point rainfall, and convert them to rainfall rates in inches per hour. See Columns 20 and 21 of Plate E-2.2.

3. Find the pervious area loss rates for subareas within the drainage area using Plates E-6.1 and E-6.2. Adjust these rates to account for impervious area using the relationship below, and then compute a weighted average loss rate for the watershed. See Sheet 2 of Plate E-2.1.

$$F = F_p (1.00 - 0.9A_i)$$

where:

F = Adjusted loss rate - inches/hour

F_p = Loss rate for pervious areas - inches/hour (Plate E-6.2)

A_i = Impervious area (actual) - decimal percent (Plate E-6.3)

4. For 3 and 6-hour duration storms assume the weighted average loss rate is a constant defining the maximum loss rate for each unit time period. For 24-hour storms use the variable loss rate function below to compute the maximum loss rate for each unit time period:

$$F_T \text{ (inches/hour)} = C\,(24-(T/60))^{1.55} + F_m$$

where:

$C = (F - F_m)/54$

F = Adjusted loss rate - inches/hour (as previously defined)

T = Time from beginning of storm - minutes

F_m = Minimum value on loss rate curve - inches/hour (typically 50 to 75-percent of F)

The time "T" used should be from the start of the storm to the middle of each unit time period, i.e., for a unit time of 30-minutes the maximum loss rate would be computed for T=15-minutes for period one, T=45-minutes for period two, etc. Enter the maximum loss rates (constant or variable) on Column 22 of Plate E-2.2.

5. Compute the low loss rate for each unit time period where the maximum loss rate exceeds the rainfall rate for that period. The low loss rate should normally be 80 to 90-percent times the rainfall rate. See Column 22 of Plate E-2.2.

6. Compute the effective rainfall rate for each unit time period by subtracting the loss rate from the rainfall rate. See Column 23 of Plate E-2.2. Be sure to use the low loss rate where the maximum loss rate exceeds unit period intensity.

7. Compute the flood hydrograph using one of the following two methods. Do not use the simplified method until the long form method is thoroughly understood:

   (a) Long form method (use Plate E-2.3):

      (1) Multiply the effective rainfall rate for the first unit time period times each synthetic unit hydrograph value to determine the flood hydrograph which would result from that rainfall increment.

      (2) Repeat the above process for each suceeding effective rainfall value, advancing the resultant flood hydrographs one unit time period for each cycle.

7. (continued)

(3) Sum the flow ordinates found in the steps above to determine the average flow ordinate per unit time period for the design storm flood hydrograph.

(b) Simplified Method:

(1) List the unit graph values (Column 19, Plate E-2.2) in reverse order on the right hand side of a separate sheet of paper.

(2) Align the separate sheet with the effective rain column (Column 23 of Plate E-2.2) so that the bottom unit graph value is adjacent to the top effective rain value. The product of these values is the flood hydrograph value in cfs for the first unit period (Column 24 of Plate E-2.2).

(3) Move the separate sheet down one unit time period. The sum of the products of the first two effective rain values, times the adjacent unit graph values, is the flood hydrograph value for the second unit time period.

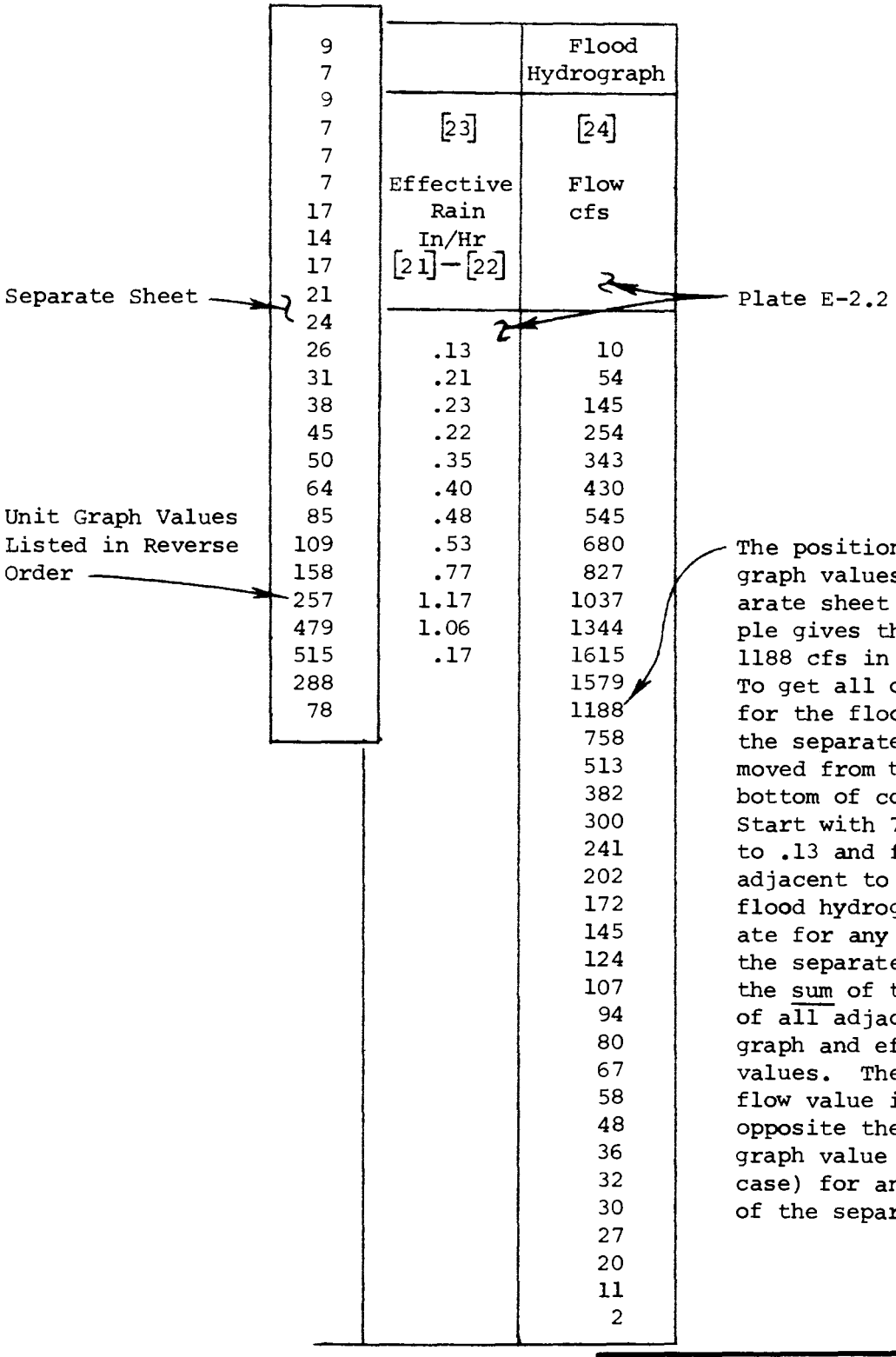
(4) Move the separate sheet down one unit time period to compute each successive flood hydrograph value. The flood hydrograph value in each case is the sum of the products of each effective rain value times the adjacent unit graph value. The procedure is illustrated by the example on the next page. Continue this process until the hydrograph is completely defined (the top unit graph value will be opposite the bottom effective rain value).

The flood hydrograph value computed for any positioning of the separate sheet is always entered opposite the unit graph value at the bottom of the separate sheet.

It is possible to determine the peak discharge without defining the entire hydrograph by aligning the maximum unit graph values just above the maximum effective rain values, and then computing enough flood hydrograph values to identify the peak discharge.

8. If desired add base flow to the flood hydrograph ordinates determined in Step 7.

EXAMPLE OF SIMPLIFIED METHOD OF FLOOD HYDROGRAPH COMPUTATION



The position of the unit graph values on the separate sheet in this example gives the value of 1188 cfs in column [24]. To get all of the values for the flood hydrograph the separate sheet must moved from the top to the bottom of column [23]. Start with 78 adjacent to .13 and finish with 9 adjacent to .17. The flood hydrograph ordinate for any position of the separate sheet is the sum of the products of all adjacent unit graph and effective rain values. The computed flow value is entered opposite the bottom unit graph value (78 in this case) for any position of the separate sheet.

9. The hydrograph may be plotted by drawing a smooth curve through flow ordinates (at the center of each unit time period) so that the average flow value under the curve matches the average ordinate for each unit time period (see example calculations).

10. Additional steps may be necessary for complicated drainage systems as conditions dictate, including combining subarea hydrographs, and channel and reservoir routing.

INSTRUCTIONS FOR SHORT CUT SYNTHETIC HYDROGRAPH HYDROLOGY CALCULATIONS

1. Determine drainage area and lag time. Use Steps A-1 through A-3 on Plate E-1.1.

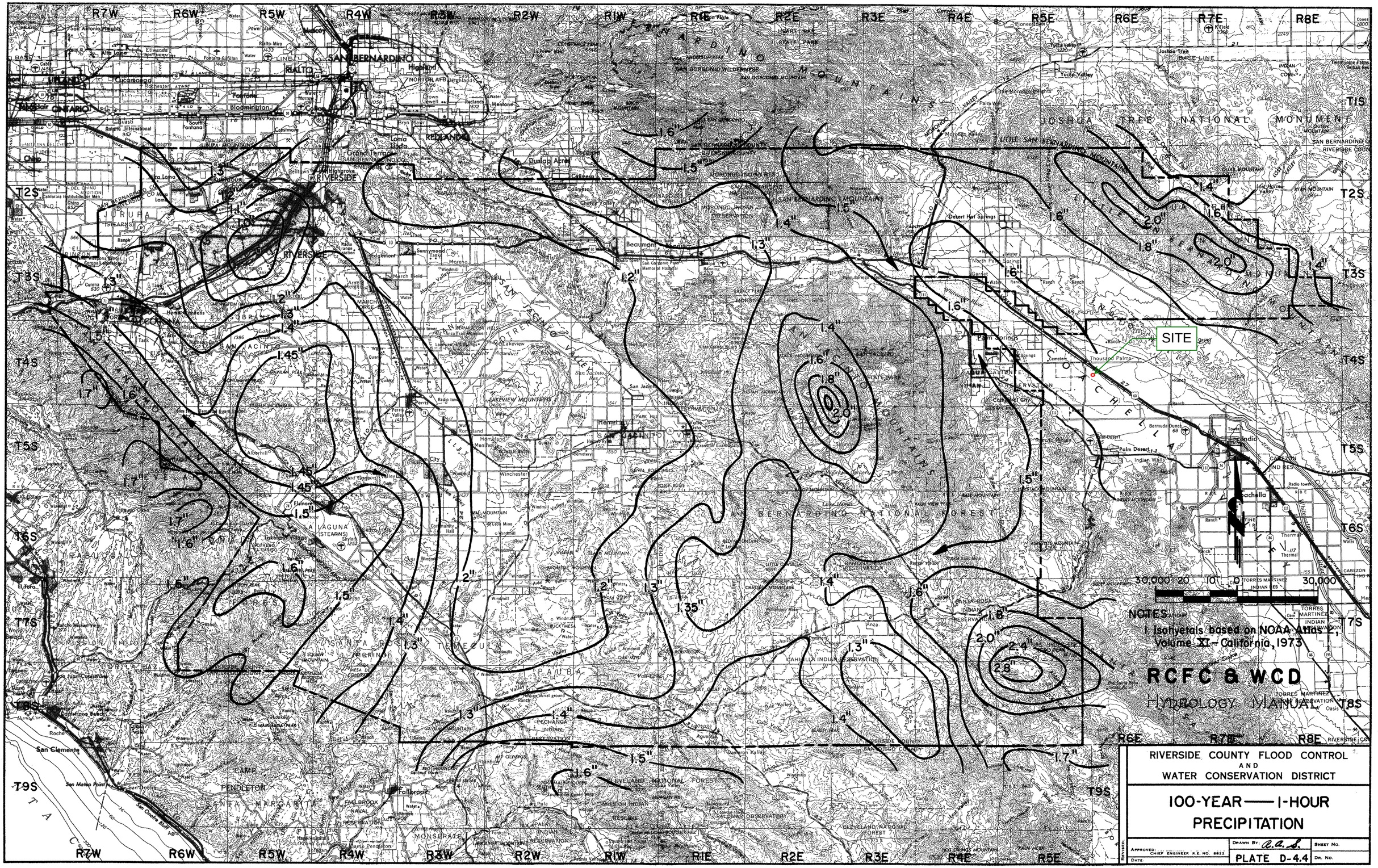
2. Determine that the area is suitable for development of a Short Cut hydrograph, i.e., the area is no more than 100 to 200-acres in size, and lag time is less than 7 to 8-minutes.

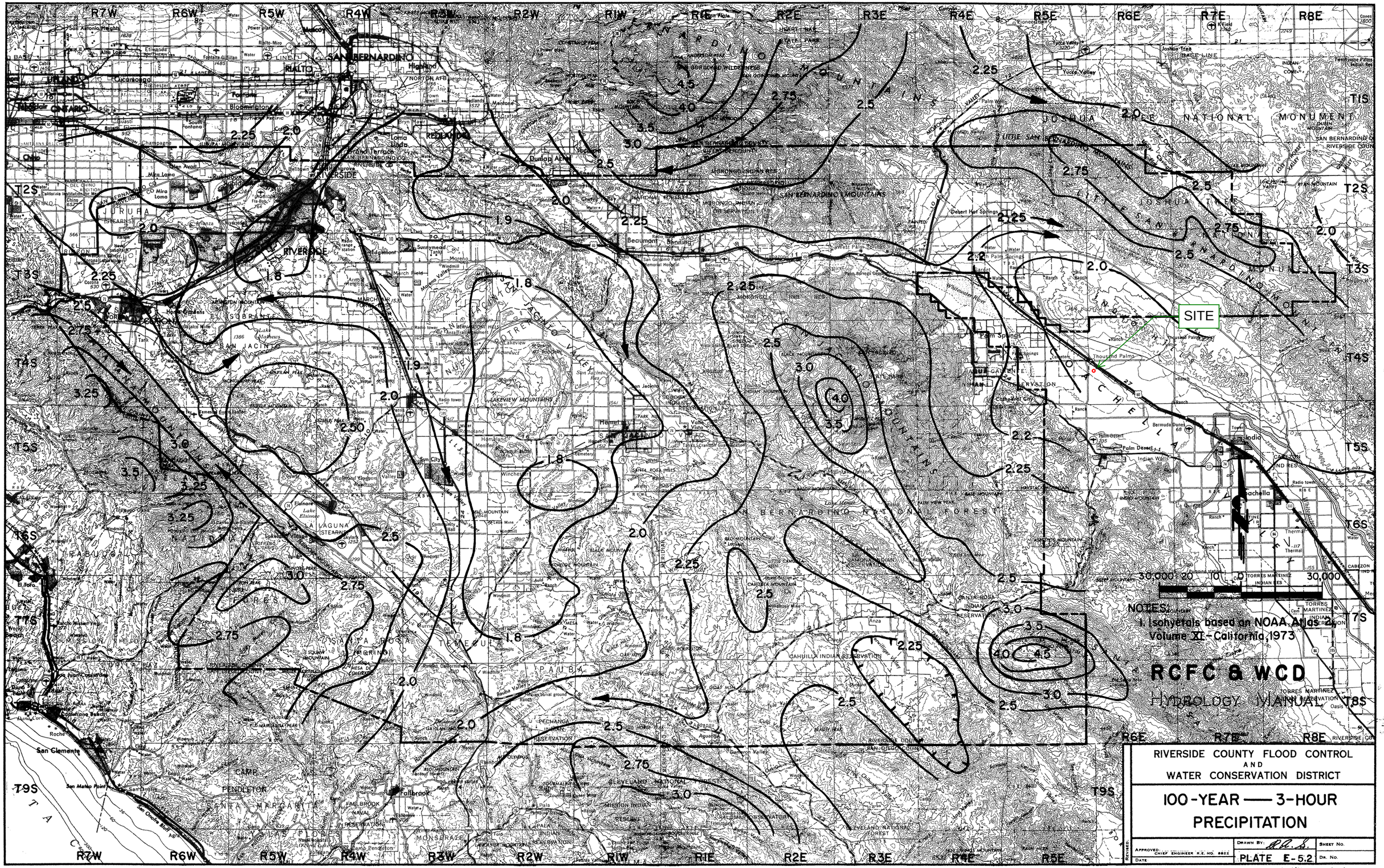
3. Select a suitable unit time equal to from 100 to 200-percent of lag. Normally, 5 to 10-minutes for 3 and 6-hour storms, and 15-minutes for 24-hour storms will be adequate.

4. Compute effective rainfall rates using steps B-1 through B-6 on Plate E-1.1.

5. Compute flood hydrograph ordinates for each unit time period by multiplying the effective rainfall rate (inches per hour) times the drainage area in acres. The resultant values are discharge in cfs.

6. The three hour storm peak discharge should normally compare well with rational peaks. If adjustments are necessary, use a shorter unit time period to raise the peak, and a longer unit time period to lower them.


SITE
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 1-HOUR PRECIPITATION
DRAWN BY: A.A.S.
SHEET NO.
PLATE D-4.4
DR. NO.
APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED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NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973
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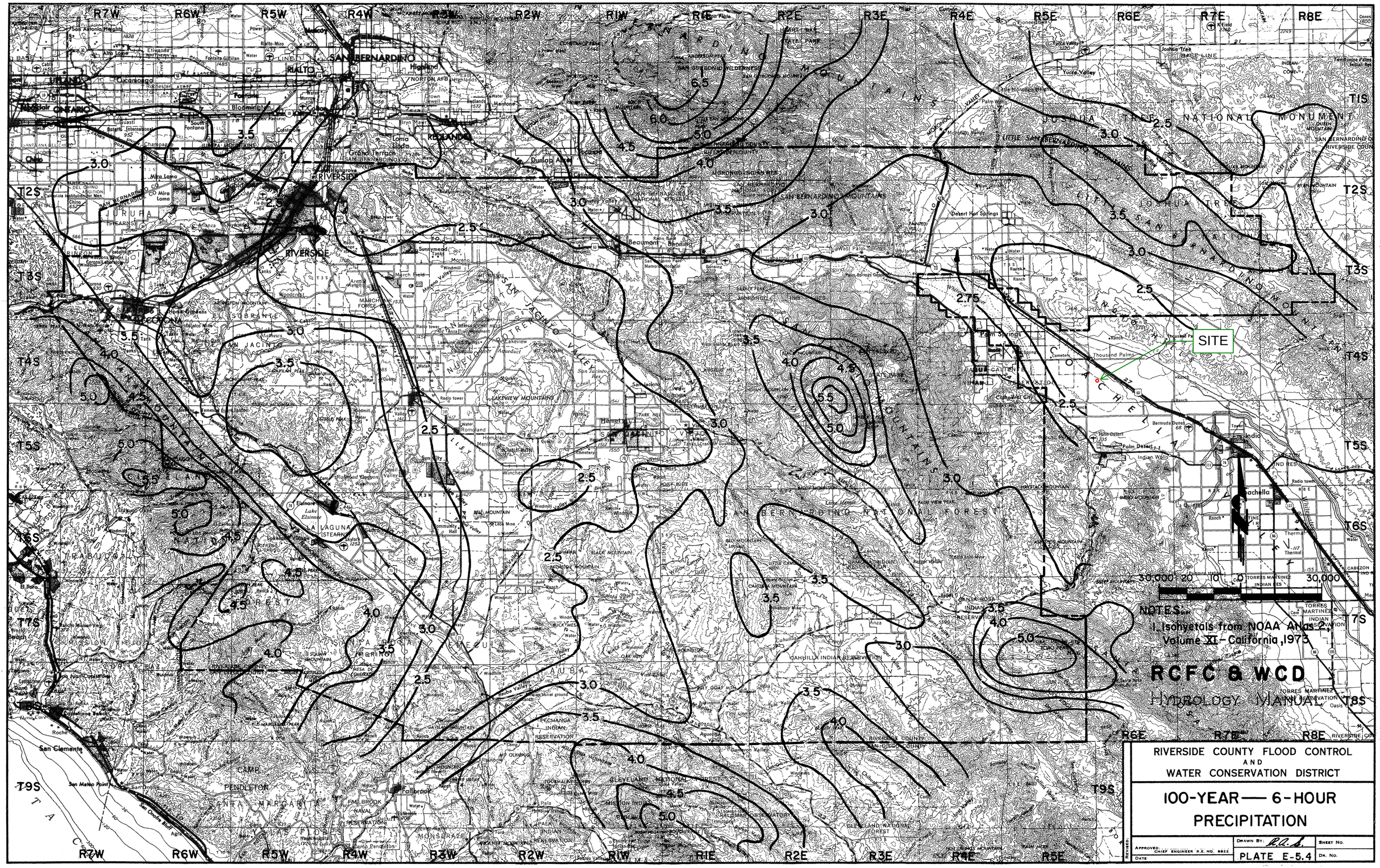
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR PRECIPITATION
PLATE E-5.2
SAN BERNARDINO MOUNTAINS
SAN JACINTO MOUNTAINS
SANTA ROSA MOUNTAINS
LAKEVIEW MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
CLEVELAND NATIONAL FOREST
CAHUILLA INDIAN RESERVATION
AGUANGA INDIAN RESERVATION
PECHANGA INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
MORONGO INDIAN RESERVATION
SAN MANUEL INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
CAMP PENDLETON
MARINE CORPS BASE
30,000 20 0 0 30,000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1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
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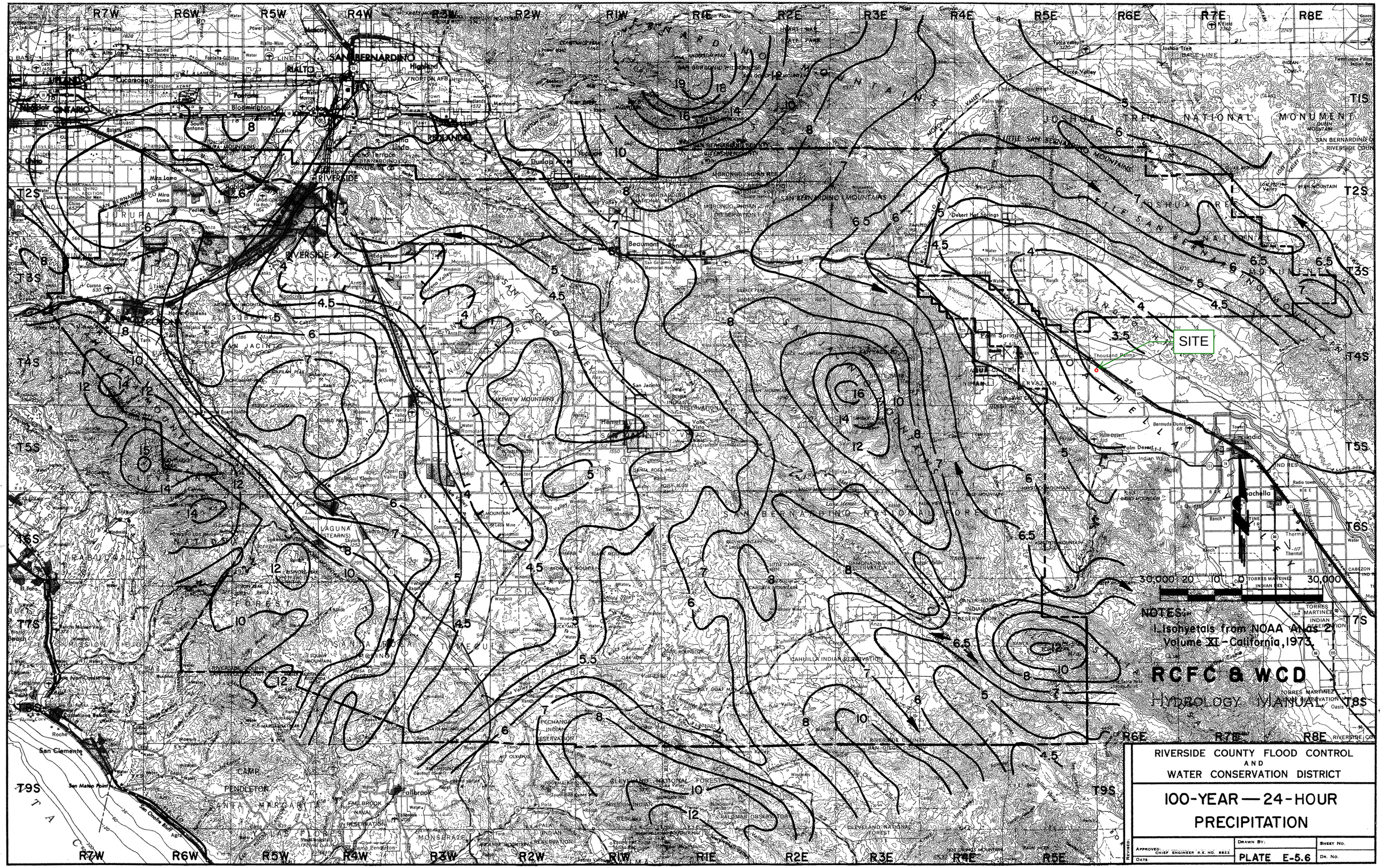
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
DRAWN BY: R.A.S.
SHEET No.
PLATE E-5.4
DR. No.
APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED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NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION
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DATE
DRAWN BY:
PLATE E-5.6
SHEET NO.
DR. NO.
REVISED

RAINFALL PATTERNS IN PERCENT

3-HOUR STORM

TIME PERIOD	5-MIN PERIOD	10-MIN PERIOD	15-MIN PERIOD	30-MIN PERIOD
1	1.3	2.6	3.7	8.5
2	1.3	2.6	4.8	10.0
3	1.1	3.3	5.1	13.9
4	1.5	3.3	4.9	17.4
5	1.5	3.3	6.6	29.9
6	1.8	3.4	7.3	20.3
7	1.5	4.4	8.4	
8	1.8	4.2	9.0	
9	1.8	5.3	12.3	
10	1.5	5.1	17.6	
11	1.6	6.4	16.1	
12	1.8	5.9	4.2	
13	2.2	7.3		
14	2.2	8.5		
15	2.2	14.1		
16	2.0	14.1		
17	2.6	3.8		
18	2.7	2.4		
19	2.4			
20	2.7			
21	3.3			
22	3.1			
23	2.9			
24	3.0			
25	3.1			
26	4.2			
27	5.0			
28	3.5			
29	6.8			
30	7.3			
31	8.2			
32	5.9			
33	2.0			
34	1.8			
35	1.8			
36	.6			

6-HOUR STORM

TIME PERIOD	5-MIN PERIOD	10-MIN PERIOD	15-MIN PERIOD	30-MIN PERIOD
1	.5	1.1	1.7	3.6
2	.6	1.2	1.9	4.3
3	.6	1.3	2.1	4.8
4	.6	1.4	2.2	4.9
5	.6	1.4	2.4	5.3
6	.7	1.5	2.4	5.8
7	.7	1.6	2.4	6.8
8	.7	1.6	2.5	9.0
9	.7	1.6	2.6	11.6
10	.7	1.6	2.7	14.4
11	.7	1.6	2.8	25.1
12	.8	1.7	3.0	4.4
13	.8	1.7	3.2	
14	.8	1.8	3.6	
15	.8	1.8	4.3	
16	.8	1.8	4.7	
17	.8	2.0	5.4	
18	.8	2.0	6.2	
19	.8	2.1	6.9	
20	.8	2.2	7.5	
21	.8	2.5	10.6	
22	.8	2.8	14.5	
23	.8	3.0	3.4	
24	.9	3.2	1.0	
25	.8	3.5		
26	.9	3.9		
27	.9	4.2		
28	.9	4.5		
29	.9	4.8		
30	.9	5.1		
31	.9	6.7		
32	.9	8.1		
33	1.0	10.3		
34	1.0	2.8		
35	1.0	1.1		
36	1.0	.5		
37	1.0			
38	1.1			
39	1.1			
40	1.1			
41	1.2			
42	1.3			
43	1.4			
44	1.4			
45	1.5			
46	1.5			
47	1.6			
48	1.6			

TIME PERIOD	5-MIN PERIOD
49	1.7
50	1.8
51	1.9
52	2.0
53	2.1
54	2.1
55	2.2
56	2.3
57	2.4
58	2.4
59	2.5
60	2.6
61	3.1
62	3.6
63	3.9
64	4.2
65	4.7
66	5.6
67	1.9
68	.9
69	.6
70	.5
71	.3
72	.2

24-HOUR STORM

TIME PERIOD	15-MIN PERIOD	30-MIN PERIOD	60-MIN PERIOD
1	.2	.5	1.2
2	.3	.7	1.3
3	.3	.6	1.8
4	.4	.7	2.1
5	.3	.8	2.8
6	.3	1.0	2.9
7	.3	1.0	3.8
8	.4	1.1	4.6
9	.4	1.3	6.3
10	.4	1.5	8.2
11	.5	1.3	7.0
12	.5	1.6	7.3
13	.5	1.8	10.8
14	.5	2.0	11.4
15	.5	2.1	10.4
16	.6	2.5	8.5
17	.6	3.0	1.4
18	.7	3.3	1.9
19	.7	3.9	1.3
20	.8	4.3	1.2
21	.6	3.0	1.1
22	.7	4.0	1.0
23	.8	3.8	.9
24	.8	3.5	.8
25	.9	5.1	
26	.9	5.7	
27	1.0	6.8	
28	1.0	4.6	
29	1.0	5.3	
30	1.1	5.1	
31	1.2	4.7	
32	1.3	3.8	
33	1.5	.8	
34	1.5	.6	
35	1.6	1.0	
36	1.7	.9	
37	1.9	.8	
38	2.0	.5	
39	2.1	.7	
40	2.2	.5	
41	1.5	.6	
42	1.5	.5	
43	2.0	.5	
44	2.0	.5	
45	1.9	.5	
46	1.9	.4	
47	1.7	.4	
48	1.8	.4	

TIME PERIOD	15-MIN PERIOD
49	2.5
50	2.6
51	2.8
52	2.9
53	3.4
54	3.4
55	2.3
56	2.3
57	2.7
58	2.6
59	2.6
60	2.5
61	2.4
62	2.3
63	1.9
64	1.9
65	.4
66	.4
67	.3
68	.3
69	.5
70	.5
71	.5
72	.4
73	.4
74	.4
75	.3
76	.2
77	.3
78	.4
79	.3
80	.2
81	.3
82	.3
83	.3
84	.2
85	.3
86	.2
87	.3
88	.2
89	.3
90	.2
91	.2
92	.2
93	.2
94	.2
95	.2
96	.2

NOTES:

1. 3 and 6-hour patterns based on the Indio area thunderstorm of September 24,1939.
2. 24-hour patterns based on the general storm of March 2 & 3,1938.

RAINFALL PATTERNS IN PERCENT

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

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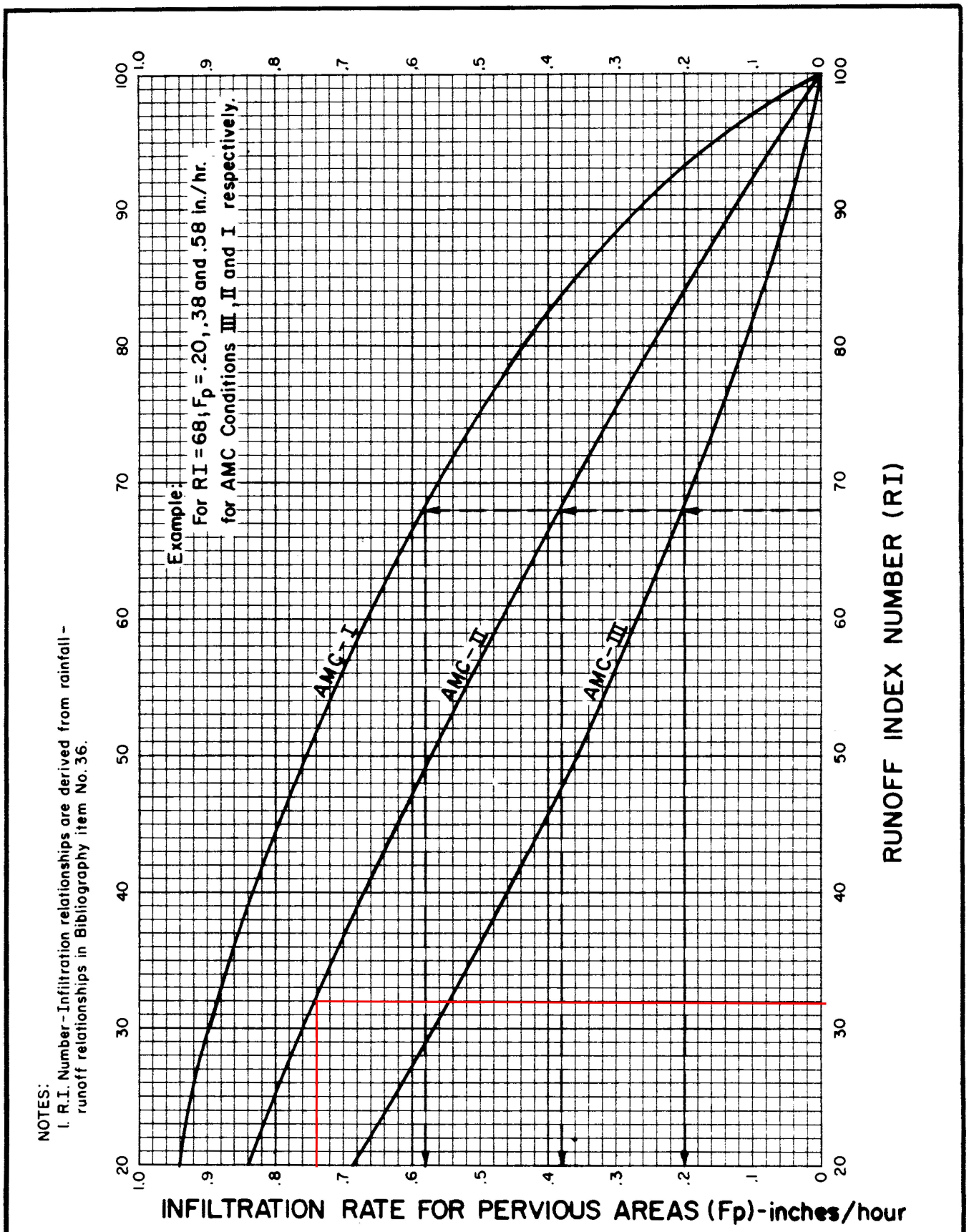
RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS



NOTES:
1. R.I. Number - Infiltration relationships are derived from rainfall - runoff relationships in Bibliography item No. 36.

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INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

PLATE E-6.2

Via Vall

Victory Lane

Landy Lane

Via Josefina

Key Largo

Ginger Rogers

Via Florencia

Via Marta

NEW STREET 1

NEW STREET

NEW STREET No 3

35TH

STREET A

(FF = 264±)

(FF = 253±)

270 BOTTOM

48 MIN

CRITERIA:

5% MAXIMUM STREET SLOPE.

0.50% MINIMUM SLOPE WHERE IT DOESN'T AFFECT DEVELOPED PROPERTY DRIVEWAYS.

0.35% MINIMUM WHERE EXISTING DRIVEWAYS ARE AFFECTED OR WHERE EXISTING STREETS DICTATE (VIA MARTA, LANDY LANE, GINGER ROGERS, VIA JOSEFINA, VICTORY LANE, KEY LARGO).

MINIMIZE CUTTING WHERE THERE ARE EXISTING UTILITIES BURIED, OTHERWISE IT'S BETTER TO CUT THAN TO FILL.

EACH PROPERTY SHALL BE REQUIRED TO RETAIN THE 100 YEAR 24 HOUR STORM FROM THEIR ON-SITE PROPERTY AND FROM THEIR STREET FRONTAGE BUT TO THE CENTERLINE. THEREFORE THERE SHOULD BE NO CUMULATIVE FLOW FROM THE STREETS UNLESS PEOPLE FAIL TO MAINTAIN THEIR RETENTION BASINS OR DEVICES PROPERLY.

SCALE 1"=200'

FOMOTOR ENGINEERING

225 S. CIVIC DRIVE, SUITE 1-5
PALM SPRINGS, CA. 92262
(760) 323-1842 FAX (760) 323-1742

IN THE CITY OF RANCHO MIRAGE

INTERIOR STREET PRELIMINARY CENTERLINE STUDY

FOR

SECTION 30 ALTERNATIVE B

SHEET 1 OF 1 SHEETS

FILE NO.

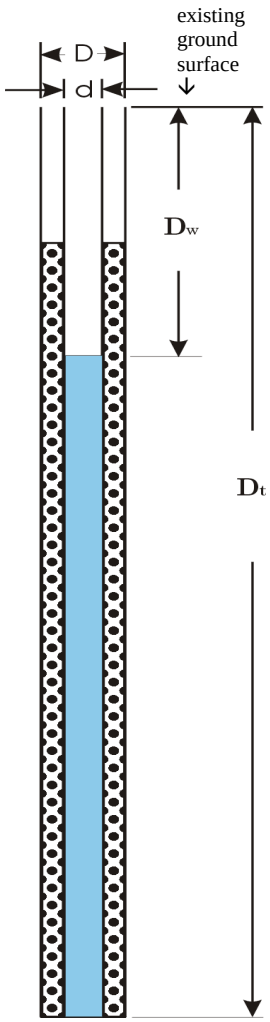
PLOT DATE: 12/18/2000

APPENDIX D

Geotechnical Report

Boring/Test Number: P-1

Total Depth of Boring, D_T (ft):	10	**Test Date:**	6/7/2024
Diameter of Hole, D (in):	8	**Tested By:**	KTM
Diameter of Casing, d (in):	2	**USCS Soil Type:**	SP
Depth of Slotted Casing (ft):	5 to 10	**Depth to Groundwater (ft):**	?
Porosity of Annulus Material, *n* :	0.42	**Ground Elevation (msl ft):**	312
Depth from Existing Ground Surface to Bottom of Prop. Inflitration System (ft):			?



SANDY SOIL CRITERIA TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔD (in.)	Change in Height of Water Greater Than or Equal to 6"? (Yes/No)*
		Initial, D_o (ft.)	Final, D_f (ft.)		
1	25	9.1	10	10.8	yes
2	25	9.10	10	10.8	yes
Standard Time Interval Between Readings (min.), [* if yes = 10, if no = 30]:					30

PERCOLATION TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔH (in.)	Percolation Rate	
		Initial, D_o (ft.)	Final, D_f (ft.)		(min/in.)	(gal/day/ft^2)
1	10	8.60	10.00	16.80	0.60	132.32
2	10	8.60	10.00	16.80	0.60	132.32
3	10	8.55	10.00	17.40	0.57	133.20
4	10	8.60	10.00	16.80	0.60	132.32
5	10	8.55	10.00	17.40	0.57	133.20
6	10	8.55	10.00	17.40	0.57	133.20

TEST RESULTS**

Inflitration Rate [Porchet Method]# (inches/hour)	Percolation Rate	
	(min/in.)	(gal/day/ft^2)
12.00	**0.57**	**133.20**

**Raw Results. Does Not Include a Factor of Safety

FACTOR OF SAFETY

Testing Option	Testing Requirements	Factor of Safety per Reference
Option 2	**4 tests minimum with at least two borings per basin**	**3**

Where Infiltration Rate, It = ΔH (60r) / Δt (r + 2Havg)

r = D / 2

Ho = D_T - Do

$H_f = D_T - D_f$

$\Delta H = \Delta D = H_o - H_f$

$H_{avg} = (H_o + H_f) / 2$

Reference:

RCFCWCD, Design Handbook for LID, dated September, 2011

PETRA GEOSCIENCES, INC.
3186 Airway Avenue, Suite K
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PHONE: (714) 549-8921
COSTA MESA TEMECULA LOS ANGELES PALM DESERT CORONA ESCONDIDO

PERCOLATION TEST SUMMARY

Key Largo Avenue
Rancho Mirage, Riverside County, CA

PETRA GEOSCIENCES INC.

DATE: June , 2024

J.N.: 24-112

Appendix B

PETRA GEOSCIENCES INC.

SOLID AS A ROCK

ENGINEERS + GEOLOGISTS + ENVIRONMENTAL SCIENTISTS

DESIGN-PHASE GEOTECHNICAL INVESTIGATION REPORT PROPOSED RANCHO MIRAGE APARTMENTS APPROXIMATELY 5 ACRES SOUTH OF THE RANCHO MIRAGE DOG PARK A PORTION OF ASSESSOR'S PARCEL NO. 685-090-011 RANCHO MIRAGE, RIVERSIDE COUNTY, CALIFORNIA

NATIONAL CORE

July 25, 2024
J.N. 24-112

July 25, 2024
J.N. 24-112

NATIONAL CORE
430 E. State Street, Suite 100
Eagle, Idaho 83616

Attention: Ms. Taylor Libolt Varner

Subject: Design-Phase Geotechnical Investigation Report, Proposed Rancho Mirage Apartments, Approximately 5 Acres South of the Rancho Mirage Dog Park, a Portion of Assessor's Parcel No. 685-090-011, Rancho Mirage, Riverside County, California

Dear Ms. Libolt Varner:

Petra Geosciences, Inc. (Petra) is submitting herewith our geotechnical investigation report for the proposed construction of approximately 150 apartments at the subject location in the city of Rancho Mirage. The proposed improvements will also include utilities, paved parking, landscaping, and on-site stormwater retention. This work was performed in general accordance with the scope of services outlined in our Proposal No. 24-112P, dated January 17, 2024. This report presents the results of our field investigation, laboratory testing, and our engineering and geologic analysis, judgment, opinions, conclusions and recommendations pertaining to geotechnical design aspects of the proposed improvements.

It is a pleasure to be of service to you on this project. Should you have any questions regarding the contents of this report, or should you require additional information, please do not hesitate to contact us.

Respectfully submitted,

PETRA GEOSCIENCES, INC.

Alan Pace
Senior Associate Geologist

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DESIGN-PHASE GEOTECHNICAL INVESTIGATION REPORT
PROPOSED RANCHO MIRAGE APARTMENTS
APPROXIMATELY 5 ACRES SOUTH OF THE RANCHO MIRAGE DOG PARK
A PORTION OF ASSESSOR'S PARCEL NO. 685-090-011
RANCHO MIRAGE, RIVERSIDE COUNTY, CALIFORNIA

PURPOSE AND SCOPE OF SERVICES

Petra Geosciences, Inc. (Petra) is presenting herein our design-phase geotechnical investigation report for an apartment buildings complex and various improvements that are currently proposed at the vacant site located in the city of Rancho Mirage, California. The improvements include the construction of a series of apartment buildings and associated utilities, paved parking, landscaping, and on-site stormwater retention. The purposes of this investigation were to 1) obtain information regarding surface and subsurface geologic conditions within the area of the proposed construction, 2) evaluate the engineering properties of the onsite soil materials, and 3) provide conclusions and recommendations for design and construction of the proposed improvements. To accomplish these objectives, our scope of services included the following:

1. Reviewing of published and unpublished literature and maps pertaining to regional faulting, seismic hazards and soil and geologic conditions within and adjacent to the site that could influence the design of the proposed structural elements.

2. Reviewing of historical aerial photographs of the area of proposed construction.

3. Performing a subsurface investigation within the area of proposed construction. The investigation consisted of drilling 3 exploratory borings to depths of 20 to 66 feet using a hollow-stem drilling rig. Additionally, drilling 1 exploratory boring to 10 feet below ground surface using the hollow-stem auger drilling method and performing a falling-head percolation test in the borehole. The boring logs are presented in Appendix A and the percolation tests results and infiltration rate calculations are presented in Appendix E.

4. Logging and field-classifying soil materials encountered in each boring in accordance with the visual-manual procedures outlined in the Unified Soil Classification System and the American Society for Testing and Materials (ASTM) Procedure D 2488-90. All field activities were performed by or under the direct observation of a State of California Certified Engineering Geologist.

5. Collecting representative bulk and relatively undisturbed soil samples for laboratory analysis. Undisturbed samples will be retrieved at 3- to 10-foot depth intervals utilizing a 2.4-inch inside diameter, modified-California split-spoon sampler. In addition, where granular soils were encountered within the saturated zone, these materials were selectively sampled using the Standard Penetration Test (SPT) method in accordance with ASTM Procedure D 1586-92.

6. Performing appropriate laboratory analysis on soil samples which included the following: in-situ and maximum dry density; in-situ and optimum moisture content; sieve analysis, remolded direct shear; collapse analysis; soluble sulfate and chloride content; general soil corrosivity (Sulfate, Chloride, pH and minimum resistivity).

7. Engineering and geologic analyses of the field and laboratory data as they pertain to the proposed construction.

8. An evaluation of faulting and seismicity of the region, and the possible impact of regional seismicity on the proposed construction.

9. Preparation of this geotechnical report presenting the results of our evaluation and recommendations for the proposed development in general conformance with the 2022 California Building Code (2022 CBC) and in accordance with applicable state and local jurisdictional requirements.

LOCATION AND SITE DESCRIPTION

The area of study considered under the scope of this investigation consists of 5 acres located to the southeast of the Rancho Mirage Dog Park. The location of the site with respect to nearby roadways and other landmarks is shown on the Site Location Map, Figure 1. The subject site is vacant and is bordered on the north by vacant land and existing shopping center along Dinah Shore Drive, on the east by vacant land and Monterey Avenue, on the west by vacant land and Key Largo Avenue, and on the south by undeveloped vacant land. The topography is approximately flat and level, with approximately 10 feet of relief from the south end of the site to the north end. The subject site's natural landscaping consists of few grasses and light desert scrub with no trees.

PROPOSED IMPROVEMENTS

Petra understands that the site is to be developed into approximately 150 apartments. Additionally, the improvements will consist of utilities, paved parking, landscaping, and on-site storm water retention. Neither grading plans nor specific details related to the proposed improvements were provided to Petra at the time this report was prepared. Based on the nearby development and the relatively flat topography of the site, Petra assumes that earthwork is generally limited to minor cuts and fills to establish finished grade elevations. It should be noted, however, that remedial grading (i.e., excavation and re-compaction of any existing undocumented fill soils that are present on the site and loose native soils) will entail deeper cuts from exiting grades as recommended in subsequent sections of this report. No extensive subterranean construction is anticipated.

FIELD EXPLORATION AND TESTING

Subsurface Exploration

Our subsurface exploration was performed on June 7, 2024, and involved the following:

- Drilling and sampling of two relatively shallow borings (B-2 and B-3) to depths of 20 feet below the existing ground surface and one deep boring (B-1) to a depth of 66 feet below the existing ground surface. All of the borings were drilled utilizing a truck-mounted, hollow-stem auger drill rig.

- Drilling one boring to a depth of 10 feet (Boring P-1) and performing a percolation test to observe infiltration characteristics of subsurface materials for stormwater retention design.

Earth materials encountered in each of the exploratory borings were field classified and logged in accordance with Unified Soil Classification System, USCS, procedures. In addition, our subsurface exploration included the collection of bulk and relatively undisturbed samples of the subsurface soils for laboratory testing purposes. Bulk samples consisted of selected earth materials obtained at various depth intervals from selected borings. Relatively undisturbed samples were collected using a 3-inch, outside-diameter, modified California split-spoon soil sampler lined with 1-inch-high brass or stainless-steel rings. The modified sampler was driven with successive 30-inch drops of a hydraulically operated 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the field logs. The central portions of the driven core samples were placed in sealed containers and transported to our laboratory for testing. The approximate locations of the exploratory borings are shown on the attached Boring Location Map, Figure 2, and descriptive exploration logs are presented in Appendix A.

In addition to the above sampling method, Standard Penetration Tests (SPT's) were also performed at selected depth intervals in accordance with the American Society for Testing Materials (ASTM) Standard Procedure D 1586. This method consists of mechanically driving an unlined standard split-barrel sampler 18 inches into the soil with successive 30-inch drops of the 140-pound automatic trip hammer. Blow counts for each 6-inch driving increment were recorded on the exploration logs. The number of blows required to drive the standard split-spoon sampler for the last 12 of the 18 inches was identified as the uncorrected standard penetration resistance (N). Disturbed soil samples from the unlined standard split-spoon samplers were placed in plastic bags and transported to our laboratory for testing.

Laboratory Testing

In order to evaluate the engineering properties of onsite soils, a number of laboratory tests were performed on selected samples considered representative of the materials encountered within the study area. These

laboratory tests were performed shortly after completion of our field investigation and included determination of in-place dry density and moisture content, maximum dry density and optimum moisture content, sieve analysis, collapse potential, remolded shear strength, as well as chemical and electrical corrosivity potential (soluble sulfate and chloride content, pH, and minimum resistivity). A description of laboratory test methods is provided in the Laboratory Test Procedures section of this report (Appendix B). Summaries of the test data are presented on the exploration logs (Appendix A) and in Appendix B of this report.

Percolation Testing

Percolation testing was conducted in Exploratory Boring P-1 in accordance with County of Riverside Department of Environmental Health (RCDEH) test procedures and the guidelines presented in Appendix VII of the County of Orange Technical Guidance Document for WQMPs. The Orange County Manual references the RCDEH percolation test methods as an acceptable method of obtaining site infiltration data. The "percolation rates" determined in accordance with the RCDEH test procedures are based on both horizontal (lateral) and vertical percolation. Therefore, to consider vertical percolation only, the "percolation rates" were converted to a reasonable estimate of the "infiltration rate" using the Porchet Method presented in Appendix VII of the referenced County of Orange Technical Guidance Document.

Boring P-1 was converted to a percolation test hole following drilling by placing a two-inch (I.D.) perforated PVC pipe in the test hole. The annular space around the pipe was filled with open-graded gravel, approximately ¾-inch, within the annular space between the pipe and boring walls and a 3-inch-thick layer of gravel below the pipe. The remainder of the annular space was backfilled with boring cuttings. Clean water was then added to the boring to pre-soak the adjacent soils prior to performing the percolation test.

The percolation test was conducted in eolian sand that exists from the near surface to below the base of the percolation tests. Boring P-1 was drilled to a total depth of approximately 10 feet. The test hole was filled with clean water to approximately 5 feet from the ground surface. The drop in water level was measured at 10-minute intervals. From these readings, the percolation characteristics of the underlying eolian sand deposits was estimated. Percolation test results are presented in Appendix E and are summarized in Table 1. We note that the calculated infiltration rate presented in this table has a factor of safety of 1 and the project engineer should use an appropriate factor of safety per project Specifications.

TABLE 1

Unfactored Percolation Test Results

Test No.	Soil Type[1] (USCS)	Depth of Hole (Feet)	Measured [2] Percolation Rate (Minutes/Inch)	Infiltration Rate (I_t) [3] per Porchet Method (Inches/Hour) (F.S – 1)
P-1	SP	10	0.57	12.0

[1] Interbedded Strata – see Boring Logs, Appendix A
[2] RCDEH Test Procedure
[3] Minutes/inch converted to inches/hour per Porchet Method

FINDINGS

Regional Geologic Setting

The proposed development is located in the Coachella Valley, which is part of the Salton Trough geomorphic province of California. The Salton Trough geomorphic province encompasses the Coachella, Imperial and Mexicali Valleys, which extend from northeast of Palm Springs near San Gorgonio Pass to the Gulf of California. The geologic structure of the trough is a result of extensional forces within the earth's crust. The Coachella Valley is generally bounded by the San Jacinto and Santa Rosa Mountains on the west, the San Bernardino and the Little San Bernardino Mountains on the north, the Cottonwood Mountains and the Mecca Hills on the east, and the Salton Sea to the south. Alluvial (Streams), aeolian (wind-blown), and lacustrine (lake) sediments are the dominant geologic units of the Coachella Valley.

The watershed of the Coachella Valley empties into the Salton Sea at the lowest part of the basin. This basin was periodically filled with water to form the ancient Lake Cahuilla, depending on which side of its delta the Colorado River would drain. The sediments of the delta form a topographic high that separates the Salton basin, which is below sea level, from the Gulf of California (Sea of Cortez).

Local Geology and Subsurface Soil Conditions

In general, the soil materials underlying the site as encountered in our borings were noted to consist of very loose to very dense, poorly graded eolian sand to the maximum depth explored of 66 feet. The upper 3 to 4 feet of the soil was found to be dry and very loose to loose. Soils become medium dense to dense and finer grained with depth. The moisture content of these native soils is very low and on the order of less than 0.5 percent. Laboratory testing of relatively undisturbed samples of eolian sand yielded in-place dry densities ranging from 98 to 109 pounds per cubic foot.

Groundwater

Free groundwater was not encountered within any of the exploratory borings advanced onsite to the maximum depth explored of 66 feet below grades. According to a monitoring well located approximately 0.5 miles to the north, groundwater is located approximately 160 feet below the ground surface as of July 18, 2023 (CDWR Station 338086N1163878W001).

Faulting

The Coachella Valley is a seismically active area and numerous northwest-trending active faults have been documented within the area. The San Andreas fault zone is the most prominent fault within the Coachella Valley and is considered to be "active". An "active" fault is defined as a fault that has had displacement within the Holocene epoch, or last ±11,000 years. Based on our review, the site is not located within a *Fault Hazard Zone* (Bryant and Hart, 2007), as defined by the state of California in the Alquist-Priolo Earthquake Fault Zoning Act and no evidence for faulting was observed within the site during our study.

Secondary Seismic Hazards

Seismically Induced Landsliding

The site exhibits a generally flat topography, and no landslides exist within or near the site. Based on the topography across the site, the potential for landsliding is considered negligible.

Seismically Induced Flooding

The types of seismically induced flooding that are generally considered as potential hazards to a particular site normally include flooding due to a tsunami (seismic sea wave), a seiche, or failure of a major reservoir or other water retention structure upstream of the site. The Salton Sea is situated approximately 25 miles southeast of the site with an elevation approximately 500 feet lower than the subject site. In addition, no major reservoir is located near or upstream of the site. Therefore, the potential for seiche or inundation is considered negligible. Because of the inland location of the site, flooding due to a tsunami is also considered negligible at the site.

Liquefaction and Seismically Induced Settlement

Liquefaction

Liquefaction is a soil softening dynamic response, by which an increase in the excess pore water pressure results in partial to full loss of soil shear strength and post-liquefaction dissipation of this pore water pressure results in ground settlement shortly after the earthquake. In order for liquefaction to occur, the

following four factors are required: 1) saturated soil or soil situated below the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands, non-plastic silts, or gravels. SP117A (CGS, 2008) discusses preliminary screening methods sufficient to evaluate liquefaction potential without requiring a comprehensive liquefaction analysis; one of the considerations is the depth to groundwater. Sites with groundwater depth of around 50 feet below ground surface and deeper (including historic high ground water, current conditions, and future expectations), are considered unlikely to experience liquefaction within the upper 50 feet of the soil profile. Due to a very deep ground water table at the subject property (+160 feet) the potential for liquefaction at this site is considered negligible.

Dry Sand

Dry sand settlement can occur during moderate and large earthquakes when loose, natural or fill sandy soils are densified and settle, often unevenly across a site. In order for dry sand settlement to occur, the following four factors are required: 1) Relatively dry soil or soil situated above the groundwater table; 2) undrained loading (strong ground shaking), such as by earthquake; 3) contractive soil response during shear loading, which is often the case for a soil which is initially in a loose or uncompacted state; and 4) susceptible soil type; such as clean, uniformly graded sands. Structures situated above seismically densifying dry sandy soils may experience settlement or tilting of superstructures, or both.

Seismically Induced Settlement Parameters

Assessment of liquefaction or dry sand settlement potential for a particular site requires knowledge of a number of regional as well as site-specific parameters, including the estimated design earthquake magnitude, and the associated probable peak horizontal ground acceleration at the site, subsurface stratigraphy and soil characteristics. Parameters such as estimated probable peak horizontal ground acceleration can readily be determined using published references, or by utilizing a commercially available computer program specifically designed to perform a probabilistic analysis. In contrast, stratigraphy and soil characteristics can only be accurately determined by means of a site-specific subsurface investigation combined with appropriate laboratory analysis of representative samples of onsite soils.

Seismically Induced ‘Dry Sand’ Settlement

Propagating earthquake waves induces shearing stresses and strains in soil materials during strong ground shaking. This process rearranges the structure of granular soils such that there is an increase in density, with a corresponding decrease in volume, which results in vertical settlement. Seismically induced settlement has been well documented in wet, sandy deposits undergoing liquefaction (see Tokimatsu and Seed, 1987)

and in relatively dry sediments as well (Stewart et al, 1996). Specific methods to analyze potential wet and dry dynamic settlement are reported in Tokimatsu and Seed (1987), Pradel (1998), and Stewart et al. (2001; 2002). Most of the referenced papers focus on the seismic effects on dry, clean sands of a uniform grain size, though several reports extend the literature to fine-grained soils (Stewart et al., 2001 & 2002). State guidelines for evaluating dynamic settlement are provided in the California Geological Survey Special Publication 117A (CGS, 2008).

To evaluate the potential for earthquake-induced dry sand settlement at the site and its impact on the proposed improvements, we performed a settlement analysis of the data from our 66 feet deep boring B-1 using LiqSVs program (Geologismiki, Version 2.3.2.11). LiqSVs is a software that evaluates liquefaction potential and calculates the settlement of soil deposits due to seismic loads. For the purpose of dry sand settlement analyses, we considered a design groundwater level at a depth of 160 feet below the existing ground surface, peak ground acceleration for maximum considered earthquake (PGA_M) in the site vicinity to be approximately 0.868g, and a predominant earthquake magnitude of 7.49 Mw.

The results of our analysis indicate that the loose and medium dense poorly graded eolian sand encountered below the ground surface to the depth of approximately 10 feet in our borings appear to be prone to dry sand settlement during seismic shaking. Assuming that the upper 4 feet of soil will be replaced with an engineered fill soil not susceptible to dynamic settlement, we estimate that total dynamic settlement up to about 1½ to 2-inches is possible at the ground surface due to dry sand settlement from the MCE level earthquake. In our opinion, differential dry sand settlement of up to about 1½ -inch over a horizontal distance of approximately 100 feet may occur across the proposed improvements at the ground surface. A summary of our dry sand settlement analysis is presented in Appendix D. The estimated dry sand settlement should be considered during the structural design of the foundation system of the proposed improvements.

It should be noted that in the literature, prediction of the seismic settlement for unsaturated sandy soils, referred to as 'dry sand' settlement, is based on observation of performance of 5 sites that were comprised of clean sands, i.e. sands with 5 percent fines or less. However, the shallow site soils, above the assumed historic high groundwater level, are comprised of sands with substantial amounts of fines. The presence of fines influences (reduces) the settlement potential under a seismic event. To overcome this, the measured resistance parameters of soils with fines are first converted to that of clean sand values and then are used in the predictive routines. This is an indirect approach and, therefore, lacks the performance-based verification requirements. In addition, sandy deposits, especially within vadose zones, contain certain amount of pore water that, because of surface tension properties of water molecules, create tensile intra-particle forces, albeit, very weak, that are expected to reduce the particle rearrangement tendencies of sandy deposits during

ground shaking. Further, sometimes the 'dry sand' seismic settlement calculation results are multiplied by factor of 2 to account for bidirectional nature of seismic waves propagations. That is, the investigators are provided with an optional factor of 2 to multiply the results of their seismic 'dry sand' calculations. It is our professional opinion that for the reasons cited herein dry sand settlement calculations are less reliable compared to that of the liquefaction settlement. It is perhaps for these and potentially other reasons that some review agencies do not require 'dry sand' settlement calculations as a part of their approval process.

CONCLUSIONS AND RECOMMENDATIONS

General Feasibility

Although the detailed development plans are not fully available, from a soils engineering and engineering geologic point of view and based on our current knowledge of the project, the subject property is considered suitable for the proposed development. It is our opinion that the proposed construction will not adversely affect the geologic stability of adjoining properties in an adverse manner provided grading and construction are performed in accordance with current standards of practice, all applicable grading ordinances and the recommendations presented in this report.

Earthwork and Grading

General Specifications

All earthwork and grading should be performed in accordance with all applicable requirements of the grading and excavation codes of the County of Riverside, and in compliance with all applicable provisions of the 2022 California Building Code (2022 CBC). Grading should also be performed in accordance with the recommendations provided in this report.

Geotechnical Observations and Testing

Prior to the start of earthwork, a meeting should be held at the site with the owner's representative, contractor and geotechnical consultant to discuss the work schedule and geotechnical aspects of the grading. Earthwork, which in this instance will generally entail removal and re-compaction of the near surface soils, should be accomplished under full-time observation and testing by the geotechnical consultant. A representative of the project geotechnical consultant should be present onsite during all earthwork operations to document placement and compaction of fills, as well as to document compliance with the other recommendations presented herein.

Demolition, Clearing and Grubbing

Following any demolition, clearing operations should also include the removal of any remaining trash, debris, vegetation and similar deleterious materials including the root balls from any trees. Any cavities or excavations created upon removal of any unknown subsurface structures or inclusions should be cleared of loose soil, shaped to provide access for backfilling and compaction equipment and then backfilled with engineered fill. Note that buried deleterious materials may be encountered within the site (i.e., buried organics or debris) due to the past site usage and may need to be removed by hand (i.e., root pickers), during grading operations.

The project geotechnical consultant should provide periodic observation and testing services during final clearing and grubbing operations to document compliance with the above recommendations. In addition, should unusual or adverse soil conditions or buried structures be encountered during grading that are not described herein, these conditions should be brought to the immediate attention of the project geotechnical consultant for corrective recommendations.

Unsuitable Soil Removals and Bottom Processing

Any existing undocumented fill and near surface native soils are considered unsuitable for support of proposed structures and should be removed to underlying competent alluvial materials as approved by the project geotechnical consultant. As such, the estimated depth of removal is recommended to be approximately 4 feet below the existing ground surface, or 3 feet below the bottom of the deepest footing, whichever is deeper. Consideration should be given to locally deepening the excavation at the location of tree roots, any underground structures, or proposed subterranean features (if any), including swimming pools if proposed, in order to provide a uniform depth of compacted fill in all areas. Soil removals could be locally deeper depending upon the actual exposed conditions encountered during grading. At a minimum, the over-excavation should extend a distance beyond the perimeter of the supported structure equal to the depth of the over-excavation. The actual depths and horizontal limits of removals and over-excavations should be evaluated upon availability of the site grading plan and during grading on the basis of observations and testing performed by the project geotechnical consultant. Excavated soils, if found free of deleterious materials, are considered acceptable for use as compacted fill.

Prior to placing engineered fill, the exposed bottom surfaces in the removal areas should be approved by a representative of project geotechnical consultant. The exposed bottom(s) should be scarified to a minimum depth of 12 inches, moisture-conditioned or air-dried to achieve approximately two percent above optimum moisture content and then compacted with a heavy construction equipment prior to placement of fill. The

minimum compaction of the upper 12 inches of the removal bottom should meet or exceed 90 percent relative compaction. The laboratory maximum dry density, the standard for determining relative compaction, and optimum moisture content for each change in soil type should be determined in accordance with Test Method ASTM D 1557.

Grading at Site Boundaries

Average remedial removals within the building pad areas, extending horizontally beyond the limits of the proposed structures a distance equal to the depth of the overexcavation, are anticipated to be on the order of 4 feet below the existing ground surface, although locally deeper over-excavation is possible. A vertical cut at the perimeter of any overexcavation area along the property lines is not expected to remain stable. As such, vertical cuts immediately adjacent to existing structures (if any) are not acceptable from geotechnical standpoint. Specific recommendations for protection of any existing structures or improvements adjacent to the recommended overexcavation, either interior or at the perimeter of the site can be provided following review of site development plans. Recommendations may include shoring and slot-cutting for areas adjacent to property boundaries and underpinning, or other methods intended to prevent settlement or distress to existing improvements.

Excavation Characteristics

Based on the observed soil types in our borings, shallow excavation of soils within the site are expected to be readily excavatable with conventional earthmoving equipment.

Fill Placement

All fill materials should be placed in approximately 6- to 8-inch-thick loose lifts, watered or air-dried as necessary to achieve a minimum moisture content at least 2 percent above the optimum moisture condition, and then compacted in-place to a minimum relative compaction of 90 percent. The laboratory maximum dry density and optimum moisture content for each change in soil type should be determined in accordance with ASTM D 1557.

Imported Soils

If imported soils are required to complete the planned grading, these soils should consist of clean materials devoid of rock exceeding a maximum dimension of 4 inches, organics, trash and other deleterious materials. To avoid making revisions to the foundation design, imported soils should also be granular and exhibit a very low expansion potential (Expansion Index 0-20). Prospective import soils should be observed at the source, tested and approved by the geotechnical consultant prior to importing the soils to the site. It is

recommended that the project environmental consultant should also be notified so that they can confirm the suitability of the proposed import material from an environmental standpoint.

Volumetric Changes - Bulking, Shrinkage and Subsidence

An average shrinkage factor estimated at 10 to 15 percent is anticipated when excavated on-site soils are replaced as properly compacted fill. A subsidence, estimated at 0.15 to 0.25 feet may also occur when exposed bottom surfaces in removal areas are scarified and re-compacted as recommended herein. These estimates of shrinkage and subsidence are intended for use by project planners in estimating earthwork quantities and should not be considered absolute values. Contingencies should be made for balancing earthwork quantities based on actual shrinkage and subsidence that will occur during grading.

Temporary Excavations

Temporary excavations up to a depth of up to roughly four feet below existing grades may be required to accomplish the recommended over-excavation of existing soils. Based on the physical properties of the onsite soils, any temporary excavations exceeding 4 feet in height should be cut back to an inclination of 1.5:1 (h:v) or flatter for the duration of the over-excavation of unsuitable soil material and replacement as compacted fill, as well as placement of underground utilities. During remedial grading the estimated 1.5:1 (h:v) recommendation may possibly be flattened or steepened, depending on conditions observed by a representative of the project geotechnical consultant. Other factors which should be considered with respect to the stability of the temporary slopes include construction traffic and/or storage of materials on or near the tops of the slopes, construction scheduling, presence of nearby walls or structures adjacent to the excavation and weather conditions at the time of construction. Applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, OSHA, of 1970 and the Construction Safety Act should also be followed.

Expansive Soil Conditions

Based on available data, including the non-plastic, granular nature of the soils encountered in the subsurface exploration and the Expansion Index equal to zero in the tested representative sample, near-surface soils are considered Very Low in expansion potential (Expansion Index less than 20). Additional sampling and testing should be performed during site grading for determining actual expansion potential of the supporting building pad soils.

PRELIMINARY FOUNDATION DESIGN CONSIDERATIONS

Seismic Design Parameters

Earthquake loads on earthen structures and buildings are a function of ground acceleration which may be determined from the site-specific ground motion analysis. Alternatively, a design response spectrum can be developed for certain sites based on the code guidelines. To provide the design team with the parameters necessary to construct the design acceleration response spectrum for this project, we used two computer applications. Specifically, the first computer application, which was jointly developed by Structural Engineering Association of California (SEAOC) and California's Office of Statewide Health Planning and Development (OSHPD), the SEA/OSHPD Seismic Design Maps Tool website, https://seismicmaps.org, is used to calculate the ground motion parameters. The second computer application, the United Stated Geological Survey (USGS) Unified Hazard Tool website, https://earthquake.usgs.gov/hazards/interactive/, is used to estimate the earthquake magnitude and the distance to surface projection of the fault. The results obtained from these websites are presented in Appendix C.

To run the above computer applications, site latitude and longitude, seismic risk category and knowledge of site class are required. The site class definition depends on the direct measurement of certain soil properties and the ASCE 7-16 recommended procedure for calculating the average shear wave velocity within the upper 30 meters (approximately 100 feet) of site soils. Several methods exist to determine the shear wave velocity, including correlation with SPT blow counts. Based on the blow counts obtained in boring B-1 (including converting California Modified Sampler blow counts to SPT after Burmister (1948)) and Petra's knowledge of site geologic conditions, Site Class D (D – Stiff Soil as per the SEA/OSHPD software) has been assigned to the subject site.

Petra has assumed that the proposed structures should be categorized as Risk Category II pursuant to 2022 CBC Table 1604.5. If the specifics of the proposed project warrant a different Risk Category, the members of the design team responsible for this determination may assign the appropriate Risk Category. Seismic design parameters provided below are not impacted by the assumed Risk Category.

The following table, Table 2, provides parameters required to construct the seismic response coefficient, Cs, curve based on ASCE 7-16, Article 12.8 guidelines. A printout of the computer output is attached in Appendix C. The results of conversion of blow count data to small-strain shear wave velocity are also provided in Appendix C.

TABLE 2

Seismic Design Parameters

Ground Motion Parameters	Specific Reference	Parameter Value	Unit
Site Latitude (North)	-	33.796486	°
Site Longitude (West)	-	-116.394338	°
Site Class Definition	Section 1613.2.2 (1), Chapter 20 (2)	D-Stiff (4)	-
Assumed Risk Category	Table 1604A.5 (1)	II	-
M_w - Earthquake Magnitude	USGS Unified Hazard Tool (3)	7.49 (3)	-
R – Distance to Surface Projection of Fault	USGS Unified Hazard Tool (3)	6.61 (3)	km
S_s - Mapped Spectral Response Acceleration Short Period (0.2 second)	Figure 1613.2.1(1) (1)	1.819 (4)	g
S_1 - Mapped Spectral Response Acceleration Long Period (1.0 second)	Figure 1613.2.1(2) (1)	0.757 (4)	g
F_a – Short Period (0.2 second) Site Coefficient	Table 1613A.2.3(1) (1)	1.0 (4)	-
F_v – Long Period (1.0 second) Site Coefficient	Table 1613A.2.3(2) (1)	Null (4)	-
S_{MS} – MCE_R Spectral Response Acceleration Parameter Adjusted for Site Class Effect (0.2 second)	Equation 16-36 (1)	1.819 (4)	g
S_{M1} - MCE_R Spectral Response Acceleration Parameter Adjusted for Site Class Effect (1.0 second)	Equation 16-37 (1)	Null (4)	g
S_{DS} - Design Spectral Response Acceleration at 0.2-s	Equation 16-38 (1)	1.213 (4)	g
S_{D1} - Design Spectral Response Acceleration at 1-s	Equation 16-39 (1)	Null (4)	g
$T_o = 0.2\ S_{D1}/\ S_{DS}$	Section 11.4.6 (2)	Null	s
$T_s = S_{D1}/\ S_{DS}$	Section 11.4.6 (2)	Null	s
T_L - Long Period Transition Period	Figure 22-14 (2)	8 (4)	s
PGA - Peak Ground Acceleration at MCE_G (*)	Figure 22-9 (2)	0.789 (4)	g
F_{PGA} - Site Coefficient Adjusted for Site Class Effect (2)	Table 11.8-1 (2)	1.1 (4)	-
PGA_M –Peak Ground Acceleration (2) Adjusted for Site Class Effect	Equation 11.8-1 (2)	0.868 (4)	g
Design PGA ≈ (⅔ PGA_M) - Slope Stability (†)	Similar to Eqs. 16-38 & 16-39 (2)	0.58	g
Design PGA ≈ (0.4 S_{DS}) – Short Retaining Walls (‡)	Equation 11.4-5 (2)	0.49	g
C_{RS} - Short Period Risk Coefficient	Figure 22-18A (2)	0.893 (4)	-
C_{R1} - Long Period Risk Coefficient	Figure 22-19A (2)	0.879 (4)	-
SDC - Seismic Design Category (§)	Section 1613.2.5 (1)	Null (4)	-

References:

(1) California Building Code (CBC), 2022, California Code of Regulations, Title 24, Part 2, Volume I and II.

(2) American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI), 2016, Minimum Design Loads and Associated Criteria for Buildings and Other Structures, Standards 7-16.

(3) USGS Unified Hazard Tool - https://earthquake.usgs.gov/hazards/interactive/

(4) SEI/OSHPD Seismic Design Map Application – https://seismicmaps.org

Related References:

Federal Emergency Management Agency (FEMA), 2015, NEHERP (National Earthquake Hazards Reduction Program) Recommended Seismic Provision for New Building and Other Structures (FEMA P-1050).

Notes:

* PGA Calculated at the MCE return period of 2475 years (2 percent chance of exceedance in 50 years).

† PGA Calculated at the Design Level of ⅔ of MCE; approximately equivalent to a return period of 475 years (10 percent chance of exceedance in 50 years).

‡ PGA Calculated for short, stubby retaining walls with an infinitesimal (zero) fundamental period.

§ The designation provided herein may be superseded by the structural engineer in accordance with Section 1613.2.5.1, if applicable.

Discussion

General

Owing to the characteristics of the subsurface soils, as defined by Site Class D-Stiff Soil designation, and proximity of the site to the sources of major ground shaking, the site is expected to experience strong ground shaking during its anticipated life span. Under these circumstances, where the code-specified design response spectrum may not adequately characterize site response, the 2022 CBC typically requires a site-specific seismic response analysis to be performed. This requirement is signified/identified by the "null" values that are output using SEA/OSHPD software in determination of short period, but mostly, in determination of long period seismic parameters, see Table 2.

For conditions where a "null" value is reported for the site, a variety of design approaches are permitted by 2022 CBC and ASCE 7-16 in lieu of a site-specific seismic hazard analysis. For any specific site, these alternative design approaches, which include Equivalent Lateral Force (ELF) procedure, Modal Response Spectrum Analysis (MRSA) procedure, Linear Response History Analysis (LRHA) procedure and Simplified Design procedure, among other methods, are expected to provide results that may or may not be more economical than those that are obtained if a site-specific seismic hazards analysis is performed. These design approaches and their limitations should be evaluated by the project structural engineer.

Seismic Design Category

Please note that the Seismic Design Category, SDC, is also designated as "null" in Table 2. For Risk Category is I, II, or III structures, where the mapped spectral response acceleration parameter at 1 – second period, S_1, is greater than or equal to 0.75, the 2022 CBC, Section 1613.2.5 requires the assignment to Seismic Design Category E.

Equivalent Lateral Force Method

Should the Equivalent Lateral Force (ELF) method be used for seismic design of structural elements, the value of Constant Velocity Domain Transition Period, T_s, is estimated to be 0.71 seconds and the value of Long Period Transition Period, T_L, is provided in Table 2 for construction of Seismic Response Coefficient – Period (C_s -T) curve that is used in the ELF procedure.

As stated herein, the subject site is considered to be within a Site Class D-Stiff Soil. A site-specific ground motion hazard analysis is not required for structures on Site Class D-Stiff Soil with S1 > 0.2 provided that the Seismic Response Coefficient, Cs, is determined in accordance with ASCE 7-16, Article 12.8 and structural design is performed in accordance with Equivalent Lateral Force (ELF) procedure.

Foundation System

In consideration of the existing surficial soils and the recommended remedial grading herein, conventional shallow foundations, consisting of isolated column footings interconnected with tie beams and continuous footings, may be used for support of the proposed structures. Structural foundation loads are currently unknown but are assumed to be typical for two-story light-framed construction.

Eccentrically loaded footings should be avoided if possible. In the event that the design requires eccentric loading, the design should consider the effective footing dimensions rather than actual dimensions. Pad footings located closer than 2 x B (where B is the footing width) to an adjacent footing should be designed as a single footing. Allowable bearing capacity for square footings apply as long as L/B is less than 5 (where L is the footing length).

Allowable Soil Bearing Capacity, Anticipated Settlement and Lateral Resistance

Pad Footings

Based on the test results (ultimate friction angle of 26.4 degrees and negligible cohesion), an allowable soil bearing capacity of 2,000 pounds per square foot, including dead and live loads, may be utilized for design of 24-inch-square pad footings that are a part of the slab system and embedded a minimum of 12 inches below the lowest adjacent compacted final grade. This value may be increased by 20 percent for each foot of embedment and by 10 percent for each additional foot of width, to a maximum value of 3,000 pounds per square foot. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces.

Continuous Footings

An allowable soil bearing capacity of 1,500 pounds per square foot may be utilized for design of continuous footings founded at a minimum depth of 18 inches below the lowest adjacent final grade. This value may be increased by 20 percent for each additional foot of depth and by 10 percent for each additional foot of width, to a maximum value of 3,000 pounds per square foot. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces.

Estimated Static Settlement

Based on the allowable bearing values provided above, total static settlement of the footings under the anticipated loads is expected to be on the order of 1 inch. Differential settlement is expected to be less than ¾ inch over a horizontal span of 30 feet. The majority of settlement is likely to take place as footing loads are applied or shortly thereafter.

Seismically Induced Settlement

As previously noted, if remedial grading removes and replaces the upper 4 feet of existing soils as compacted fill, the total seismic settlement is estimated at approximately 2 inches. Differential seismic settlement is estimated to be around 1 ½ inches over a span of 100 feet.

Lateral Resistance

A passive earth pressure of 250 pounds per square foot per foot of depth, to a maximum value of 2,500 pounds per square foot, may be used to determine lateral bearing resistance for footings. In addition, a coefficient of friction of 0.30 times the dead load forces may be used between concrete and the supporting soils to determine lateral sliding resistance. The above values may be increased by one-third when designing for transient wind or seismic forces. It should be noted that the above values are based on the condition where footings are cast in direct contact with compacted fill or competent native soils. In cases where the footing sides are formed, all backfill placed against the footings upon removal of forms should be compacted to at least 90 percent of the applicable maximum dry density.

Guidelines for Footings and Slabs on-Grade Design and Construction

Based on the sandy nature of the material encountered in the borings and Petra's experience in the area, the site soils have expansive indices less than 20. As indicated in Section 1803.5.3 of 2022 California Building Code (2022 CBC), these soils are considered non-expansive and, as such, the design of slabs on-grade is considered to be exempt from the procedures outlined in Sections 1808.6.2 of the 2022 CBC and may be performed using any method deemed rational and appropriate by the project structural engineer. However, the following minimum recommendations are presented herein for conditions where the project design team may require geotechnical engineering guidelines for design and construction of footings and slabs on-grade the project site.

> *The design and construction guidelines that follow are based on the above soil conditions and may be considered for reducing the effects of variability in fabric, composition and, therefore, the detrimental behavior of the site soils such as excessive short- and long-term total and differential heave or settlement. These guidelines have been developed on the basis of the previous experience of this firm on projects with similar soil conditions. Although construction performed in accordance with these guidelines has been found to reduce post-construction movement and/or distress, they generally do not positively eliminate all potential effects of variability in soils characteristics and future heave or settlement.*

It should also be noted that the suggestions for dimension and reinforcement provided herein are performance-based and intended only as preliminary guidelines to achieve adequate performance under the anticipated soil conditions. However, they should not be construed as replacement for structural engineering analyses, experience and judgment. The project structural engineer, architect and/or civil engineer should make appropriate adjustments to slab and footing dimensions, and reinforcement type, size and spacing to account for internal concrete forces (e.g., thermal, shrinkage and expansion), as well as external forces (e.g., applied loads) as deemed necessary. Consideration should also be given to minimum design criteria as dictated by local building code requirements.

Conventional Slabs on-Grade System

Considering an expansion index of less than 20, we recommend that footings and floor slabs be designed and constructed in accordance with the following minimum criteria.

Footings

1. Exterior continuous footings supporting one- and two-story structures should be founded at a minimum depth of 18 inches below the lowest adjacent final grade, respectively. Interior continuous footings may be founded at a minimum depth of 12 inches below the top of the adjacent finish floor slabs.

2. In accordance with Table 1809.7 of 2022 CBC for light-frame construction, all continuous footings should have minimum widths of 12 inches for one- and two-story structures. We recommend all continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom.

3. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across garage entrances or similar openings (such as large doors or bay windows). The grade beam should be reinforced in a similar manner as provided above.

4. Interior isolated pad footings, if required, should be a minimum of 24 inches square and founded at a minimum depth of 12 inches below the bottoms of the adjacent floor slabs for one- and two-story structures. Pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings.

5. Exterior isolated pad footings intended for support of roof overhangs such as second-story decks, patio covers, and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

6. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Building Floor Slabs

1. Concrete floor slabs should be a minimum of 4 inches thick and reinforced with No. 3 bars spaced a maximum of 24 inches on centers, both ways. Alternatively, the structural engineer may recommend the use of prefabricated welded wire mesh for slab reinforcement. For this condition, the welded wire mesh should be of sheet type (not rolled) and should consist of 6x6/W2.9xW2.9 (per the Wire Reinforcement Institute, WRI, designation) or stronger. All slab reinforcement should be supported on concrete chairs or brick to ensure the desired placement near mid-depth. Care should be exercised to prevent warping of the welded wire mesh between the chairs in order to ensure its placement at the desired mid-slab position.

   Slab dimension, reinforcement type, size and spacing need to account for internal concrete forces (e.g., thermal, shrinkage and expansion) as well as external forces (e.g., applied loads), as deemed necessary. Consideration should also be given to using a control joint spacing on the order of 2 feet in each direction for each inch of slab thickness.

   It should be noted that some of the non-climatic site parameters, which may impact slabs on-grade performance, are not known at this time, as it is the case for many projects at the design stage. Some of these site parameters include unsaturated soils diffusion conditions pre- and post-construction (e.g., casting the slabs at the end of long, dry or wet periods, maintenance during long, dry and wet periods, etc.), landscaping, alterations in site surface gradient, irrigation, trees, etc. While the effects of any or a combination of these parameters on slab performance cannot be accurately predicted, maintaining moisture content equilibrium within the soils mass and planting trees at a distance greater than half of their mature height away from the edge of foundation may reduce the potential for the adverse impact of these site parameters on slabs on-grade performance.

2. Living area concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete.

   In general, to reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.. Foot traffic on the membrane should be reduced to a minimum. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

   To comply with Section 1907.1.1 of the 2022 CBC, the living area concrete floor slab should also be underlain with capillary break consisting of a minimum of 4 inches of gravel or crushed stone containing not more than 10 percent of material that passes through a No. 4 sieve. The capillary break should be placed below the 10-mil moisture vapor retarder and may be considered as the structural fill recommended above.

At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer or contractor with experience in slab design, construction, and curing should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

3. Garage floor slabs should be a minimum 4 inches thick and reinforced in a similar manner as living area floor slabs. Garage slabs should also be poured separately from adjacent wall footings with a positive separation maintained using ¾-inch-minimum felt expansion joint material. To control the propagation of shrinkage cracks, garage floor slabs should be quartered with weakened plane joints. Consideration should be given to placement of a moisture vapor retarder below the garage slab, similar to that provided in Item 2 above, should the garage slab be overlain with moisture sensitive floor covering.

4. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

5. The minimum dimensions and reinforcement recommended herein for building floor slabs may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Post-Tensioned Slabs on-Grade System

In consideration of the expansion index of less than 20, as predominantly exhibited by onsite soils, any rational and appropriate procedure may be chosen by the project structural engineer for the design of post-tensioned slabs on-grade. Should the design engineer choose to follow the latest Code-adopted edition of the procedure published by the Post-Tensioning Institute (PTI DC 10.5), the following minimum design criteria are provided Table 3, below.

TABLE 3

Presumptive Post-Tensioned Slab on-Grade Design Parameters for PTI Procedure

Soil Information	
Approximate Depth of Constant Suction, feet	9
Approximate Soil Suction, pF	3.9
Inferred Thornthwaite Index:	-20
Average Edge Moisture Variation Distance, e_m in feet: Center Lift Edge Lift	 9.0 4.7
Anticipated Swell, y_m in inches: Center Lift Edge Lift	 0.25 0.45

Modulus of Subgrade Reaction

The modulus of subgrade reaction for design of load bearing elements depends on the size of the element and soil-structure interaction. However, as a first level of approximation, this value may be assumed to be 125 pounds per cubic inch.

Minimum Design Recommendations

The soil values provided above may be utilized by the project structural engineer to design post-tensioned slabs on-ground in accordance with Section 1808.6.2 of the 2022 CBC and the PTI publication. Thicker floor slabs and larger footing sizes may be required for structural reasons and should govern the design if more restrictive than the minimum recommendations provided below:

1. Exterior continuous footings for one- and two-story structures should be founded at a minimum depth of 12 inches below the lowest adjacent finished ground surface. Interior footings may be founded at a minimum depth of 10 inches below the tops of the adjacent finish floor slabs.

2. In accordance with Table 1809.7 of 2022 CBC for light-frame construction, all continuous footings should have minimum widths of 12 inches for one- and two-story construction. We recommend all continuous footings should be reinforced with a minimum of two No. 4 bars, one top and one bottom. Alternatively, post-tensioned tendons may be utilized in the perimeter continuous footings in lieu of the reinforcement bars.

3. A minimum 12-inch-wide grade beam founded at the same depth as adjacent footings should be provided across the large entrances or similar openings (such as warehouse doors or bay windows). The grade beam should be reinforced in a similar manner as provided above.

4. Interior isolated pad footings, if required, should be a minimum of 24 inches square and founded at a minimum depth of 12 inches below the bottoms of the adjacent floor slabs for one- and two-story buildings. Pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings.

5. Exterior isolated pad footings intended for support of roof overhangs such as second-story decks, patio covers, and similar construction should be a minimum of 24 inches square and founded at a minimum depth of 18 inches below the lowest adjacent final grade. The pad footings should be reinforced with No. 4 bars spaced a maximum of 18 inches on centers, both ways, placed near the bottoms of the footings. Exterior isolated pad footings may need to be connected to adjacent pad and/or continuous footings via tie beams at the discretion of the project structural engineer.

6. The thickness of the floor slabs should be determined by the project structural engineer with consideration given to the expansion index of the onsite soils; however, we recommend that a minimum slab thickness of 4 inches be considered.

7. As an alternative to designing 4-inch-thick post-tensioned slabs with perimeter footings as described in Items 1 and 2 above, the structural engineer may design the foundation system using a thickened slab design. The minimum thickness of this uniformly thick slab should be 7.5 inches. The engineer in charge of post-tensioned slab design may also opt to use any combination of slab thickness and footing embedment depth as deemed appropriate based on their engineering experience and judgment.

8. Concrete floor slabs and areas to receive moisture sensitive floor covering should be underlain with a moisture vapor retarder consisting of a minimum 10-mil-thick polyethylene or polyolefin membrane that meets the minimum requirements of ASTM E96 and ASTM E1745 for vapor retarders (such as Husky Yellow Guard®, Stego® Wrap, or equivalent). All laps within the membrane should be sealed, and at least 2 inches of clean sand should be placed over the membrane to promote uniform curing of the concrete. To reduce the potential for punctures, the membrane should be placed on a pad surface that has been graded smooth without any sharp protrusions. If a smooth surface cannot be achieved by grading, consideration should be given to lowering the pad finished grade an additional inch and then placing a 1-inch-thick leveling course of sand across the pad surface prior to the placement of the membrane.

   At the present time, some slab designers, geotechnical professionals and concrete experts view the sand layer below the slab (blotting sand) as a place for entrapment of excess moisture that could adversely impact moisture-sensitive floor coverings. As a preventive measure, the potential for moisture intrusion into the concrete slab could be reduced if the concrete is placed directly on the vapor retarder. However, if this sand layer is omitted, appropriate curing methods must be implemented to ensure that the concrete slab cures uniformly. A qualified materials engineer with experience in slab design and construction should provide recommendations for alternative methods of curing and supervise the construction process to ensure uniform slab curing. Additional steps would also need to be taken to prevent puncturing of the vapor retarder during concrete placement.

9. Presaturation of the subgrade below floor slabs will not be required; however, prior to placing concrete, the subgrade below all dwelling and garage floor slab areas should be thoroughly moistened to achieve a moisture content that is at least equal to or slightly greater than optimum moisture content. This moisture content should penetrate to a minimum depth of 12 inches below the bottoms of the slabs.

10. The minimum footing dimensions and reinforcement recommended herein may be modified (increased or decreased subject to the constraints of Chapter 18 of the 2022 CBC) by the structural engineer responsible for foundation design based on calculations, engineering experience and judgment.

Foundation Excavation Observations

All footing trenches should be observed by a representative of the project geotechnical consultant to document that they have been excavated into competent bearing soils prior to the placement of forms, reinforcement or concrete. The excavations should be trimmed neat, level and square. All loose, sloughed or moisture-softened soils and/or any construction debris should be removed prior to the placing of concrete. Excavated soils derived from footing and/or utility trenches should not be placed in building slab-on-grade areas or exterior concrete flatwork areas unless the soils are compacted to at least 90 percent of maximum dry density.

General Corrosivity Screening

As a screening level study, very limited chemical and electrical tests were performed on samples considered representative of the onsite soils to identify potential corrosive characteristics of these soils. The common indicators associated with soil corrosivity include water-soluble sulfate and chloride levels, pH (a measure of acidity), and minimum electrical resistivity. Test results are presented in Table 4 below.

> *It should be noted that Petra does not practice corrosion engineering; therefore, the test results, opinion and engineering judgment provided herein should be considered as general guidelines only. Additional analyses would be warranted, especially for cases where buried metallic building materials (such as copper and cast or ductile iron pipes) in contact with site soils are planned for the project. In many cases, the project geotechnical engineer may not be informed of these choices. Therefore, for conditions where such elements are considered, we recommend that other, relevant project design professionals (e.g., the architect, landscape architect, civil and/or structural engineer) also consider recommending a qualified corrosion engineer to conduct additional sampling and testing of near-surface soils during the final stages of site grading to provide a complete assessment of soil corrosivity. Recommendations to mitigate the detrimental effects of corrosive soils on buried metallic and other building materials that may be exposed to corrosive soils should be provided by the corrosion engineer as deemed appropriate.*

In general, a soil's water-soluble sulfate levels and pH relate to the potential for concrete degradation; water-soluble chlorides in soils impact ferrous metals embedded or encased in concrete, e.g., reinforcing steel; and electrical resistivity is a measure of a soil's corrosion potential to a variety of buried metals used in the building industry, such as copper tubing and cast or ductile iron pipes. Table 4, below, presents test results. with an interpretation of current code indicators and guidelines that are commonly used in this industry. The table includes the classifications of the soils as they relate to the various tests, as well as a general recommendation for possible mitigation measures in view of the potential adverse impact on

various components of the proposed structures in direct contact with site soils. The guidelines provided herein should be evaluated and confirmed, or modified, in their entirety by the project structural engineer, corrosion engineer and/or the contractor responsible for concrete placement for structural concrete used in exterior and interior footings, interior slabs on-ground, garage slabs, wall foundations and concrete exposed to weather such as driveways, patios, porches, walkways, ramps, steps, curbs, etc.

TABLE 4

Soil Corrosivity Screening Results

Test	Test Results	Classification	General Recommendations
Soluble Sulfates (Cal 417)	0.0018 percent	S0[1] Not Applicable	No cement type restrictions; no water/cement ratio restrictions; min. f'_c = 2,500 psi
pH (Cal 643)	7.5	Slightly Alkaline	No special recommendations
Soluble Chloride (Cal 422)	330 ppm	C1[2] Moderate C2[4] Severe	Residence: No special recommendations, f'_c should not be less than 2,500 psi. Pools & Decking: Water/cement ratio should not exceed 0.40; min. f'_c = 5,000 psi
Resistivity (Cal 643)	20,000 ohm-cm	Mildly Corrosive[3]	A corrosion engineer should be consulted for long term protection of metallic elements in contact with site soils

Notes:
1. ACI 318-14, Section 19.3
2. ACI 318-14, Section 19.3
3. Pierre R. Roberge, "Handbook of Corrosion Engineering"
4. Exposure classification C2 applies specifically to swimming pools and appurtenant concrete elements

Post-Grading Considerations

Utility Trenches

All utility trenches backfill should be compacted to a minimum relative compaction of 90 percent. Due to the nature of the upper onsite earth materials, flooding and jetting techniques should be avoided. Therefore, trench backfill materials should be placed in lifts no greater than approximately 12 inches in thickness, watered or air-dried as necessary to achieve near optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. A representative of the project geotechnical consultant should probe and test the backfills to verify adequate compaction.

As an alternative for shallow trenches where pipe or utility lines may be damaged by mechanical compaction equipment, such as under building floor slabs, imported clean sand having a sand equivalent

(SE) value of 30 or greater may be utilized. The sand backfill materials should be watered to achieve near optimum moisture conditions and then tamped into place. No specific relative compaction will be required; however, observation, probing, and if deemed necessary, testing should be performed by a representative of the project geotechnical consultant to verify an adequate degree of compaction.

If clean, imported sand is to be used for backfill of exterior utility trenches, it is recommended that the upper 12 inches of trench backfill materials consist of properly compacted onsite soil materials. This is to mitigate infiltration of irrigation and rainwater into granular trench backfill materials.

Where an exterior and/or interior utility trench is proposed in a direction parallel to a building footing, the bottom of the trench should not extend below a 1:1 (horizontal to vertical) plane projected downward from the bottom edge of the adjacent footing. Where this condition occurs, the adjacent footing should be deepened, or the utility constructed and the trench backfilled and compacted prior to footing construction. Where utility trenches cross under a building footing, these trenches should be backfilled with on-site soils at the point where the trench crosses under the footing to reduce the potential for water to migrate under the floor slabs.

Site Drainage

Positive surface drainage systems consisting of a combination of sloped concrete flatwork/asphalt pavement, sheet flow gradients, swales and surface area drains (where needed) should be provided around the building and within any planter areas to collect and direct all surface waters to an appropriate drainage facility as determined by the project civil engineer. The ground surfaces of planter and landscape areas that are located within 10 feet of building foundations should be sloped at a minimum gradient of 5 percent away from the foundations and towards the nearest area drains. The ground surface of planter and landscape areas that are located more than 10 feet away from building foundations may be sloped at a minimum gradient of 2 percent away from the foundations and towards the nearest area drains.

Concrete flatwork surfaces that are located within 10 feet of building foundations should be inclined at a minimum gradient of one percent away from the building foundations and towards the nearest area drains. Concrete flatwork surfaces that are located more than 10 feet away from building foundations may be sloped at a minimum gradient of 1 percent towards the nearest area drains. Surface waters should not be allowed to collect or pond against building foundations and within the level areas of the site. All drainage devices should be properly maintained throughout the lifetime of the development. Future changes to site improvements, or planting and watering practices, should not be allowed to cause over-saturation of site soil adjacent to the structures.

Bottomless Trench Drains

When gravel filled bottomless infiltration systems are constructed near foundations, a potential exists for oversaturation of the foundation soils which conflicts with the intended purpose of onsite drainage facilities. In addition, it has been our experience that a leading cause of distress to buildings and foundations is due to poor management of water next to building foundations. Petra recommends a setback of at least 15 feet between any infiltration system and building foundations. If this setback distance cannot be maintained, then a modified foundation system may be required to alleviate any distress that could be caused by infiltration of water near the footing. A modified foundation system could consist of constructing deepened footings within 15 feet of the infiltration system and installing extra reinforcement. Design of a modified foundation system is referred to the project structural engineer.

Retaining Walls

Due to the relatively flat and level site, it is anticipated that tall retaining walls will not be necessary for this project. Shorter retaining walls may be utilized for grading and landscaping purposes. Petra should be afforded the opportunity to review all proposed retaining wall design. Retaining walls retaining less than 6 feet of soil and without additional surcharge may be designed according to the following recommendations.

Allowable Bearing Values

Proposed retaining walls should be supported on spread footings using the design criteria recommended previously for building footings; however, when calculating passive resistance, the passive earth pressure for retaining walls supported by descending slopes should be reduced to 150 pounds per square foot, per foot of depth, to a maximum value of 1,500 pounds per square foot.

Active and At-Rest Earth Pressures

1. On-Site Soils Used for Backfill
   On-site soil and bedrock materials have predominant very low expansion potentials. Therefore, for this condition, active earth pressures equivalent to fluids having densities of 35 and 51 pounds per cubic foot should be used for design of cantilevered walls retaining a level backfill and ascending 2:1 backfill, respectively. For walls that are restrained at the top, at-rest earth pressures of 53 and 78 pounds per cubic foot (equivalent fluid pressures) should be used. The above values are for retaining walls that have been supplied with a proper subdrain system (see Figure RW-1). All walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings in addition to the above-recommended active and at-rest earth pressures.

2. Imported Sand, Pea Gravel, or Rock Used for Wall Backfill

   Imported clean sand exhibiting a sand equivalent value (SE) of 30 or greater, pea gravel, or crushed rock may be used for wall backfill to reduce the lateral earth pressures provided these granular backfill materials extend behind the walls to a minimum horizontal distance equal to one-half the wall height.

> In addition, the sand, pea gravel, or rock backfill materials should extend behind the walls to a minimum horizontal distance of 2 feet at the base of the wall or to a horizontal distance equal to the heel width of the footing, whichever is greater (see Figures RW-2 and RW-3). For the above conditions, cantilevered walls retaining a level backfill and ascending 2:1 backfill may be designed to resist active earth pressures equivalent to fluids having densities of 30 and 41 pounds per cubic foot, respectively. For walls that are restrained at the top, at-rest earth pressures equivalent to fluids having densities of 45 and 62 pounds per cubic foot are recommended for design of restrained walls supporting a level backfill and ascending 2:1 backfill, respectively. These values are also for retaining walls supplied with a proper subdrain system.

Furthermore, as with existing soil backfill, the walls should be designed to support any adjacent structural surcharge loads imposed by other nearby walls or footings in addition to the recommended active and at-rest earth pressures. All structural calculations and details should be provided to this firm for verification purposes prior to grading and construction phases.

Earthquake Loads Retaining Walls

Note 1 of Section 1803.5.12 of the 2022 CBC indicates that the dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet of backfill height due to design earthquake ground motions be determined. It is unlikely that any wall retaining 6 or more feet of backfill will be constructed onsite. Accordingly, dynamic seismic lateral earth pressures are not considered necessary for this project.

Subdrainage

Perforated pipe and gravel subdrains should be installed behind all retaining walls to prevent entrapment of water in the backfill (see Figures RW-1 through RW-3). Perforated pipe should consist of 4-inch-minimum diameter PVC Schedule 40, or SDR-35, with the perforations laid down. The pipe should be encased in a 1-foot-wide column of ¾-inch to 1½-inch open-graded gravel. If on-site soils are used as backfill, the open-graded gravel should extend above the wall footings to a minimum height equal to one-third the wall height or to a minimum height of 1.5 feet above the footing, whichever is greater. If imported sand, pea gravel, or crushed rock is used as backfill, subdrain details shown on Figures RW-2 and RW-3 should be utilized. The open-graded gravel should be completely wrapped in filter fabric consisting of Mirafi 140N or equivalent. Solid outlet pipes should be connected to the subdrains and then routed to a suitable area for discharge of accumulated water.

If a limited area exists behind the walls for installation of a pipe and gravel subdrain, a geotextile drain mat such as Mirafi Miradrain, or equivalent, can be used in lieu of drainage gravel. The drain mat should extend the full height and lengths of the walls and the filter fabric side of the drain mat should be placed up against

the backcut. The perforated pipe drain line placed at the bottom of the drain mat should consist of 4-inch minimum diameter PVC Schedule 40 or SDR-35. The filter fabric on the drain mat should be peeled back and then wrapped around the drain line.

Waterproofing

The portions of retaining walls supporting backfill should be coated with an approved waterproofing compound or covered with a similar material to inhibit infiltration of moisture through the walls.

Wall Backfill

Where imported sand (with a Sand Equivalent of 30 or greater) or the onsite soils materials are used as backfill behind the proposed retaining walls, the backfill materials should be placed in approximately 6- to 8-inch-thick maximum lifts, watered as necessary to achieve above optimum moisture conditions, and then mechanically compacted in place to a minimum relative compaction of 90 percent. Flooding or jetting of the backfill materials should be avoided. A representative of the project geotechnical consultant should observe the backfill procedures and test the wall backfill to verify adequate compaction.

If imported pea gravel or rock is used for backfill, the gravel should be placed in approximately 2- to 3-foot-thick lifts, thoroughly wetted but not flooded, and then mechanically tamped or vibrated into place. A representative of the project geotechnical consultant should observe the backfill procedures and probe the backfill to determine that an adequate degree of compaction is achieved.

To reduce the potential for the direct infiltration of surface water into the backfill, imported sand, gravel, or rock backfill should be capped with at least 12 inches of on-site soil. Filter fabric such as Mirafi 140N or equivalent, should be placed between the soil and the imported gravel or rock to prevent fines from penetrating into the backfill.

Geotechnical Observation and Testing

All grading and construction phases associated with retaining wall construction, including backcut excavations, footing trenches, installation of the subdrainage systems, and placement of backfill should be observed and tested by a representative of the project geotechnical consultant.

Masonry Block Walls

Footings for free-standing masonry block walls and other rigid structures should be designed and reinforced utilizing the criteria recommended for conventional building foundations. Where existing surface soils are not removed and re-compacted as recommended herein, the footings should be extended through these

loose surface soils and founded in underlying competent materials. Positive separations in walls should also be provided at corners and at horizontal spacing of approximately 25 feet to permit relative movement. The separations should be provided in the blocks and not extend through the footings. The footings should be poured monolithically with continuous rebars to serve as effective "grade beams" below the walls.

Where remedial grading cannot be performed due to site constraints, a reduced bearing value of 1,200 pounds per square foot should be used for 12-inch-wide continuous footings founded at a minimum depth of 12 inches below the lowest adjacent final grade. No increase in bearing value may be used for wider or deeper footings for this condition. The recommended allowable bearing value includes both dead and live loads and may be increased by one-third for short duration wind and seismic forces. In addition, a reduced passive earth pressure of 175 pounds per square foot per foot of depth, to a maximum value of 1,750 pounds per square foot, should be used to resist lateral loads. A coefficient of friction of 0.3 times the dead load forces may still 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 or seismic forces.

Exterior Concrete Flatwork

General

Near-surface compacted fill soils within the site are expected to exhibit an expansion index of 0 to 20, i.e. non-expansive. Subgrade preparation for areas not supported by the compacted fill supporting building structures should follow the guidelines presented below for pavement design and construction. We recommend that all exterior concrete flatwork such as sidewalks, patio slabs, large decorative slabs, concrete subslabs that will be covered with decorative pavers, vehicular driveways and/or access roads within and adjacent to the site be designed by the project architect and/or structural engineer with consideration given to mitigating the potential cracking and uplift that can develop in soils exhibiting expansion index values that fall in the very low category. The guidelines that follow should be considered as minimums and are subject to review and revision by the project architect, structural engineer and/or landscape consultant as deemed appropriate.

Thickness and Joint Spacing

To reduce the potential of unsightly cracking, concrete walkways, patio-type slabs, large decorative slabs and concrete subslabs to be covered with decorative pavers should be at least 4 inches thick and provided with construction joints or expansion joints every 6 feet or less. Private driveways that will be designed for the use of passenger cars for access to private garages should also be at least 4 inches thick and provided

with construction joints or expansion joints every 10 feet or less. Concrete pavement that will be designed based on an unlimited number of applications of an 18-kip single-axle load in public access areas, segments of road that will be paved with concrete (such as bus stops and cross-walks) or access roads that will be subject to heavy truck loadings should have a minimum thickness of 5 inches and be provided with control joints spaced at maximum 10-foot intervals. A modulus of subgrade reaction of 125 pounds per cubic foot may be used for design of the public and access roads.

Reinforcement

All concrete flatwork having their largest plan-view panel dimension exceeding 10 feet should be reinforced with a minimum of No. 3 bars spaced 24 inches on centers, both ways. Alternatively, the slab reinforcement may consist of welded wire mesh of the sheet type (not rolled) with 6x6/W1.4xW1.4 designation in accordance with the Wire Reinforcement Institute (WRI). The reinforcement should be properly positioned near the middle of the slabs.

> *The reinforcement recommendations provided herein are intended as guidelines to achieve adequate performance for anticipated soil conditions. The project architect, civil and/or structural engineer should make appropriate adjustments in reinforcement type, size and spacing to account for concrete internal (e.g., shrinkage and thermal) and external (e.g., applied loads) forces as deemed necessary.*

Edge Beams (Optional)

Where the outer edges of concrete flatwork are to be bordered by landscaping, it is recommended that consideration be given to the use of edge beams (thickened edges) to prevent excessive infiltration and accumulation of water under the slabs. Edge beams, if used, should be 6 to 8 inches wide, extend 8 inches below the tops of the finish slab surfaces. Edge beams are not mandatory; however, their inclusion in flatwork construction adjacent to landscaped areas is intended to reduce the potential for vertical and horizontal movement and subsequent cracking of the flatwork related to uplift forces that can develop in expansive soils.

Subgrade Preparation

Compaction

To reduce the potential for distress to concrete flatwork, the subgrade soils below concrete flatwork areas to a minimum depth of 12 inches (or deeper, as either prescribed elsewhere in this report or determined in the field) should be moisture conditioned to at least equal to, or slightly greater than, the optimum moisture content and then compacted to a minimum relative compaction of 90 percent. Where concrete public roads,

concrete segments of roads and/or concrete access driveways are proposed, the upper 6 inches of subgrade soil should be compacted to a minimum 95 percent relative compaction.

Pre-Moistening

As a further measure to reduce the potential for concrete flatwork cracking, subgrade soils should be thoroughly moistened prior to placing concrete. The moisture content of the soils should be at least the optimum moisture content to a minimum depth of 12 inches into the subgrade. Flooding or ponding of the subgrade is not considered feasible to achieve the above moisture conditions since this method would likely require construction of numerous earth berms to contain the water. Therefore, moisture conditioning should be achieved with sprinklers, or a light spray applied to the subgrade over a period of few to several days just prior to pouring concrete. Pre-watering of the soils is intended to promote uniform curing of the concrete, reduce the development of shrinkage cracks and reduce the potential for differential expansion pressure on freshly poured flatwork. A representative of the project geotechnical consultant should observe and verify the density and moisture content of the soils, and the depth of moisture penetration prior to placing concrete.

Drainage

Drainage from patios and other flatwork areas should be directed to local area drains and/or graded earth swales designed to carry runoff water to the adjacent streets or other approved drainage structures. The concrete flatwork should be sloped at a minimum gradient of one percent, or as prescribed by project civil engineer or local codes, away from building foundations, retaining walls, masonry garden walls and slope areas.

Tree Wells

Tree wells are not recommended in concrete flatwork areas since they introduce excessive water into the subgrade soils and allow root invasion, both of which can cause heaving and cracking of the flatwork.

Swimming Pool and Spa

Allowable Bearing and Settlement

Plans for the proposed project were not made available to Petra at the time this report was prepared, but it is common to include one (or more) pools in a multi-unit apartment complex. If a pool is proposed for the project, the pool may be designed as a conventional pool shell founded on natural, medium dense eolian sand. Any loose sand below the pool shell should be removed and replaced with engineered fill. Therefore, the pool shell may be designed using an allowable bearing value of 1,500 pounds per square foot. A

potential for seismic differential settlement on the order of one inch to occur across the pool/spa shells should be considered in the design. Petra should review final plans when available to verify there are no additional geotechnical concerns related to the construction of a pool.

Lateral Earth Pressures

The pool walls should be designed assuming that an earth pressure equivalent to a fluid having a density of 90 pounds per cubic foot is acting on the outer surface of the pool walls. For this long-term condition, the walls should be designed using a lateral earth pressure of 62.4H pounds per square foot (where "H" equals the vertical depth in feet below the ground surface) that is acting on the inner surface of the pool walls. Pool walls should also be designed to resist lateral surcharge pressures imposed by any adjacent footings or structures in addition to the above lateral earth pressures.

Stability of Temporary Excavation

The pool excavation is expected to expose loose to medium dense eolian sand soil. Based on the anticipated physical characteristics of these materials, the pool excavation sidewalls will not remain stable at a vertical gradient during construction of the pool. Therefore, the temporary excavation sidewalls should be sloped at a slope ratio of 2:1 (horizontal to vertical) or flatter before forming of the pool walls.

Temporary Access Ramps

It is essential that all backfill placed within temporary access ramps extending into the pool excavation be properly compacted and tested. This will reduce the potential for excessive settlement of the backfill and subsequent damage to pool decking or other structures placed on the backfill.

Pool Bottom

It is expected that the swimming pool bottom will rest entirely on medium dense to dense eolian sand deposits. Therefore, care should be taken while excavating these structures to prevent disturbance of subgrade soils exposed at grade in the pool bottom.

Pool Decking

Pool decking should be constructed in accordance with the recommendations presented in the "Exterior Concrete Flatwork" section of this report.

Plumbing Fixtures

Leakage from the swimming pool or from any of the appurtenant plumbing could create adverse saturated conditions of the surrounding subgrade soils. Localized areas of oversaturation can lead to differential expansion (heave) of the subgrade soils and subsequent raising and shifting of concrete flatwork. Therefore, it is essential that all plumbing and pool fixtures be absolutely leak-free. For similar reasons, drainage from pool deck areas should be directed to local area drains and/or graded earth swales designed to carry runoff water to a suitable discharge point.

ACCESS ROADS

Asphalt Pavement

The proposed site improvements may include construction of new asphalt-paved roads, as well as improvements to the existing nearby access roads. We have developed the following preliminary recommendations for flexible pavement design based on an assumed R-value of 40 and using Traffic Index (TI) values of 5.0 and 6.0. The pavement design presented herein is based on the assumption that the pavement will be placed directly over engineered, compacted fill placed as specified above in the section for *Subgrade Preparation* of *Exterior Concrete Flatwork*.

R-value and traffic index parameters presented herein have been assumed. We recommend that bulk samples of the actual subgrade materials be collected and R-Value tested after rough grading is completed. Additionally, the project civil engineer should be consulted to determine appropriate or required TI values. Once actual as-graded testing is complete and traffic loads are confirmed, additional or modified design recommendations may be presented.

The pavement section thicknesses presented in Table 5 are considered as minimums for the subject site under the assumed conditions and may be superseded by the project requirements or jurisdictional agency specifications if more stringent.

TABLE 5

Suggested Minimum Flexible Pavement Thickness

Traffic Index	R-Value	Hot Mix Asphalt (alternative) (inches)	Aggregate Base (inches)
5.0 (Light Traffic)	40	3	4
6.0 (Truck Traffic)	40	3	6.5

Subgrade soils should be properly compacted, smooth, and non-yielding prior to pavement construction. The subgrade soils should be compacted to at least 90 percent of ASTM D 1557-07. Subgrade preparation recommendations are provided below.

Aggregate base materials may consist of Crushed Aggregate Base, Crushed Miscellaneous Base, or Processed Miscellaneous Base conforming to Section 200-2 of the Standard Specifications for Public Works Construction (Greenbook). It should be noted that base thicknesses recommended above are based on the use of Crushed Aggregate base material. For conditions where either Crushed Miscellaneous Base or Processed Miscellaneous Base Materials are used, a 10 percent increase in base section thickness should be incorporated in the design and construction of the structural pavement section.

The base materials should be brought to a uniform moisture near optimum moisture then compacted to at least 95 percent of ASTM D 1557. Asphaltic concrete materials and construction should conform to Section 203 of the Greenbook.

Subgrade drainage is an important factor that enhances pavement performance. Subgrade surfaces below the flexible pavement structural section should be sloped to direct run-off to suitable collection points and to prevent ponding. The roadways should be raised above the surrounding ground surface to facilitate drainage from the roadway.

PLAN REVIEW

This report is based on certain assumptions related to the proposed development, since no plans were available for Petra's review at the time this report was prepared. We recommend that our firm be engaged to review the final design drawings, specifications and grading plan prior to any new construction. If we are not provided the opportunity to review these documents with respect to the geotechnical aspects of new construction and grading, it should not be assumed that the recommendations provided herein are wholly or in part applicable to the proposed construction.

REPORT LIMITATIONS

This report is based on Petra's understanding of the proposed project and geotechnical data as described herein. The materials encountered on the project site, described in other literature, and utilized in our laboratory investigation are believed representative of the project area, and the conclusions and recommendations contained in this report are presented on that basis. However, soil materials can vary in characteristics between points of exploration, both laterally and vertically, and those variations could affect 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. To provide the greatest degree of continuity between the design and construction phases, consideration should be given to retaining Petra Geosciences, Inc., as geotechnical engineer of record for construction services.

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 guarantee or warranty.

This report should be reviewed and updated after a period of one year or if the project concept changes from that described herein.

The information contained herein 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 authorities for this project. Should you have any questions, please do not hesitate to call.

Respectfully submitted,

PETRA GEOSCIENCES, INC.

7/25/24

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Senior Associate Geologist
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Senior Principal Engineer
GE 2024

KTM/KB/AP/SJ/lv

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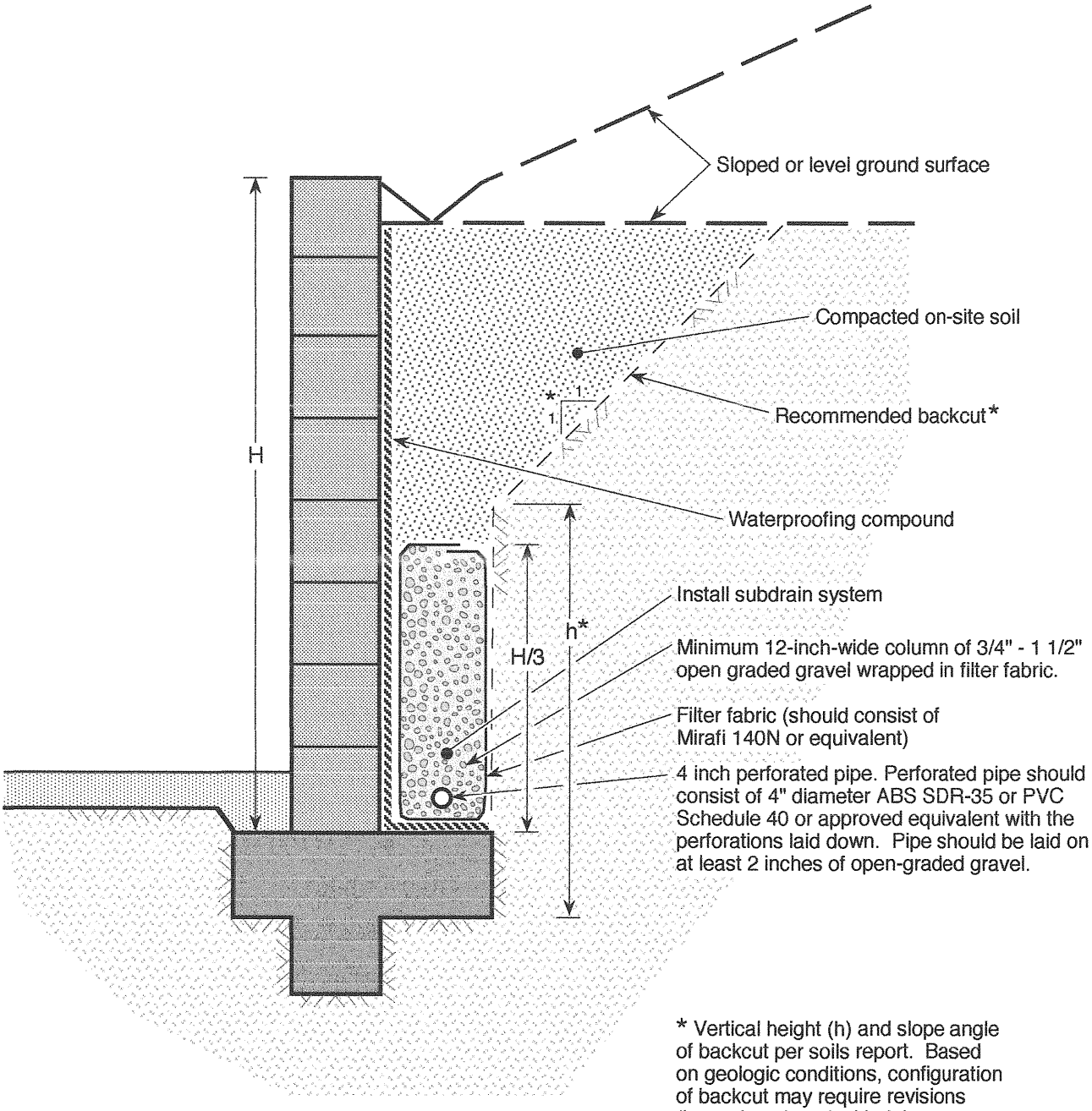
FIGURES

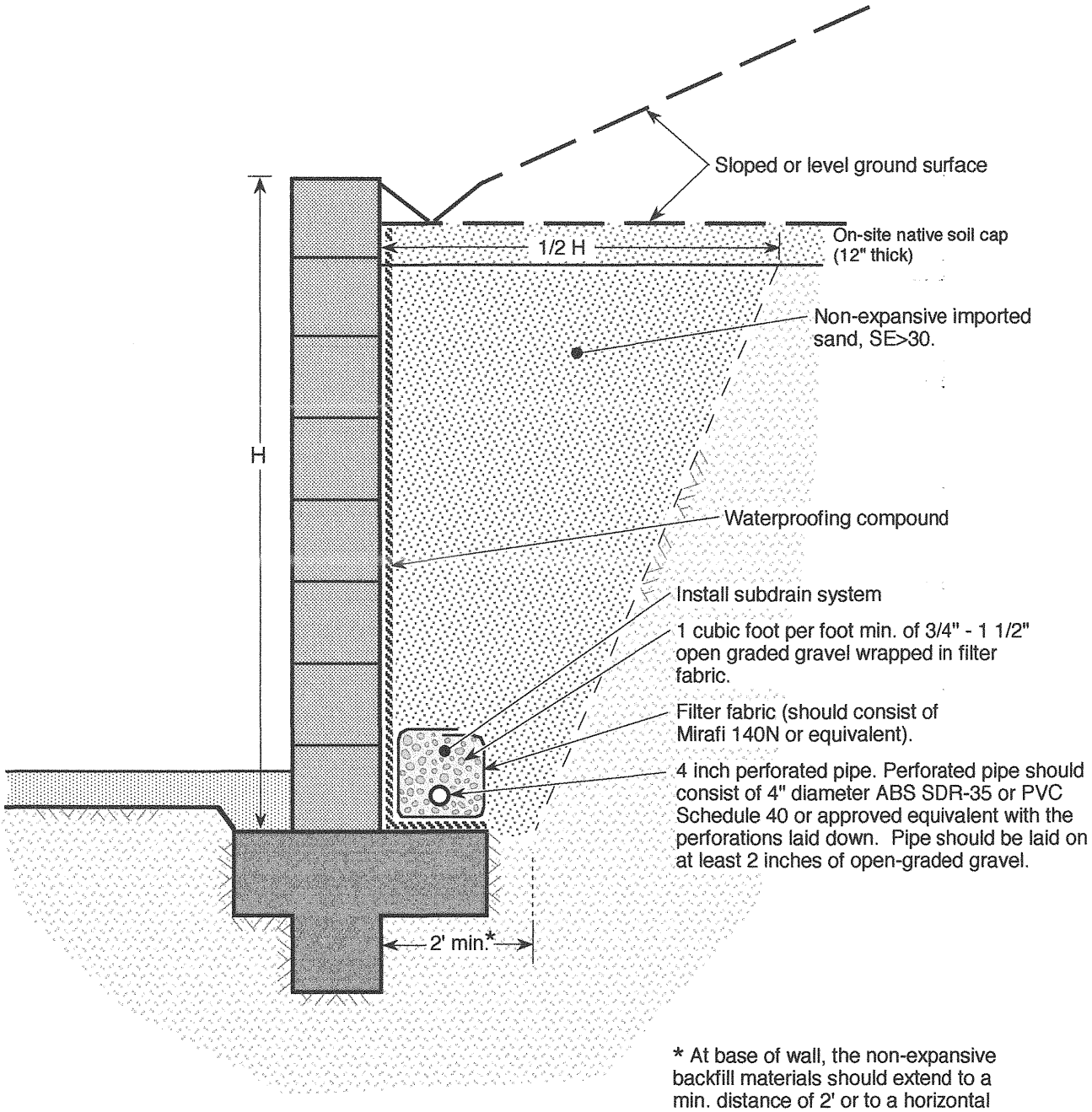
NATIVE SOIL BACKFILL



* Vertical height (h) and slope angle of backcut per soils report. Based on geologic conditions, configuration of backcut may require revisions (i.e. reduced vertical height, revised slope angle, etc.)

PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-1

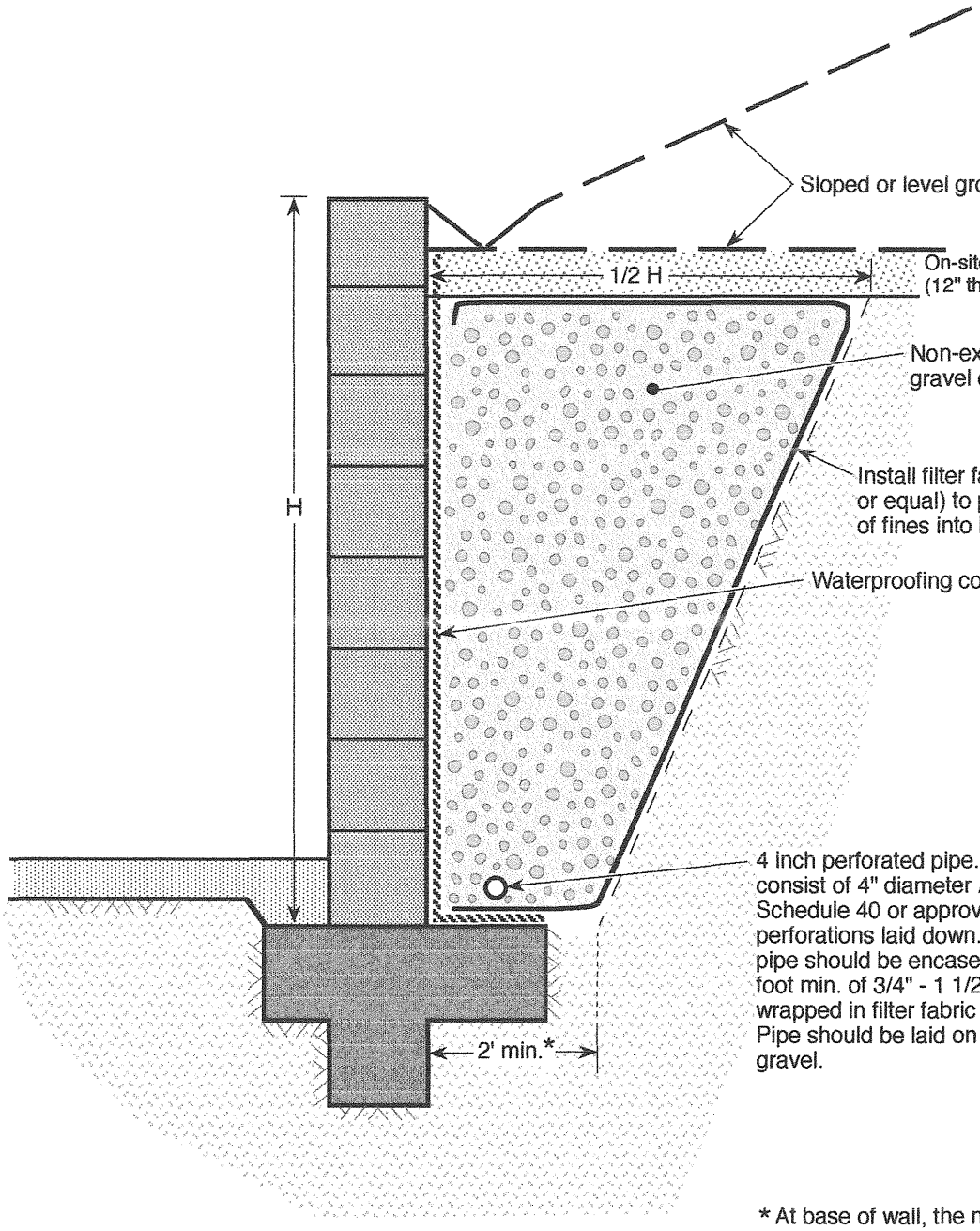
IMPORTED SAND BACKFILL



* At base of wall, the non-expansive backfill materials should extend to a min. distance of 2' or to a horizontal distance equal to the heel width of the footing, whichever is greater.

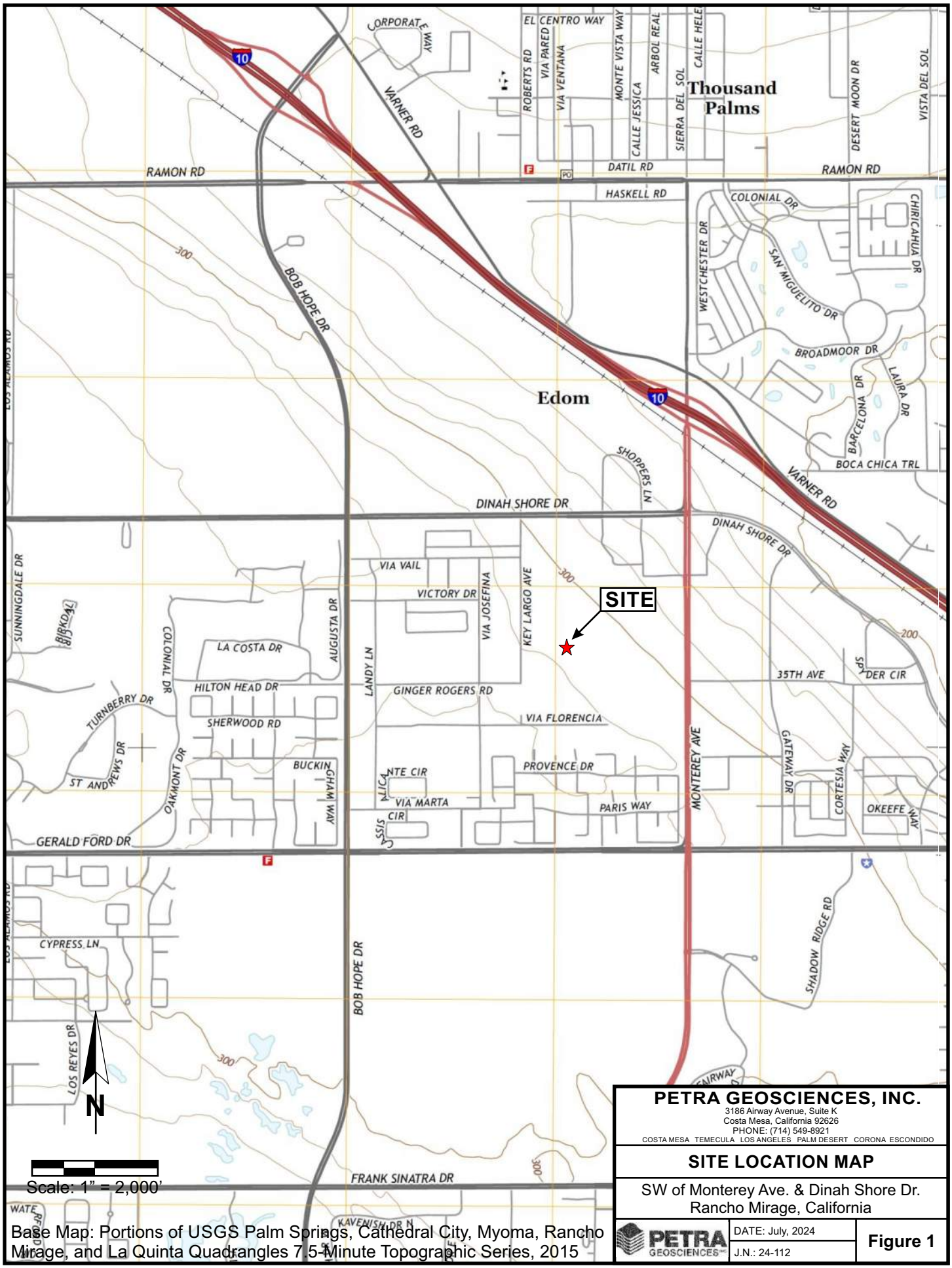
PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-2

IMPORTED GRAVEL OR CRUSHED ROCK BACKFILL



* At base of wall, the non-expansive backfill materials should extend to a min. distance of 2' or to a horizontal distance equal to the heel width of the footing, whichever is greater.

PETRA	RETAINING WALL BACKFILL AND SUBDRAIN DETAILS	FIGURE RW-3



Base Map: Portions of USGS Palm Springs, Cathedral City, Myoma, Rancho Mirage, and La Quinta Quadrangles 7.5-Minute Topographic Series, 2015

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SITE LOCATION MAP

SW of Monterey Ave. & Dinah Shore Dr.
Rancho Mirage, California

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DATE: July, 2024

J.N.: 24-112

Figure 1

Base Map: Google Earth, 2024.

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BORING LOCATION MAP

SW of Monterey Ave. & Dinah Shores Dr.
Rancho Mirage, California

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Figure 2

APPENDIX A

BORING LOGS

Key to Soil and Bedrock Symbols and Terms

PETRA

Unified Soil Classification System

Coarse-grained Soils > 1/2 of materials is larger than #200 sieve	The No. 200 U.S. Standard Sieve is about the smallest particle visible to the naked eye	**GRAVELS** more than half of coarse fraction is larger than #4 sieve	Clean Gravels (less than 5% fines)	**GW**	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
			Gravels with fines	**GM**	Silty Gravels, poorly-graded gravel-sand-silt mixtures
				GC	Clayey Gravels, poorly-graded gravel-sand-clay mixtures
		SANDS more than half of coarse fraction is smaller than #4 sieve	Clean Sands (less than 5% fines)	**SW**	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
			Sands with fines	**SM**	Silty Sands, poorly-graded sand-gravel-silt mixtures
				SC	Clayey Sands, poorly-graded sand-gravel-clay mixtures
Fine-grained Soils > 1/2 of materials is smaller than #200 sieve		**SILTS & CLAYS** Liquid Limit Less Than 50		**ML**	Inorganic silts & very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts & clays of low plasticity
		SILTS & CLAYS Liquid Limit Greater Than 50		**MH**	Inorganic silts, micaceous or diatomaceous fine sand or silt
				CH	Inorganic clays of high plasticity, fat clays
				OH	Organic silts and clays of medium-to-high plasticity
Highly Organic Soils				**PT**	Peat, humus swamp soils with high organic content

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		>12"	>12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	coarse	#10 - #4	0.079 - 0.19"	Rock salt-sized to pea-sized
	medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock salt-sized
	fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized to
Fines		Passing #200	<0.0029"	Flour-sized and smaller

Modifiers

Trace	< 1 %
Few	1 - 5%
Some	5 - 12 %
Numerous	12 - 20 %

Laboratory Test Abbreviations

MAX	Maximum Dry Density	MA	Mechanical (Particle Size) Analysis
EXP	Expansion Potential	AT	Atterberg Limits
SO4	Soluble Sulfate Content	#200	#200 Screen Wash
RES	Resistivity	DSU	Direct Shear (Undisturbed Sample)
pH	Acidity	DSR	Direct Shear (Remolded Sample)
CON	Consolidation	HYD	Hydrometer Analysis
SW	Swell	SE	Sand Equivalent
CL	Chloride Content	OC	Organic Content
RV	R-Value	COMP	Mortar Cylinder Compression

Bedrock Hardness

Soft	Can be crushed and granulated by hand; "soil like" and structureless
Moderately Hard	Can be grooved with fingernails; gouged easily with butter knife; crumbles under light hammer blows
Hard	Cannot break by hand; can be grooved with a sharp knife; breaks with a moderate hammer blow
Very Hard	Sharp knife leaves scratch; chips with repeated hammer blows

Sampler and Symbol Descriptions


Approximate Depth of Groundwater Encountered


Approximate Depth of Standing Groundwater


Modified California Split Spoon Sample


No Recovery in Mod. Calif. Split Spoon Sample


Standard Penetration Test


Shelby Tube Sample


Bulk Sample


No Recovery in SPT Sampler


No Recovery in Shelby Tube

Notes:
Blows Per Foot: Number of blows required to advance sampler 1 foot (unless a lesser distance is specified). Samplers in general were driven into the soil or bedrock at the bottom of the hole with a standard (140 lb.) hammer dropping a standard 30 inches unless noted otherwise in Log Notes. Drive samples collected in bucket auger borings may be obtained by dropping non-standard weight from variable heights. When a SPT sampler is used the blow count conforms to ASTM D-1586

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-1**
Location:	**Rancho Mirage**		Elevation: **±307'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		@2': Becomes medium-dense.		6 8 13			0.6	102.8	MAX, EI, pH, RES, CL, S04, DSR
5		Sand (SP): Off-white to gray, dry, medium-dense, fine- to medium-grained sand.		6 10 11					
				4 5 8			0.7	98.7	COL
10		Sand with Silt (SP-SM): Gray to off-white, dry, medium-dense, fine- to medium-grained sand.		5 10 15			0.8		
15				12 22 31			0.6		
20		@20': Becomes dense.		13 25 41			0.6		
25				8 14 20			0.6		
30				9 16 21			0.8		

PLATE A-1

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-1**
Location:	**Rancho Mirage**		Elevation: **±307'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
35				9 20 27	■		0.4		
40				10 16 17	■		0.6		
45				5 10 13	■		0.4		
50		@50': Becomes dense.		10 17 26	■		0.4		
55				10 17 24	■		0.5		
60		@60': Becomes medium-dense.		4 7 9	■		0.3		
65		@65': Becomes dense.		18 28 34	■		0.5		
		Total Depth= 66.5' No groundwater encountered Boring backfilled with cuttings.							

PLATE A-1

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-2**
Location:	**Rancho Mirage**		Elevation: **±313'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		Sand (SP): Gray, dry, merdium-dense, fine- to medium-grained sand.		6 9 14	■		2.0	105.1	
5				3 5 6	◪		1.9		
		@7.5': Becomes dry.		9 9 13	■		1.6	107.3	
10				2 4 6	◪		0.3		
15		@15': Becomes gray to off-white.		11 17 30	■		0.3		
20		@20': No recovery.		7 10 14	▨				
		Total Depth= 21.5' No groundwater encountered Boring backfilled with cuttings.							
25									
30									

PLATE A-2

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **B-3**
Location:	**Rancho Mirage**		Elevation: **±308'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)**							
		Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand.							
		@2': Becomes medium-dense.		4 5 6			1.2		
5		Sand (SP): Gray to off-white, dry, medium-dense, fine-grained sand.		6 10 11			1.0	105.0	
		@7.5': Becomes gray with fine- to medium-grained sand.		2 5 5			0.7		
10				6 9 16			0.5		
15				6 9 13			0.3		
20		@20': Becomes very dense.		22 43 50/4"			0.4		
		Total Depth= 21.5' No groundwater encountered Boring backfilled with cuttings.							
25									
30									

PLATE A-3

Petra Geosciences, Inc.

EXPLORATION LOG

Project:	**A-2 Rancho Mirage Apartments**		Boring No.: **P-1**
Location:	**Rancho Mirage**		Elevation: **±308'**
Job No.:	**24-112**	Client: **National Core**	Date: **6/7/2024**
Drill Method:	**8" Hollow Stem Auger**	Driving Weight:	Logged By: **KTM**

Depth (Feet)	Lith-ology	Material Description	WATER	Samples: Blows per 6 in.	Samples: Core	Samples: Bulk	Laboratory Tests: Moisture Content (%)	Laboratory Tests: Dry Density (pcf)	Laboratory Tests: Other Lab Tests
0		**EOLIAN DEPOSITS (Qe)** Sand with Silt (SP-SM): Gray, dry, loose, fine-grained sand. @2': Becomes medium-dense.							
5		Sand (SP): Gray to off-white, dry, medium-dense, fine-grained sand. @7.5': Becomes gray with fine- to medium-grained sand.							
10		Total Depth= 10' No groundwater encountered Perc test installed within boring utilizing a 2" perforated pipe and gravel.		7 9 17					MA
15									
20									
25									
30									

PLATE A-4

Petra Geosciences, Inc.

APPENDIX B

LABORATORY TEST PROCEDURES

LABORATORY DATA SUMMARY

LABORATORY TESTING

Associated with the subsurface exploration was the collection of bulk and relatively undisturbed samples of soil materials for laboratory testing. The relatively undisturbed samples were obtained using a 2.4-inch, outside-diameter, modified California split-spoon soil sampler lined with 1-inch-high stainless-steel rings. The driven ring samples were placed in sealed containers and transported to our laboratory located at 1251 W. Pomona Road, Unit #103, Corona, CA 92882, for testing.

Our laboratory testing capabilities include Soil Classifications, Moisture Content and In-Situ Moisture Content and Dry Unit Weight, Grain Size Distribution, Remolded Direct Shear, Consolidation; all in accordance with the latest procedures of American Society for Testing and Materials (ASTM) and California Department of Transportation (Caltrans).

To evaluate the engineering properties of site soils, laboratory testing was performed on selected samples of soil considered representative of those encountered. Appropriate tests were assigned by the project engineer and geologist based on project plans and specifications including the level of anticipated loads, when available, and subsurface stratigraphy. Test results were reviewed by the laboratory manager and engineer-in-charge of the laboratory or his qualified designee for completeness and accuracy. A description of laboratory test procedures and summaries of the test data are presented in the following pages.

LABORATORY TEST PROCEDURES

Soil Classification

Soil materials encountered within the property were classified and described in accordance with the Unified Soil Classification System and in general accordance with the current version of Test Method ASTM D 2488. The assigned group symbols are presented in the exploration logs, Appendix A.

Moisture Content and In Situ Moisture Content and Dry Unit Weight

Moisture content of selected bulk samples and in- place moisture content and dry unit weight of selected, relatively undisturbed soil samples were determined in accordance with the current version of Test Method ASTM D 2435 and Test Method ASTM D 2216, respectively. Test data are presented in the exploration logs, Appendix A.

Laboratory Maximum Dry Unit Weight and Optimum Moisture Content

The maximum dry unit weight and optimum moisture content of the on-site soils were determined for selected bulk samples in accordance with current version of Method A of ASTM D 1557. The result of this test is presented on Plate B-1.

Corrosivity Screening

Chemical and electrical analyses were performed on selected bulk samples of onsite soils to determine their soluble sulfate content, chloride content, pH (acidity) and minimum electrical resistivity. These tests were performed in accordance with the current versions of California Test Method Nos. CTM 417 (sulfate), CTM 422 (chloride), and CTM 643 (pH and resistivity) respectively. The results of these tests are included on Plate B-1.

Direct Shear

The Coulomb shear strength parameters, i.e., angle of internal friction and cohesion, were determined for selected, relatively undisturbed and/or reconstituted-bulk samples of onsite soil. This test was performed in general accordance with the current version of Test Method ASTM D 3080. Three specimens were prepared for each test. The test specimens were inundated and then sheared under various normal loads at a constant strain rate of 0.005 inch per minute. The results of the direct shear test are graphically presented on Plate B-2.

Grain Size Distribution

Grain size analysis was performed on selected bulk samples of onsite soils in accordance with the latest versions of Test Method ASTM D 136 and/or ASTM C 117, or Test Method ASTM D 422 and/or ASTM D 6913. The test result is graphically presented on Plate B-3.

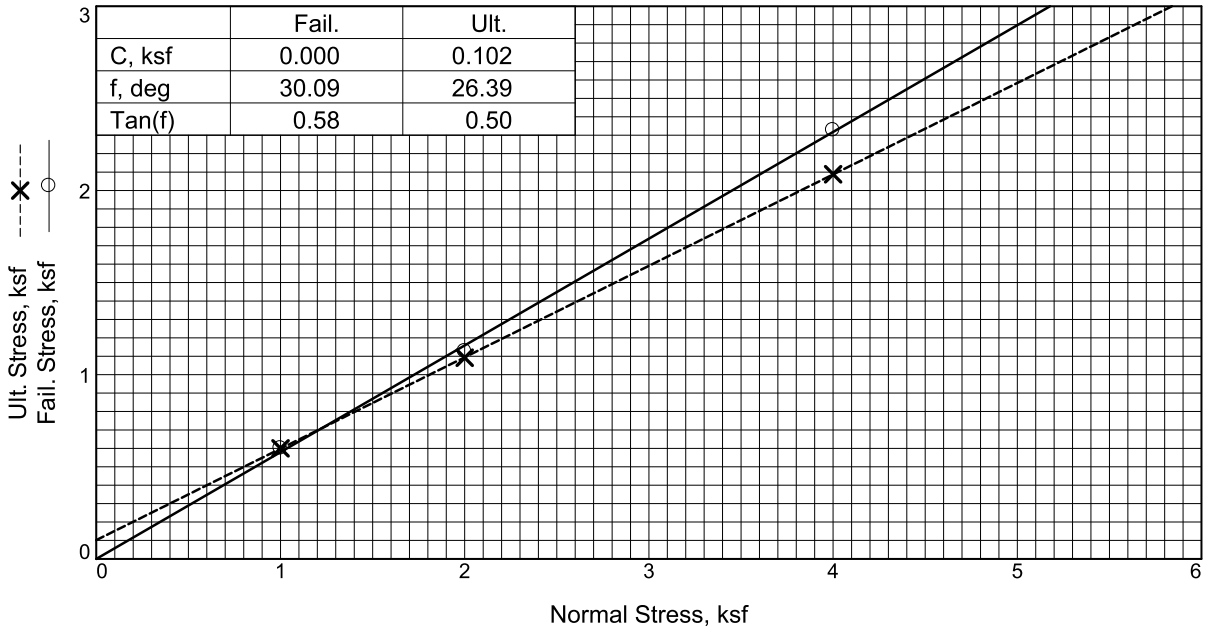
Single-Point Collapse

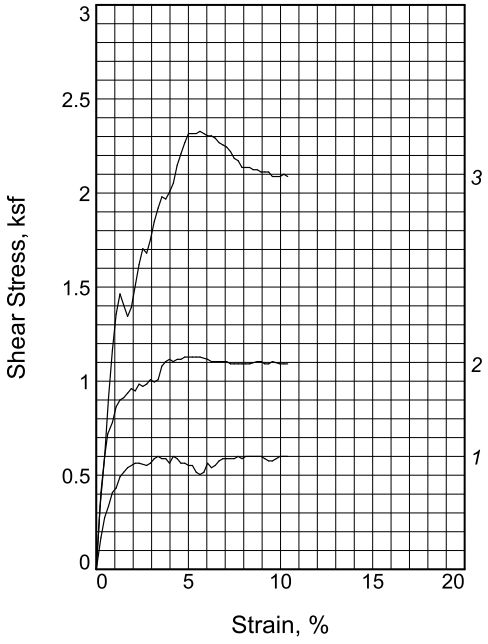
Volume change (collapse) characteristics of selected undisturbed soil samples were determined by one-dimensional single-point collapse test. This test was performed in general accordance with the latest version of the Test Method ASTM D 5333. Axial loads were applied to laterally restrained 1-inch-high samples. The resulting deformation was recorded at selected time intervals. At a load approximately corresponding to the existing overburden pressure or the anticipated future load, the test samples were inundated in order to evaluate the effect of an increase in moisture content, e.g., hydro-consolidation potential (or heave). The results of this test are graphically presented on Plate B-4.

LABORATORY DATA SUMMARY										
Boring/ Test Pit/ Sample/ Number	Sample Depth (ft.)	Soil/ Bedrock Description[1]	Compaction[2]		Corrosivity Screening				Expansion[4]	
			Maximum Dry Unit Weight (pcf)	Optimum Moisture (%)	Soluble Sulfate Content[3] (%)	Chloride Content[4] (ppm)	pH[5] (Acidity)	Minimum Resistivity[5] (Ohm-cm)	Index	Potential
B-1	0-5	SP	115.5	11.5	0.0018	330	7.5	20,000	-0	Very Low

Test Procedures:

[1] Per Test Method ASTM D 2488
[2] Per Test Method ASTM D 1557
[3] Per California Test Method CTM 417
[4] Per California Test Method CTM 422
[5] Per California Test Method CTM 643
[6] Per Test Method ASTM C 117





Sample No.		1	2	3
Initial	Water Content, %	11.5	11.5	11.5
	Dry Density, pcf	103.4	103.5	103.5
	Saturation, %	50.8	50.8	50.9
	Void Ratio	0.5994	0.5990	0.5979
	Diameter, in.	2.416	2.416	2.416
	Height, in.	1.001	1.000	1.000
At Test	Water Content, %	20.5	20.3	19.8
	Dry Density, pcf	104.6	105.9	107.3
	Saturation, %	93.3	95.9	96.9
	Void Ratio	0.5820	0.5617	0.5424
	Diameter, in.	2.416	2.416	2.416
	Height, in.	0.990	0.977	0.965
Normal Stress, ksf		1.000	2.000	4.000
Fail. Stress, ksf		0.600	1.128	2.328
Strain, %		4.2	5.6	5.6
Ult. Stress, ksf		0.600	1.092	2.088
Strain, %		8.7	10.4	10.4
Strain rate, in./min.		0.040	0.040	0.040

Sample Type: Remolded
Description: Gray Fine to Medium Sand

Specific Gravity= 2.65
Remarks:

Figure B-2

Client:

Project:

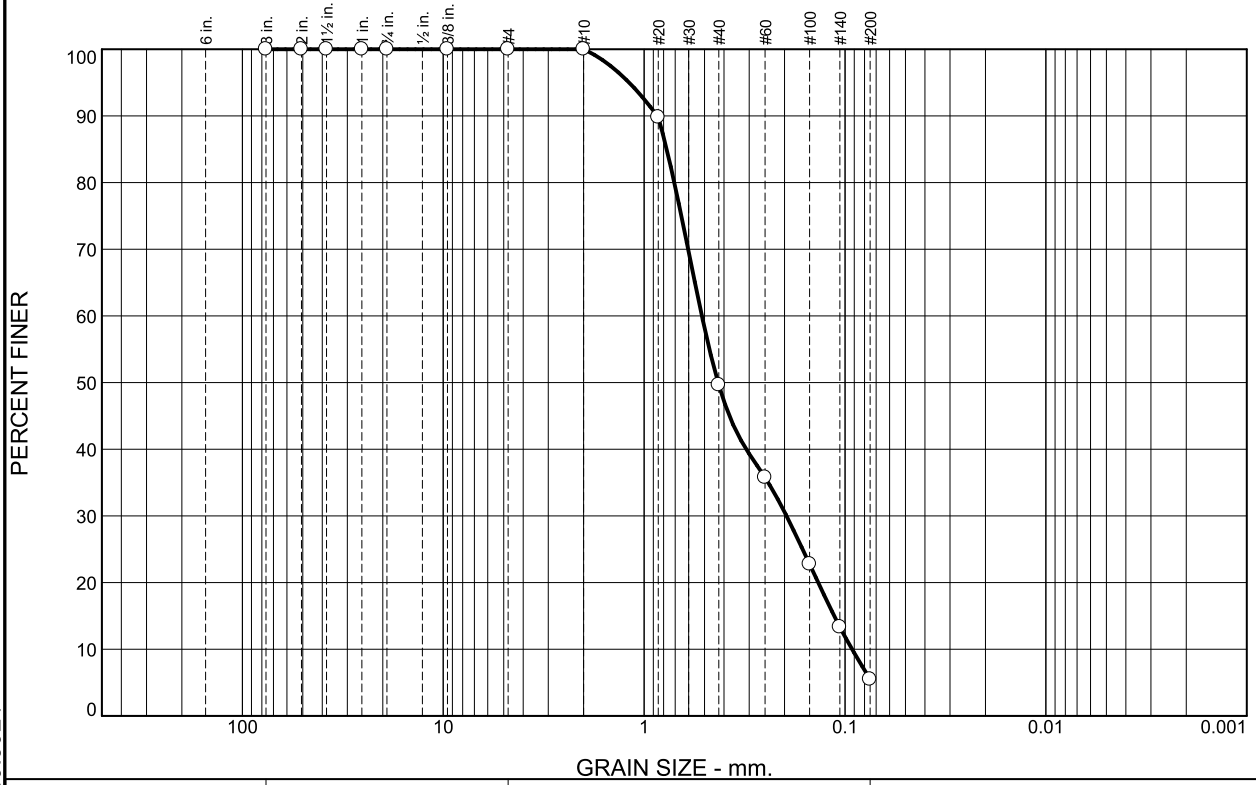
Source of Sample: 24L130 **Depth:** 0-5
Sample Number: B-1
Proj. No.: 24-112 **Date Sampled:**

PETRA GEOSCIENCES INC.

Tested By: DI

Laboratory:
1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	50.4	44.1	5.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3	100.0		
2	100.0		
1.5	100.0		
1	100.0		
.75	100.0		
.375	100.0		
#4	100.0		
#10	100.0		
#20	89.8		
#40	49.6		
#60	35.8		
#100	22.8		
#140	13.3		
#200	5.5		

* (no specification provided)

Soil Description

Gray Fine to Medium Sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.8599 D_{85}= 0.7714 D_{60}= 0.5156
D_{50}= 0.4286 D_{30}= 0.1956 D_{15}= 0.1132
D_{10}= 0.0922 C_u= 5.59 C_c= 0.81

Classification

USCS= AASHTO=

Remarks

Source of Sample: 24L130 **Depth:** 9
Sample Number: P-1

Date: 7/19/2024

Laboratory:
1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

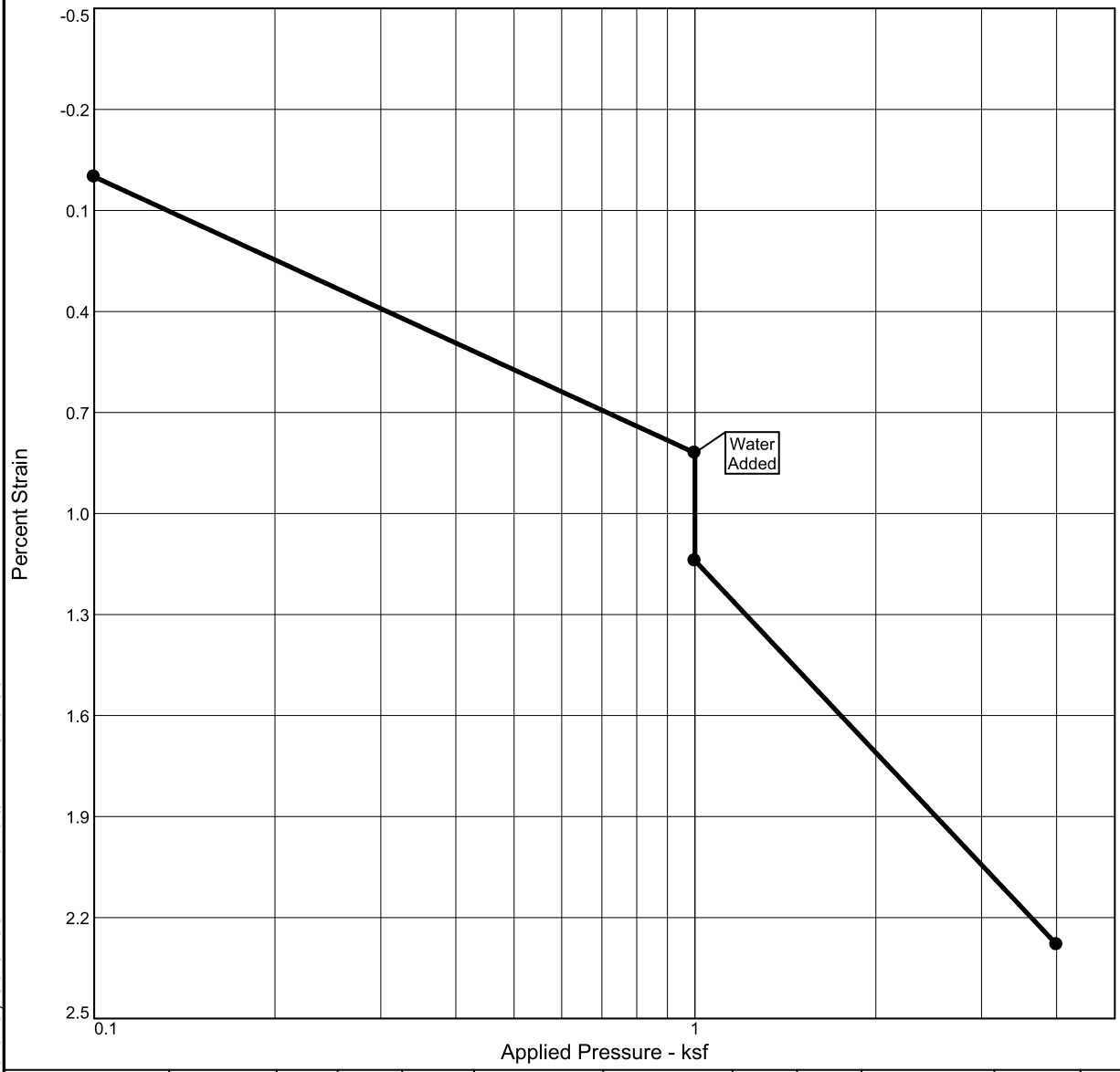
PETRA GEOSCIENCES INC.

Client:
Project:

Project No: 24-112 **Figure** B-3

Tested By: DI

COLLAPSE TEST REPORT



Natural Sat.	Natural Moist.	Dry Dens. (pcf)	LL	PI	Sp. Gr.	Overburden (ksf)	P_c (ksf)	C_c	C_r	Swell Press. (ksf)	Clpse. %	e_o
2.5 %	0.7 %	129.8			2.65						0.3	0.737

MATERIAL DESCRIPTION	USCS	AASHTO
Gray Fine to Medium Sand		

Project No. 24-112 **Client:**

Project:

Source of Sample: 24L130 **Depth:** 7.5 **Sample Number:** B-1

Remarks:

PETRA GEOSCIENCES INC.

Figure B-4

Laboratory: 1251 West Pomona Road, Unit #103, Corona, Ca 92882 Phone #. 714.549.8921

Tested By: DI

APPENDIX C

SEISMIC HAZARD ANALYSIS

PETRA GEOSCIENCES INC.

SITE CLASSIFICATION DETERMINATION BASED ON BLOW COUNT, N-SPT, FOR SEISMIC DESIGN

Per Table 20.3-1 and Section 20.4.2 of ASCE 7-16

J.N: 24-112 **Project:** National Core Apartments **Date:** 7/20/2024

Boring: B-1 Total Depth of Boring: 65 feet SPT Test Interval: every 5 feet

Layer No. (i)	Depth to Soil/Rock Layer		Layer Thickness (d_i)	$\sum_{i=1}^{n} d_i$	Mod. Cal. Sampler Blow Counts[1]	Equivalent N-SPT[2] (N_i)	N-SPT[3] (N_i)	$\sum_{i=1}^{n} \frac{d_i}{N_i}$
	Top	Bottom						
	ft	ft	ft	ft	blows/ft	blows/ft	blows/ft	
1	0	2.5	2.5	2.5	21	14		0.18
2	2.5	5	2.5	5.0	21	14		0.36
3	5	7.5	2.5	7.5	13	8		0.67
4	7.5	10	2.5	10.0	23	15		0.84
5	10	15	5	15.0	53	35		0.98
6	15	20	5	20.0	66	43		1.10
7	20	25	5	25.0		0	34	1.24
8	25	30	5	30.0		0	37	1.38
9	30	35	5	35.0		0	47	1.48
10	35	40	5	40.0		0	33	1.64
11	40	45	5	45.0		0	23	1.85
12	45	50	5	50.0		0	43	1.97
13	50	55	5	55.0		0	41	2.09
14	55	60	5	60.0		0	16	2.40
15	60	65	5	65.0		0	62	2.48

Average Field Standard Penetration Resistance (blows/ft)		Site Classification Per Table 20.3-1
$\bar{N} = \frac{\sum_{i=1}^{n} d_i}{\sum_{i=1}^{n} \frac{d_i}{N_i}}$	= 26	D

1 Modified California sampler blow counts as directly measured in the field without corrections.

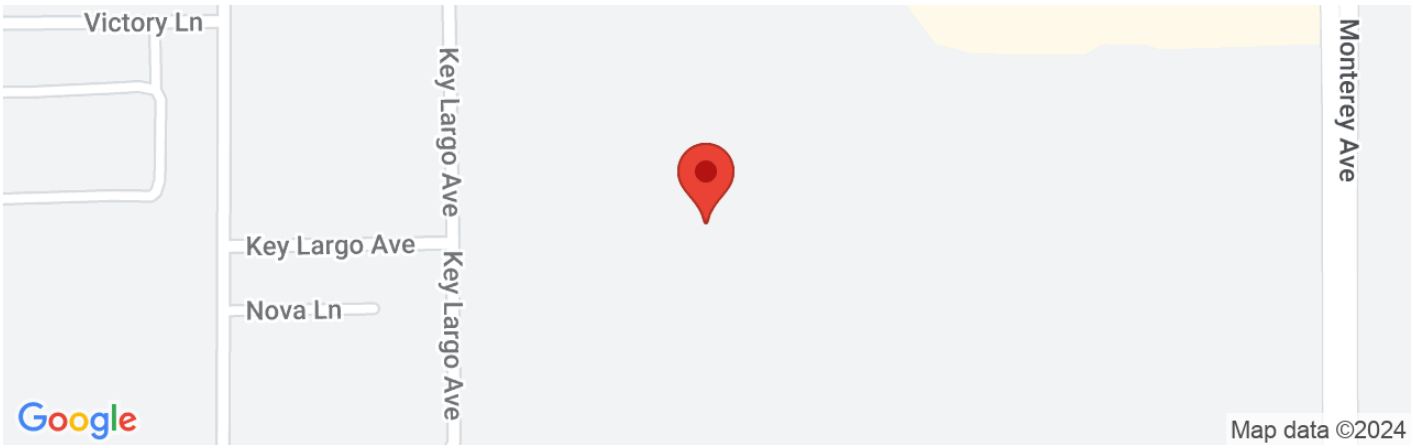
2 Equivalent SPT blow counts are calculated from field measured Modified California sampler blow counts using the standard Burmister formula (Burmister, 1948).
Eq. N-SPT = 0.651 x (Mod. Cal. Sampler Blow Counts)

3 Standard penetration resistance (ASTM D1586) not to exceed 100 blows /ft (305 blows /m) as directly measured in the field without corrections. When Refusal is met for a rock layer, this value shall be taken as 100 blows /ft (305 blows /m).

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout* error.
USGS web services are now operational so this tool should work as expected.

24-112 National Core Apartments

Latitude, Longitude: 33.796486, -116.394338



Date	7/21/2024, 11:06:57 PM
Design Code Reference Document	ASCE7-16
Risk Category	II
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.819	MCE_R ground motion. (for 0.2 second period)
S_1	0.757	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.819	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	1.213	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.789	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.868	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	2.146	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	2.404	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.819	Factored deterministic acceleration value. (0.2 second)
S1RT	0.846	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.963	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.

Type	Value	Description
S1D	0.757	Factored deterministic acceleration value. (1.0 second)
PGAd	0.789	Factored deterministic acceleration value. (Peak Ground Acceleration)
PGA_{UH}	0.941	Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration
C_{RS}	0.893	Mapped value of the risk coefficient at short periods
C_{R1}	0.879	Mapped value of the risk coefficient at a period of 1 s
C_V	1.464	Vertical coefficient

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U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Please also see the new USGS Earthquake Hazard Toolbox for access to the most recent NSHMs for the conterminous U.S. and Hawaii.

Input

Edition

Dynamic: Conterminous U.S. 2014 (…

Spectral Period

Peak Ground Acceleration

Latitude

Decimal degrees

33.796486

Time Horizon

Return period in years

2475

Longitude

Decimal degrees, negative values for western longitudes

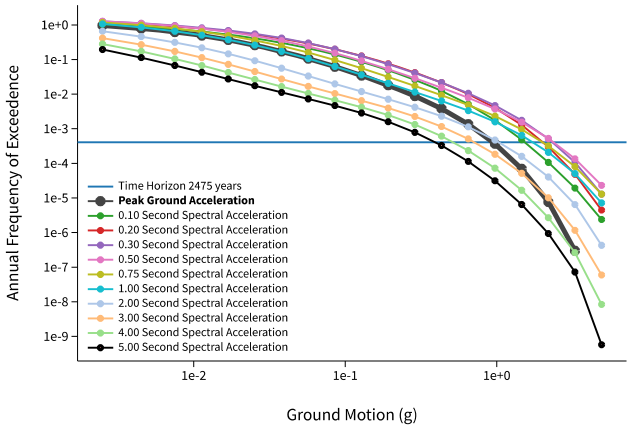
-116.394338

Site Class

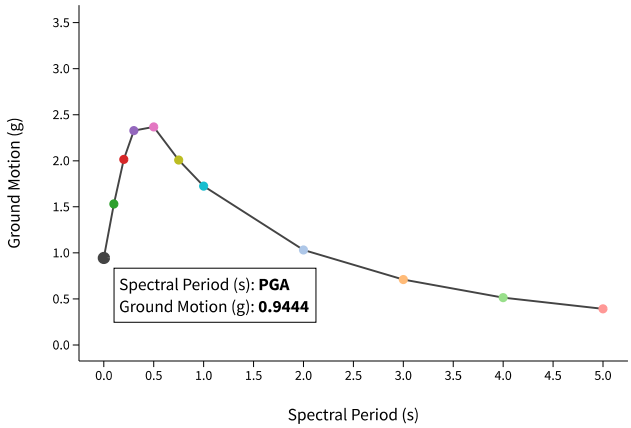
259 m/s (Site class D)

Hazard Curve

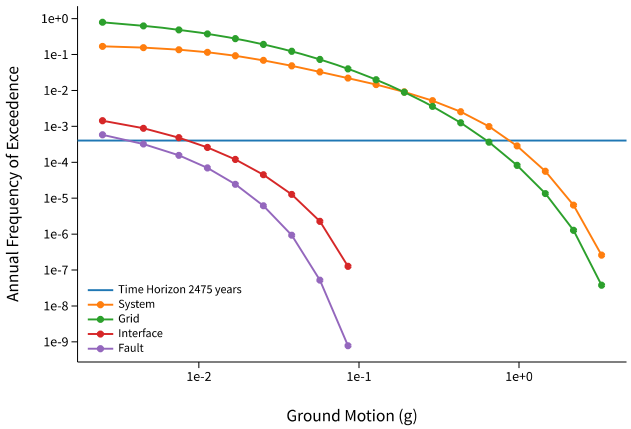
Hazard Curves



Uniform Hazard Response Spectrum



Component Curves for Peak Ground Acceleration

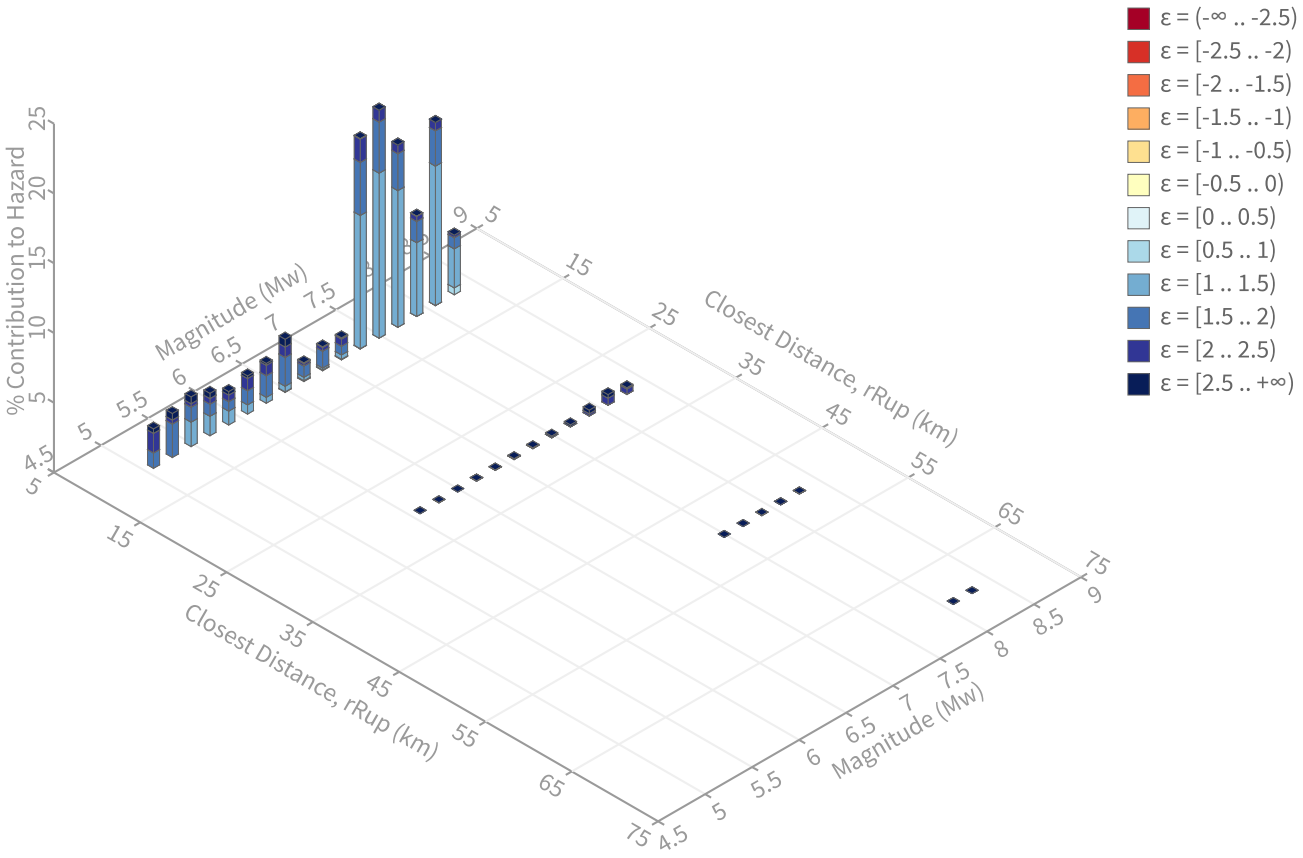


View Raw Data

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.94442438 g

Recovered targets

Return period: 3248.499 yrs
Exceedance rate: 0.00030783448 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.06 %

Mean (over all sources)

m: 7.21
r: 7.52 km
ε_0: 1.58 σ

Mode (largest m-r bin)

m: 7.49
r: 6.65 km
ε_0: 1.5 σ
Contribution: 16.34 %

Mode (largest m-r-ε_0 bin)

m: 7.49
r: 6.61 km
ε_0: 1.39 σ
Contribution: 11.82 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
UC33brAvg_FM31	System							38.53
San Andreas (San Gorgonio Pass-Garnet HIll) [1]		6.54	7.61	1.48	116.358°W	33.846°N	31.71	31.12
San Andreas (North Branch Mill Creek) [10]		8.28	7.88	1.31	116.344°W	33.853°N	36.36	3.95
UC33brAvg_FM32	System							38.48
San Andreas (San Gorgonio Pass-Garnet HIll) [1]		6.54	7.60	1.48	116.358°W	33.846°N	31.71	30.96
San Andreas (North Branch Mill Creek) [10]		8.28	7.85	1.32	116.344°W	33.853°N	36.36	4.16
UC33brAvg_FM31 (opt)	Grid							11.50
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
UC33brAvg_FM32 (opt)	Grid							11.49
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82
PointSourceFinite: -116.394, 33.801		4.92	5.66	1.60	116.394°W	33.801°N	0.00	3.82

*** Deaggregation of Seismic Hazard at One Period of Spectral Acceleration ***
*** Data from Dynamic: Conterminous U.S. 2014 (update) (unknown) ****
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Total
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 100 %
  Residual: 0 %
  Trace: 0.06 %
Mean (over all sources):
  m: 7.21
  r: 7.52 km
  ε_0: 1.58 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.5 σ
  Contribution: 16.34 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 1.39 σ
  Contribution: 11.82 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
50	8.1	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.005
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.7	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	6.9	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.014
30	7.1	0.052	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.049

30	7.3	0.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.054
30	7.5	0.111	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.013	0.099
30	7.7	0.143	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.125
30	7.9	0.418	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.166	0.252
30	8.1	0.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.493	0.253
30	8.3	0.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.375	0.089
10	5.1	2.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.104	1.403	0.309
10	5.3	3.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.397	0.289	0.456
10	5.5	3.553	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	1.059	0.256	0.474
10	5.7	3.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.866	0.398	0.372
10	5.9	2.387	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.677	0.475	0.242
10	6.1	2.727	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	1.011	0.877	0.177
10	6.3	2.847	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	1.544	0.744	0.130
10	6.5	3.811	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.403	2.063	0.749	0.562
10	6.7	1.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.237	0.805	0.176	0.051
10	6.9	1.699	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.136	1.204	0.264	0.039
10	7.1	1.569	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.310	0.618	0.518	0.080
10	7.3	15.066	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	9.549	3.804	1.666	0.025
10	7.5	16.336	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	11.818	3.664	0.848	0.001
10	7.7	13.058	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	9.799	2.633	0.625	0.000
10	7.9	7.180	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	5.286	1.523	0.368	0.002
10	8.1	13.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	9.984	2.531	0.589	0.001
10	8.3	4.263	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	2.796	0.795	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution

UC33brAvg_FM31:
  Percent Contributed: 38.53
  Distance (km): 7.7522696
  Magnitude: 7.6290489
  Epsilon (mean values): 1.5183046

San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 31.12
  Distance (km): 6.5353046
  Magnitude: 7.6050927
  Epsilon (mean values): 1.4767216
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 3.95
  Distance (km): 8.2781536
  Magnitude: 7.8816596
  Epsilon (mean values): 1.3120476
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417

UC33brAvg_FM32:
  Percent Contributed: 38.48
  Distance (km): 7.7441979
  Magnitude: 7.6245993
  Epsilon (mean values): 1.5185216

San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 30.96
  Distance (km): 6.5353046
  Magnitude: 7.6018745
  Epsilon (mean values): 1.478169
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 4.16
  Distance (km): 8.2781536
  Magnitude: 7.8512625
  Epsilon (mean values): 1.3196983
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417

UC33brAvg_FM31 (opt):
  Percent Contributed: 11.5
  Distance (km): 6.7410744
  Magnitude: 5.807404

  Epsilon (mean values): 1.8045724
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
UC33brAvg_FM32 (opt):
  Percent Contributed: 11.49
  Distance (km): 6.740285
  Magnitude: 5.806952
  Epsilon (mean values): 1.8046318
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Abrahamson, Silva & Kamai (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 22.08 %
  Residual: 0 %
  Trace: 0.05 %
Mean (over all sources):
  m: 7.11
  r: 7.89 km
  ε_0: 1.82 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.64 km
  ε_0: 1.67 σ
  Contribution: 3.51 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km

  ε_0: 1.67 σ
  Contribution: 3.49 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.1	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
50	8.3	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
30	6.3	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.5	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.7	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002
30	6.9	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	7.1	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
30	7.3	0.018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018
30	7.5	0.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036
30	7.7	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.047
30	7.9	0.133	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.033	0.100
30	8.1	0.241	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.130
30	8.3	0.148	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.148	0.000
10	5.1	1.167	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.568	0.338	0.261
10	5.3	0.920	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.681	0.000	0.239
10	5.5	0.731	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.516	0.038	0.178
10	5.7	0.608	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.412	0.067	0.130
10	5.9	0.491	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.318	0.084	0.089
10	6.1	0.604	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.255	0.290	0.059
10	6.3	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.305	0.329	0.033
10	6.5	1.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.081	0.507	0.121	0.293
10	6.7	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.070	0.178	0.053	0.018
10	6.9	0.398	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.287	0.053	0.019
10	7.1	0.380	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.205	0.143	0.014
10	7.3	3.373	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	3.058	0.308	0.000
10	7.5	3.506	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	3.493	0.011	0.000
10	7.7	2.621	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.618	0.003	0.000
10	7.9	1.386	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.356	0.030	0.000
10	8.1	2.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.453	0.013	0.000
10	8.3	0.783	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.783	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 8.17
  Distance (km): 8.1838797
  Magnitude: 7.5998188
  Epsilon (mean values): 1.7365455
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 6.58
  Distance (km): 6.5353046
  Magnitude: 7.5831569
  Epsilon (mean values): 1.661708
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

UC33brAvg_FM32:
  Percent Contributed: 8.14
  Distance (km): 8.1708632
  Magnitude: 7.5947826
  Epsilon (mean values): 1.7381942
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 6.54
  Distance (km): 6.5353046
  Magnitude: 7.5792035
  Epsilon (mean values): 1.6632409
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
UC33brAvg_FM31 (opt):
  Percent Contributed: 2.89
  Distance (km): 7.0774363
  Magnitude: 5.730687
  Epsilon (mean values): 2.051394
UC33brAvg_FM32 (opt):
  Percent Contributed: 2.89
  Distance (km): 7.076764
  Magnitude: 5.7302345
  Epsilon (mean values): 2.0514829
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Boore, Stewart, Seyhan & Atkinson (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 43.34 %
  Residual: 0 %
  Trace: 0.09 %
Mean (over all sources):
  m: 7.14
  r: 7.7 km
  ε_0: 1.45 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.69 km
  ε_0: 1.37 σ
  Contribution: 6.38 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.36 σ
  Contribution: 6.35 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)

ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.010
50	8.1	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
50	8.3	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.002
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	6.5	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004
30	6.7	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.006
30	6.9	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	7.1	0.032	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.030
30	7.3	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.032
30	7.5	0.070	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.058
30	7.7	0.085	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	0.073
30	7.9	0.219	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.106
30	8.1	0.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.372	0.004
30	8.3	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.224	0.000
10	5.1	0.991	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.536	0.446	0.010
10	5.3	1.514	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.392	0.000	0.122
10	5.5	2.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	0.001	0.218	0.152
10	5.7	1.804	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.000	0.290	0.114
10	5.9	1.361	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.000	0.309	0.058
10	6.1	1.421	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	0.439	0.276	0.044
10	6.3	1.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.409	0.788	0.129	0.053
10	6.5	1.789	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.228	0.999	0.371	0.191
10	6.7	0.546	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.112	0.382	0.040	0.012
10	6.9	0.701	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.078	0.526	0.095	0.002
10	7.1	0.656	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.279	0.118	0.254	0.000
10	7.3	5.880	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	5.354	0.212	0.306	0.000
10	7.5	6.383	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	6.348	0.018	0.015	0.000
10	7.7	5.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.382	0.008	0.000	0.000
10	7.9	2.976	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.917	0.059	0.000	0.000
10	8.1	5.508	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	5.462	0.034	0.000	0.000
10	8.3	1.822	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	1.319	0.007	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM32:
  Percent Contributed: 15.91
  Distance (km): 8.056292
  Magnitude: 7.623832
  Epsilon (mean values): 1.3878356
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 12.14
  Distance (km): 6.5353046
  Magnitude: 7.6010797
  Epsilon (mean values): 1.3457294
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 2.13
  Distance (km): 8.2781536
  Magnitude: 7.8467268
  Epsilon (mean values): 1.0820297
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31:
  Percent Contributed: 15.88
  Distance (km): 8.0622881
  Magnitude: 7.6287094

```
  Epsilon (mean values): 1.3887459
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 12.19
  Distance (km): 6.5353046
  Magnitude: 7.6037953
  Epsilon (mean values): 1.3448949
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 2.02
  Distance (km): 8.2781536
  Magnitude: 7.8788431
  Epsilon (mean values): 1.0744497
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31 (opt):
  Percent Contributed: 5.78
  Distance (km): 6.709053
  Magnitude: 5.8000703
  Epsilon (mean values): 1.6039007
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908756
  Magnitude: 5.6523822
  Epsilon (mean values): 1.3913807
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908756
  Magnitude: 5.6523822
  Epsilon (mean values): 1.3913807
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
UC33brAvg_FM32 (opt):
  Percent Contributed: 5.78
  Distance (km): 6.7081391
  Magnitude: 5.7996854
  Epsilon (mean values): 1.6039164
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908925
  Magnitude: 5.6521468
  Epsilon (mean values): 1.3914648
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 2.01
  Distance (km): 4.9908925
  Magnitude: 5.6521468
  Epsilon (mean values): 1.3914648
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Campbell & Bozorgnia (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
```

  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 4.02 %
  Residual: 0 %
  Trace: 0.02 %
Mean (over all sources):
  m: 7.46
  r: 6.7 km
  ε_0: 2.26 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.61 km
  ε_0: 2.25 σ
  Contribution: 0.81 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 2.25 σ
  Contribution: 0.81 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
30	7.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	5.3	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
10	5.5	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
10	5.7	0.026	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.026
10	5.9	0.035	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.029
10	6.1	0.068	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046	0.022
10	6.3	0.135	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.108	0.027
10	6.5	0.215	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.039	0.151	0.025
10	6.7	0.089	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.027	0.053	0.009
10	6.9	0.101	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.080	0.006
10	7.1	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.053	0.005
10	7.3	0.748	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.723	0.022
10	7.5	0.812	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.811	0.001
10	7.7	0.619	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.619	0.000
10	7.9	0.332	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.330	0.002
10	8.1	0.578	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.576	0.001
10	8.3	0.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM32:
  Percent Contributed: 1.79
  Distance (km): 6.7784225

  Magnitude: 7.5903583
  Epsilon (mean values): 2.2502599
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 1.57
  Distance (km): 6.5353046
  Magnitude: 7.5636338
  Epsilon (mean values): 2.2415974
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
UC33brAvg_FM31:
  Percent Contributed: 1.79
  Distance (km): 6.7745372
  Magnitude: 7.5940581
  Epsilon (mean values): 2.2503848
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 1.58
  Distance (km): 6.5353046
  Magnitude: 7.567265
  Epsilon (mean values): 2.2411248
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: GMM: Chiou & Youngs (2014)
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 30.56 %
  Residual: 0 %
  Trace: 0.05 %
Mean (over all sources):
  m: 7.35
  r: 7.1 km
  ε_0: 1.52 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.63 km
  ε_0: 1.43 σ
  Contribution: 5.64 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.56 km
  ε_0: 1.43 σ
  Contribution: 5.47 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)

ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	8.3	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.9	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	7.1	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.003
30	7.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004
30	7.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.004
30	7.7	0.008	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.006
30	7.9	0.067	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.046
30	8.1	0.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.119
30	8.3	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.089
10	5.1	0.658	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.620	0.038
10	5.3	0.704	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.324	0.289	0.091
10	5.5	0.672	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.543	0.000	0.129
10	5.7	0.598	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.454	0.042	0.103
10	5.9	0.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.359	0.076	0.066
10	6.1	0.634	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.317	0.264	0.053
10	6.3	0.667	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.020	0.452	0.177	0.018
10	6.5	0.805	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.093	0.518	0.107	0.053
10	6.7	0.379	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.055	0.218	0.030	0.012
10	6.9	0.499	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.019	0.376	0.036	0.012
10	7.1	0.467	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.036	0.013	0.289	0.069	0.061
10	7.3	5.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015	4.187	0.531	0.328	0.003
10	7.5	5.635	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	5.468	0.153	0.011	0.000
10	7.7	4.429	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.417	0.008	0.003	0.000
10	7.9	2.485	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.369	0.107	0.008	0.000
10	8.1	4.565	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.521	0.044	0.000	0.000
10	8.3	1.481	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.477	0.005	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 12.69
  Distance (km): 7.2244671
  Magnitude: 7.6532072
  Epsilon (mean values): 1.4368664
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 10.77
  Distance (km): 6.5353046
  Magnitude: 7.6254958
  Epsilon (mean values): 1.4010122
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 1.14
  Distance (km): 8.2781536
  Magnitude: 7.8911321
  Epsilon (mean values): 1.3969631
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM32:
  Percent Contributed: 12.65
  Distance (km): 7.2138514
  Magnitude: 7.6495929
  Epsilon (mean values): 1.438004
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 10.7
  Distance (km): 6.5353046
  Magnitude: 7.6222483
  Epsilon (mean values): 1.403131

  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 1.2
  Distance (km): 8.2781536
  Magnitude: 7.8644919
  Epsilon (mean values): 1.405447
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM31 (opt):
  Percent Contributed: 2.61
  Distance (km): 6.4949545
  Magnitude: 5.8623336
  Epsilon (mean values): 1.9321758
UC33brAvg_FM32 (opt):
  Percent Contributed: 2.61
  Distance (km): 6.4941944
  Magnitude: 5.8617784
  Epsilon (mean values): 1.9323608
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Source Type: System
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 77.01 %
  Residual: 0 %
  Trace: 0.04 %
Mean (over all sources):
  m: 7.63
  r: 7.75 km
  ε_0: 1.52 σ
Mode (largest m-r bin):
  m: 7.49
  r: 6.65 km
  ε_0: 1.5 σ
  Contribution: 16.3 %
Mode (largest m-r-ε_0 bin):
  m: 7.49
  r: 6.61 km
  ε_0: 1.39 σ
  Contribution: 11.81 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)

ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
70	8.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
70	8.3	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.015	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.015
50	8.1	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
50	8.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.005
30	6.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
30	6.9	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	7.1	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042
30	7.3	0.050	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.049
30	7.5	0.108	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.011	0.097
30	7.7	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.125
30	7.9	0.418	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.166	0.252
30	8.1	0.749	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.493	0.253
30	8.3	0.466	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.375	0.089
10	6.1	0.016	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.016
10	6.3	0.834	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.519	0.277	0.038
10	6.5	2.382	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	1.387	0.497	0.495
10	6.7	0.501	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.438	0.042	0.017
10	6.9	1.160	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.008	0.970	0.159	0.023
10	7.1	1.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.231	0.506	0.455	0.075
10	7.3	14.930	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.507	3.762	1.637	0.024
10	7.5	16.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.806	3.651	0.842	0.000
10	7.7	13.054	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.798	2.632	0.624	0.000
10	7.9	7.178	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	5.286	1.522	0.368	0.002
10	8.1	13.116	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.012	9.984	2.531	0.589	0.001
10	8.3	4.263	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.495	2.796	0.795	0.177	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution
UC33brAvg_FM31:
  Percent Contributed: 38.53
  Distance (km): 7.7522696
  Magnitude: 7.6290489
  Epsilon (mean values): 1.5183046
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 31.12
  Distance (km): 6.5353046
  Magnitude: 7.6050927
  Epsilon (mean values): 1.4767216
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786
San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 3.95
  Distance (km): 8.2781536
  Magnitude: 7.8816596
  Epsilon (mean values): 1.3120476
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
UC33brAvg_FM32:
  Percent Contributed: 38.48
  Distance (km): 7.7441979
  Magnitude: 7.6245993
  Epsilon (mean values): 1.5185216
San Andreas (San Gorgonio Pass-Garnet HIll) [1]:
  Percent Contributed: 30.96
  Distance (km): 6.5353046
  Magnitude: 7.6018745
  Epsilon (mean values): 1.478169
  Azimuth: 31.71136
  Latitude: 33.845511
  Longitude: -116.35786

San Andreas (North Branch Mill Creek) [10]:
  Percent Contributed: 4.16
  Distance (km): 8.2781536
  Magnitude: 7.8512625
  Epsilon (mean values): 1.3196983
  Azimuth: 36.358309
  Latitude: 33.853076
  Longitude: -116.34417
PSHA Deaggregation. %contributions.
site: Test
longitude: 116.394°W
latitude: 33.796°E
imt: Peak Ground Acceleration
vs30 = 259 m/s (Site class D)
return period: 2475 yrs.
#This deaggregation corresponds to: Source Type: Grid
Summary statistics for PSHA PGA deaggregation, r=distance, ε=epsilon:
Deaggregation targets:
  Return period: 2475 yrs
  Exceedance rate: 0.0004040404 yr^{-1}
  PGA ground motion: 0.94442438 g
Recovered targets:
  Return period: 3248.499 yrs
  Exceedance rate: 0.00030783448 yr^{-1}
Totals:
  Binned: 22.99 %
  Residual: 0 %
  Trace: 0.06 %
Mean (over all sources):
  m: 5.81
  r: 6.74 km
  ε_0: 1.8 σ
Mode (largest m-r bin):
  m: 5.5
  r: 6.19 km
  ε_0: 1.75 σ
  Contribution: 3.55 %
Mode (largest m-r-ε_0 bin):
  m: 5.3
  r: 4.87 km
  ε_0: 1.76 σ
  Contribution: 2.4 %
Discretization:
  r: min = 0.0, max = 1000.0, Δ = 20.0 km
  m: min = 4.4, max = 9.4, Δ = 0.2
  ε: min = -3.0, max = 3.0, Δ = 0.5 σ
Epsilon keys:
  ε0: [-∞ .. -2.5)
  ε1: [-2.5 .. -2.0)
  ε2: [-2.0 .. -1.5)
  ε3: [-1.5 .. -1.0)
  ε4: [-1.0 .. -0.5)
  ε5: [-0.5 .. 0.0)
  ε6: [0.0 .. 0.5)
  ε7: [0.5 .. 1.0)
  ε8: [1.0 .. 1.5)
  ε9: [1.5 .. 2.0)
  ε10: [2.0 .. 2.5)
  ε11: [2.5 .. +∞]

Closest Distance, rRup (km)	Magnitude (Mw)	ALL_ε	ε=(-∞,-2.5)	ε=[-2.5,-2)	ε=[-2,-1.5)	ε=[-1.5,-1)	ε=[-1,-0.5)	ε=[-0.5,0)	ε=[0,0.5)	ε=[0.5,1)	ε=[1,1.5)	ε=[1.5,2)	ε=[2,2.5)	ε=[2.5,∞)
50	7.5	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
50	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	6.3	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.5	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.005
30	6.7	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.008

30	6.9	0.011	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.009
30	7.1	0.010	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.006
30	7.3	0.007	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.004
30	7.5	0.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.001
30	7.7	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	7.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	5.1	2.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.104	1.403	0.309
10	5.3	3.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.397	0.289	0.456
10	5.5	3.553	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.763	1.059	0.256	0.474
10	5.7	3.036	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.399	0.866	0.398	0.372
10	5.9	2.387	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.993	0.677	0.475	0.242
10	6.1	2.712	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.662	1.011	0.877	0.162
10	6.3	2.013	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.429	1.025	0.466	0.092
10	6.5	1.429	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.034	0.399	0.675	0.253	0.068
10	6.7	0.832	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.065	0.233	0.367	0.134	0.033
10	6.9	0.539	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.057	0.128	0.234	0.105	0.017
10	7.1	0.303	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.042	0.080	0.112	0.064	0.005
10	7.3	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.042	0.042	0.029	0.002
10	7.5	0.037	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.006	0.012	0.013	0.006	0.000
10	7.7	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.000
10	7.9	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Principal Sources (faults, subduction, random seismicity having > 3% contribution

UC33brAvg_FM31 (opt):
  Percent Contributed: 11.5
  Distance (km): 6.7410744
  Magnitude: 5.807404
  Epsilon (mean values): 1.8045724

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9165462
  Magnitude: 5.6568818
  Epsilon (mean values): 1.5987339
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

UC33brAvg_FM32 (opt):
  Percent Contributed: 11.49
  Distance (km): 6.740285
  Magnitude: 5.806952
  Epsilon (mean values): 1.8046318

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

PointSourceFinite: -116.394, 33.801:
  Percent Contributed: 3.82
  Distance (km): 4.9166413
  Magnitude: 5.6565838
  Epsilon (mean values): 1.5988436
  Azimuth: 0
  Latitude: 33.800983
  Longitude: -116.39434

APPENDIX D

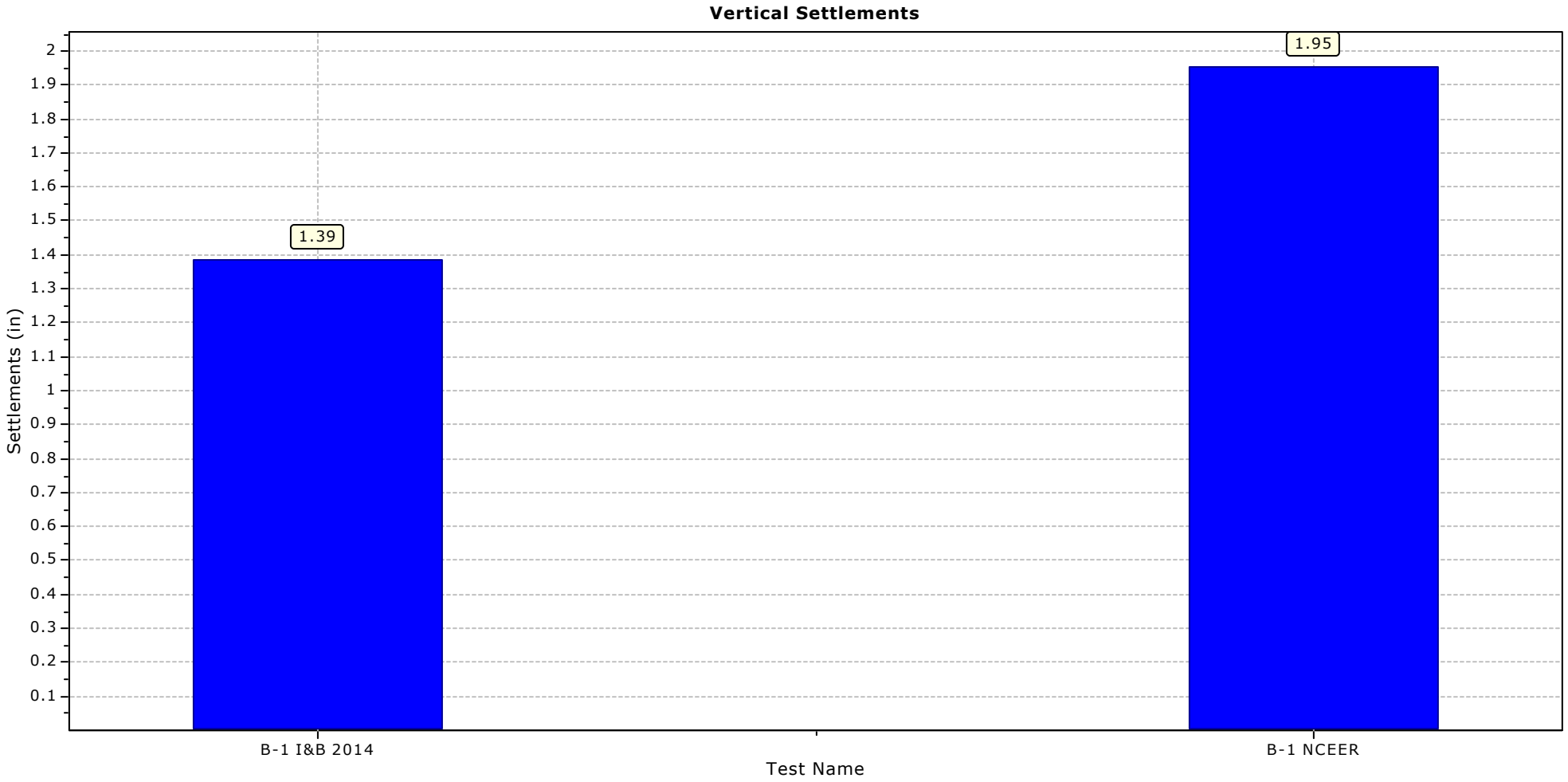
DRY SAND SETTLEMENT

Petra Geosciences, Inc.
Orange County Office
3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
www.petra-inc.com

SUMMARY CALCULATION REPORT

Project title : 24-112 National Core Apartments

Location : Rancho Mirage



Petra Geosciences, Inc.
Orange County Office
3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
www.petra-inc.com

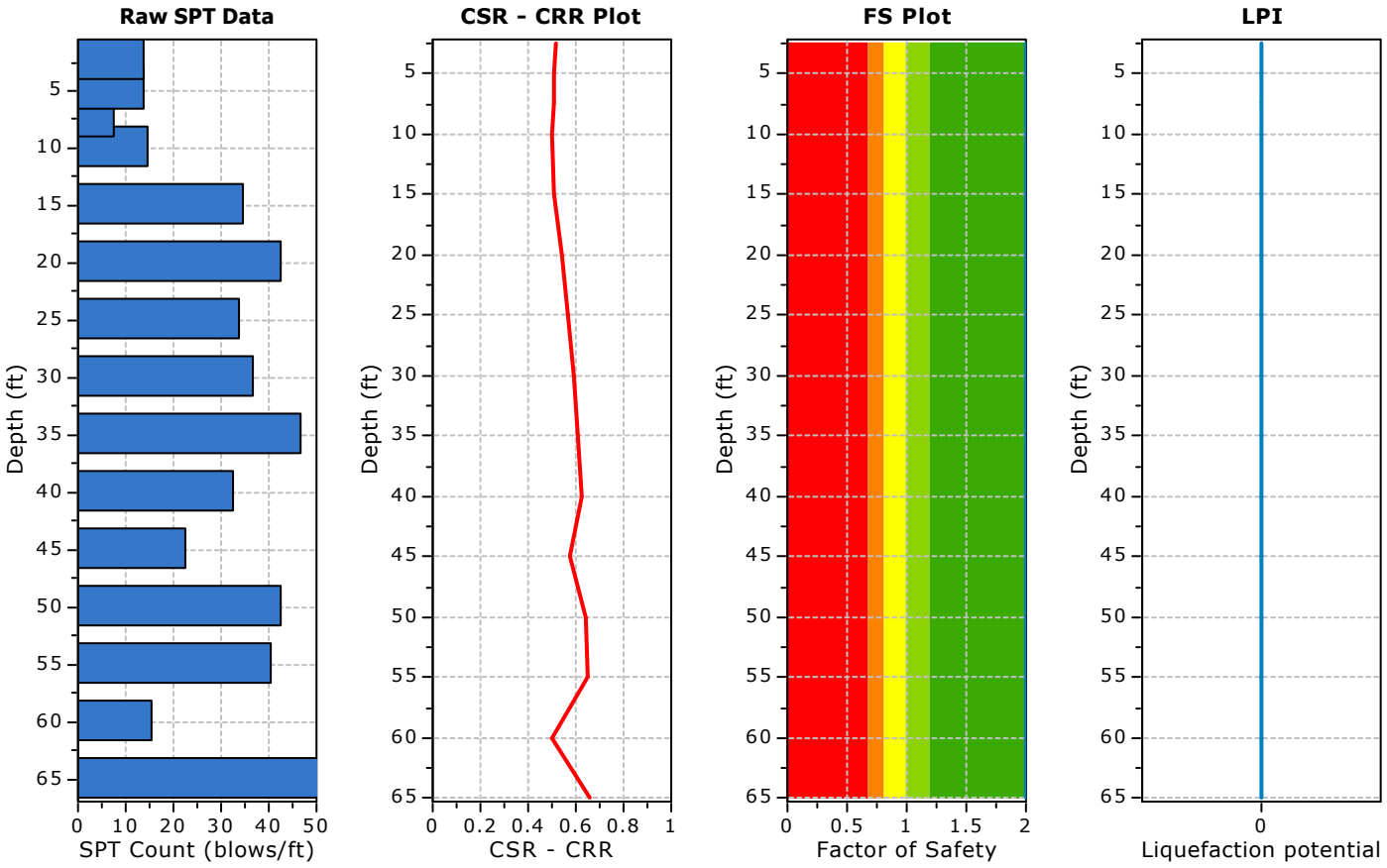
SPT BASED LIQUEFACTION ANALYSIS REPORT

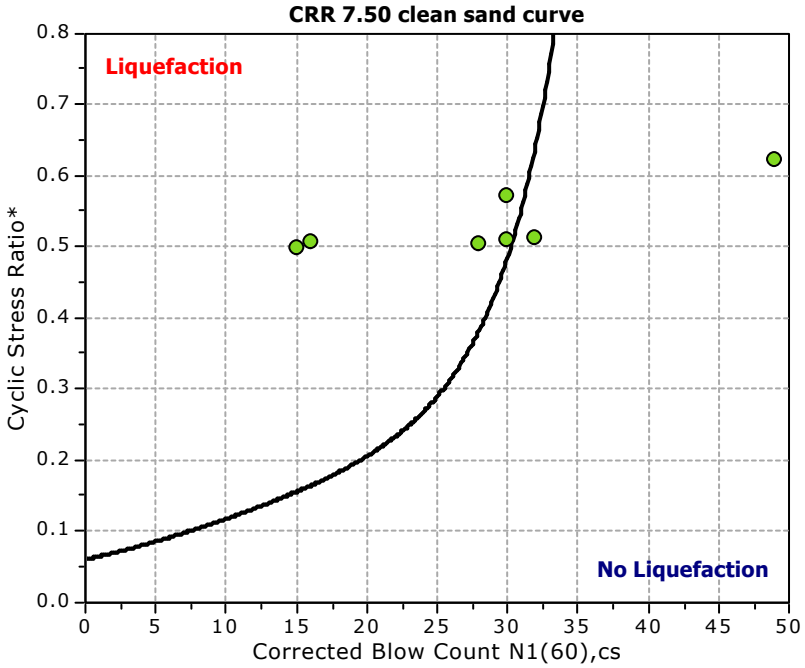
Project title : 24-112 National Core Apartments **SPT Name: B-1 I&B 2014**

Location : Rancho Mirage

:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	160.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	160.00 ft
Sampling method:	Sampler wo liners	Earthquake magnitude M_w:	7.49
Borehole diameter:	200mm	Peak ground acceleration:	0.87 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.20		

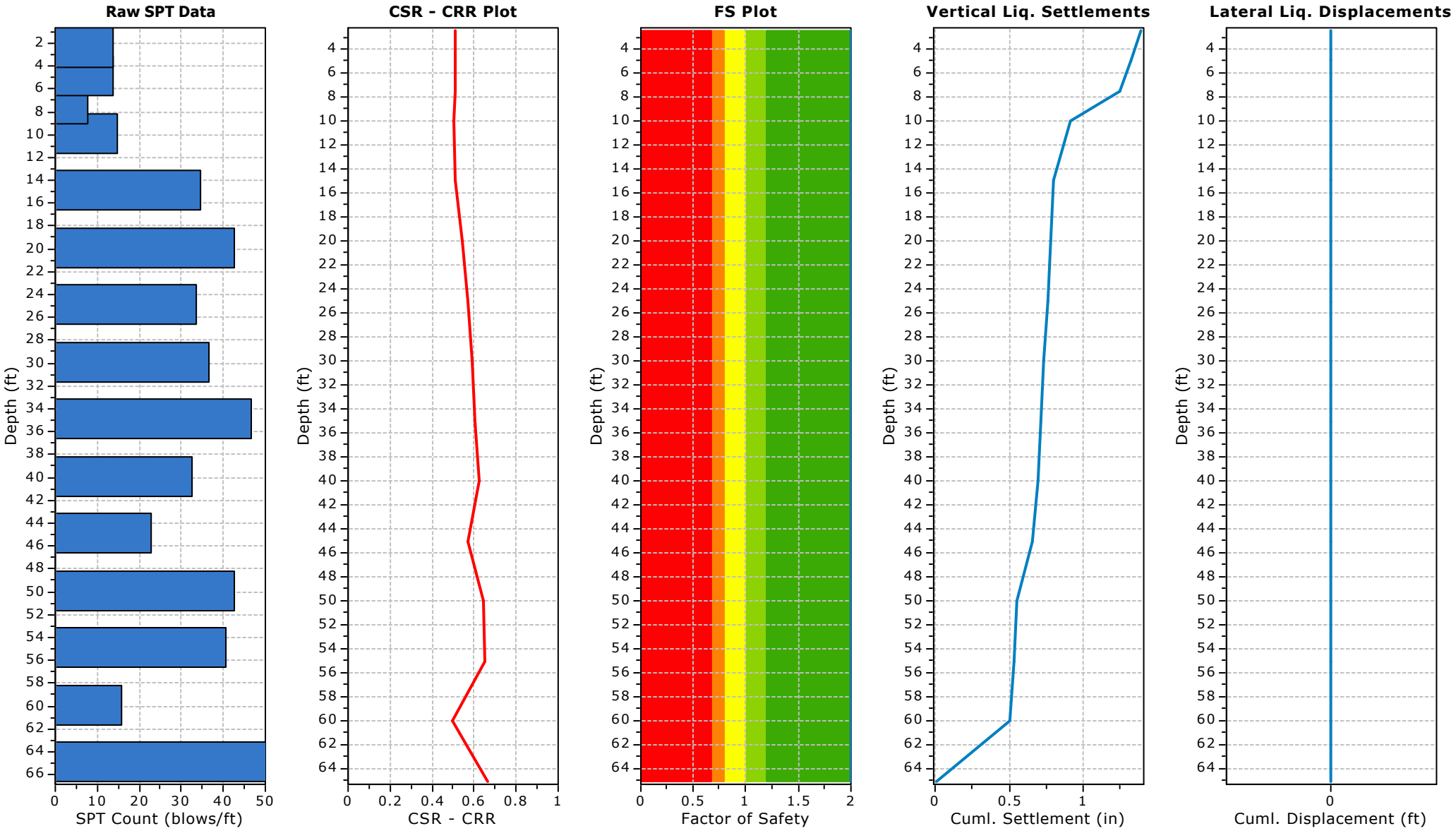




F.S. color scheme
- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme
- Very high risk
- High risk
- Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::

Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
2.50	14	0.00	115.00	3.75	Yes
5.00	14	0.00	115.00	3.00	Yes
7.50	8	0.00	110.00	2.00	Yes
10.00	15	0.00	110.00	3.75	Yes
15.00	35	0.00	110.00	5.00	Yes
20.00	43	0.00	110.00	5.00	Yes
25.00	34	0.00	110.00	5.00	Yes
30.00	37	0.00	110.00	5.00	Yes
35.00	47	0.00	110.00	5.00	Yes
40.00	33	0.00	110.00	5.00	Yes
45.00	23	0.00	110.00	5.00	Yes
50.00	43	0.00	110.00	5.00	Yes
55.00	41	0.00	110.00	5.00	Yes
60.00	16	0.00	110.00	5.00	Yes
65.00	62	0.00	110.00	5.00	Yes

Abbreviations

Depth: Depth at which test was performed (ft)
SPT Field Value: Number of blows per foot
Fines Content: Fines content at test depth (%)
Unit Weight: Unit weight at test depth (pcf)
Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	$CRR_{7.5}$
2.50	14	115.00	0.14	0.00	0.14	0.37	1.70	1.20	1.15	0.75	1.30	32	0.00	0.00	32	4.000
5.00	14	115.00	0.29	0.00	0.29	0.36	1.60	1.20	1.15	0.75	1.30	30	0.00	0.00	30	4.000
7.50	8	110.00	0.42	0.00	0.42	0.46	1.53	1.20	1.15	0.80	1.18	16	0.00	0.00	16	4.000
10.00	15	110.00	0.56	0.00	0.56	0.39	1.28	1.20	1.15	0.85	1.26	28	0.00	0.00	28	4.000
15.00	35	110.00	0.84	0.00	0.84	0.26	1.06	1.20	1.15	0.85	1.30	57	0.00	0.00	57	4.000
20.00	43	110.00	1.11	0.00	1.11	0.26	0.99	1.20	1.15	0.95	1.30	72	0.00	0.00	72	4.000
25.00	34	110.00	1.39	0.00	1.39	0.26	0.93	1.20	1.15	0.95	1.30	54	0.00	0.00	54	4.000
30.00	37	110.00	1.66	0.00	1.66	0.26	0.89	1.20	1.15	1.00	1.30	59	0.00	0.00	59	4.000
35.00	47	110.00	1.94	0.00	1.94	0.26	0.85	1.20	1.15	1.00	1.30	72	0.00	0.00	72	4.000
40.00	33	110.00	2.21	0.00	2.21	0.26	0.82	1.20	1.15	1.00	1.30	49	0.00	0.00	49	4.000
45.00	23	110.00	2.49	0.00	2.49	0.36	0.73	1.20	1.15	1.00	1.30	30	0.00	0.00	30	4.000
50.00	43	110.00	2.76	0.00	2.76	0.26	0.78	1.20	1.15	1.00	1.30	60	0.00	0.00	60	4.000
55.00	41	110.00	3.04	0.00	3.04	0.26	0.76	1.20	1.15	1.00	1.30	56	0.00	0.00	56	4.000
60.00	16	110.00	3.31	0.00	3.31	0.47	0.59	1.20	1.15	1.00	1.17	15	0.00	0.00	15	4.000
65.00	62	110.00	3.59	0.00	3.59	0.26	0.73	1.20	1.15	1.00	1.30	81	0.00	0.00	81	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	$CRR_{7.5}$

Abbreviations

σ_v: Total stress during SPT test (tsf)
u_o: Water pore pressure during SPT test (tsf)
σ'_{vo}: Effective overburden pressure during SPT test (tsf)
m: Stress exponent normalization factor
C_N: Overburden corretion factor
C_E: Energy correction factor
C_B: Borehole diameter correction factor
C_R: Rod length correction factor
C_S: Liner correction factor
$N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
$\Delta(N_1)_{60}$ Equivalent clean sand adjustment
$N_{1(60)cs}$: Corected $N_{1(60)}$ value for fines content
$CRR_{7.5}$: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF_{max}	$(N_1)_{60cs}$	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR^*	FS	
2.50	115.00	0.14	0.00	0.14	1.00	1.00	0.566	2.12	32	1.00	0.564	1.10	0.513	2.000	●
5.00	115.00	0.29	0.00	0.29	0.99	1.00	0.563	2.00	30	1.00	0.561	1.10	0.510	2.000	●
7.50	110.00	0.42	0.00	0.42	0.99	1.00	0.559	1.35	16	1.00	0.558	1.10	0.508	2.000	●
10.00	110.00	0.56	0.00	0.56	0.98	1.00	0.555	1.88	28	1.00	0.553	1.10	0.503	2.000	●
15.00	110.00	0.84	0.00	0.84	0.97	1.00	0.546	2.20	57	1.00	0.544	1.07	0.509	2.000	●
20.00	110.00	1.11	0.00	1.11	0.95	1.00	0.536	2.20	72	1.00	0.534	0.99	0.542	2.000	●
25.00	110.00	1.39	0.00	1.39	0.93	1.00	0.525	2.20	54	1.00	0.523	0.92	0.568	2.000	●
30.00	110.00	1.66	0.00	1.66	0.91	1.00	0.513	2.20	59	1.00	0.511	0.87	0.590	2.000	●
35.00	110.00	1.94	0.00	1.94	0.89	1.00	0.501	2.20	72	1.00	0.499	0.82	0.607	2.000	●
40.00	110.00	2.21	0.00	2.21	0.86	1.00	0.488	2.20	49	1.00	0.486	0.78	0.622	2.000	●
45.00	110.00	2.49	0.00	2.49	0.84	1.00	0.475	2.00	30	1.00	0.474	0.83	0.573	2.000	●
50.00	110.00	2.76	0.00	2.76	0.82	1.00	0.462	2.20	60	1.00	0.461	0.72	0.643	2.000	●
55.00	110.00	3.04	0.00	3.04	0.80	1.00	0.450	2.20	56	1.00	0.448	0.69	0.650	2.000	●
60.00	110.00	3.31	0.00	3.31	0.77	1.00	0.437	1.32	15	1.00	0.437	0.87	0.500	2.000	●
65.00	110.00	3.59	0.00	3.59	0.75	1.00	0.425	2.20	81	1.00	0.423	0.64	0.662	2.000	●

Abbreviations

$\sigma_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
$u_{o,eq}$: Water pressure at test point, during earthquake (tsf)
$\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
r_d: Nonlinear shear mass factor
α: Improvement factor due to stone columns
CSR : Cyclic Stress Ratio
MSF : Magnitude Scaling Factor
$CSR_{eq,M=7.5}$: CSR adjusted for M=7.5
K_{sigma}: Effective overburden stress factor
CSR^*: CSR fully adjusted (user FS applied)***
FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
2.50	2.000	0.00	9.62	2.50	0.00
5.00	2.000	0.00	9.24	2.50	0.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
7.50	2.000	0.00	8.86	2.50	0.00
10.00	2.000	0.00	8.48	2.50	0.00
15.00	2.000	0.00	7.71	5.00	0.00
20.00	2.000	0.00	6.95	5.00	0.00
25.00	2.000	0.00	6.19	5.00	0.00
30.00	2.000	0.00	5.43	5.00	0.00
35.00	2.000	0.00	4.67	5.00	0.00
40.00	2.000	0.00	3.90	5.00	0.00
45.00	2.000	0.00	3.14	5.00	0.00
50.00	2.000	0.00	2.38	5.00	0.00
55.00	2.000	0.00	1.62	5.00	0.00
60.00	2.000	0.00	0.86	5.00	0.00
65.00	2.000	0.00	0.09	5.00	0.00

Overall potential I_L : 0.00

I_L = 0.00 - No liquefaction
I_L between 0.00 and 5 - Liquefaction not probable
I_L between 5 and 15 - Liquefaction probable
I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	α	b	γ	ε_{15}	N_c	ε_{Nc} weight factor	ε_{Nc} (%)	Δh (ft)	ΔS (in)
2.50	32	0.08	0.10	440.42	0.13	26059.76	0.00	0.00	15.06	0.95	0.16	3.75	0.070
5.00	30	0.16	0.19	609.59	0.13	17193.03	0.00	0.00	15.06	0.90	0.20	3.00	0.071
7.50	16	0.24	0.28	601.05	0.14	13598.84	0.01	0.01	15.06	0.85	1.38	2.00	0.330
10.00	28	0.31	0.38	833.28	0.14	11493.75	0.00	0.00	15.06	0.80	0.25	3.75	0.112
15.00	57	0.46	0.56	1288.63	0.15	9051.99	0.00	0.00	15.06	0.70	0.04	5.00	0.024
20.00	72	0.60	0.75	1605.48	0.15	7634.05	0.00	0.00	15.06	0.60	0.03	5.00	0.015
25.00	54	0.73	0.93	1629.02	0.16	6686.45	0.00	0.00	15.06	0.50	0.05	5.00	0.029
30.00	59	0.85	1.11	1836.58	0.17	5998.99	0.00	0.00	15.06	0.40	0.04	5.00	0.024
35.00	72	0.97	1.30	2118.73	0.17	5472.55	0.00	0.00	15.06	0.30	0.03	5.00	0.016
40.00	49	1.08	1.48	1991.52	0.18	5053.65	0.00	0.00	15.06	0.20	0.06	5.00	0.036
45.00	30	1.18	1.67	1793.08	0.19	4710.61	0.00	0.00	15.06	0.10	0.18	5.00	0.107
50.00	60	1.28	1.85	2380.75	0.20	4423.37	0.00	0.00	15.06	0.00	0.04	5.00	0.022
55.00	56	1.37	2.04	2439.68	0.20	4178.55	0.00	0.00	15.06	0.00	0.04	5.00	0.025
60.00	15	1.45	2.22	1642.30	0.21	3966.81	0.01	0.01	15.06	0.00	0.82	5.00	0.491
65.00	81	1.52	2.40	2998.49	0.22	3781.46	0.00	0.00	15.06	0.00	0.02	5.00	0.012

Cumulative settlemetns: 1.385

Abbreviations

τ_{av}: Average cyclic shear stress
p: Average stress
G_{max}: Maximum shear modulus (tsf)
α, b: Shear strain formula variables
γ: Average shear strain
ε_{15}: Volumetric strain after 15 cycles
N_c: Number of cycles
ε_{Nc}: Volumetric strain for number of cycles N_c (%)
Δh: Thickness of soil layer (in)
ΔS: Settlement of soil layer (in)

Petra Geosciences, Inc.
Orange County Office
3190 Airport Loop Drive, Suite J1, Costa Mesa, California 92626
www.petra-inc.com

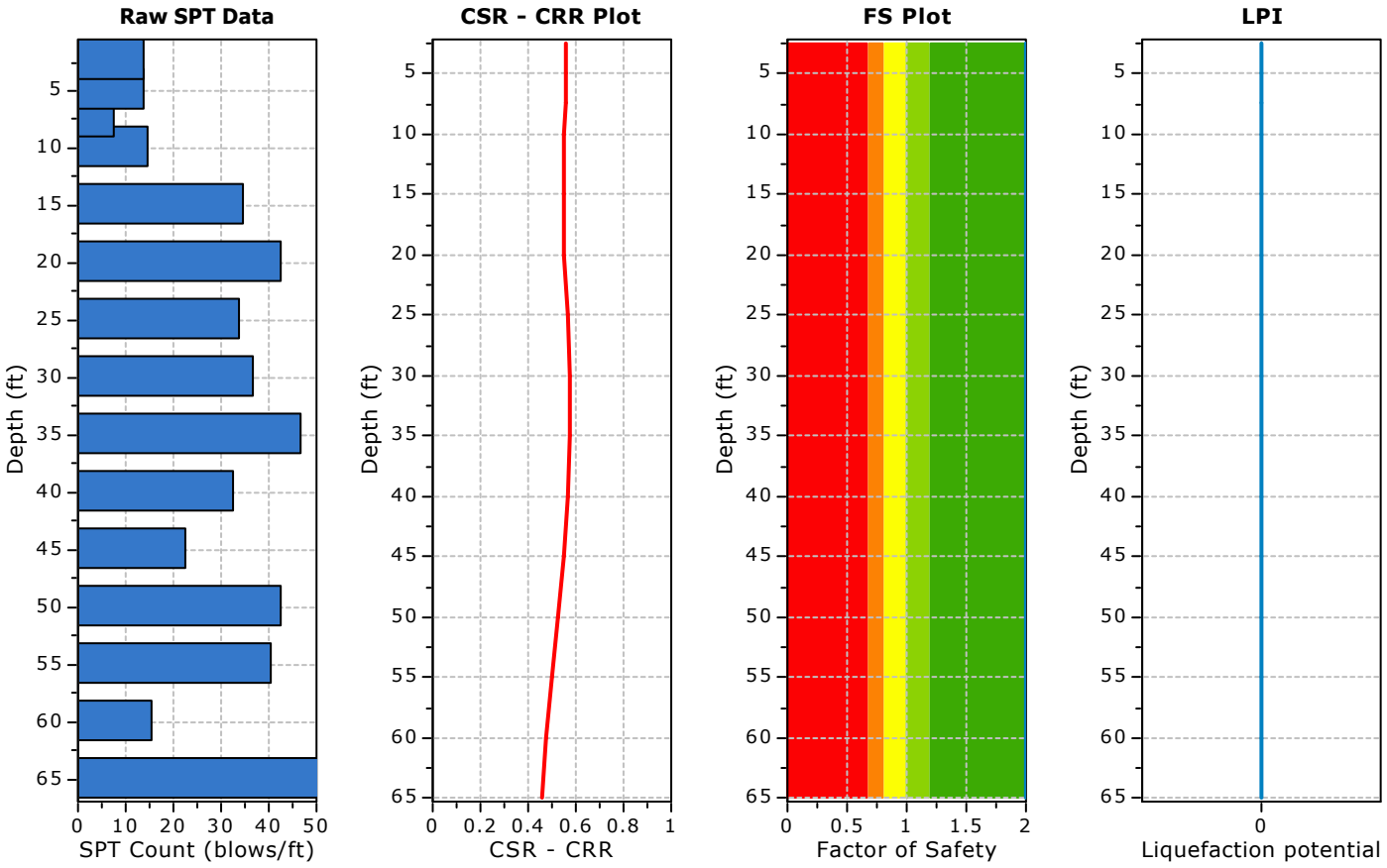
SPT BASED LIQUEFACTION ANALYSIS REPORT

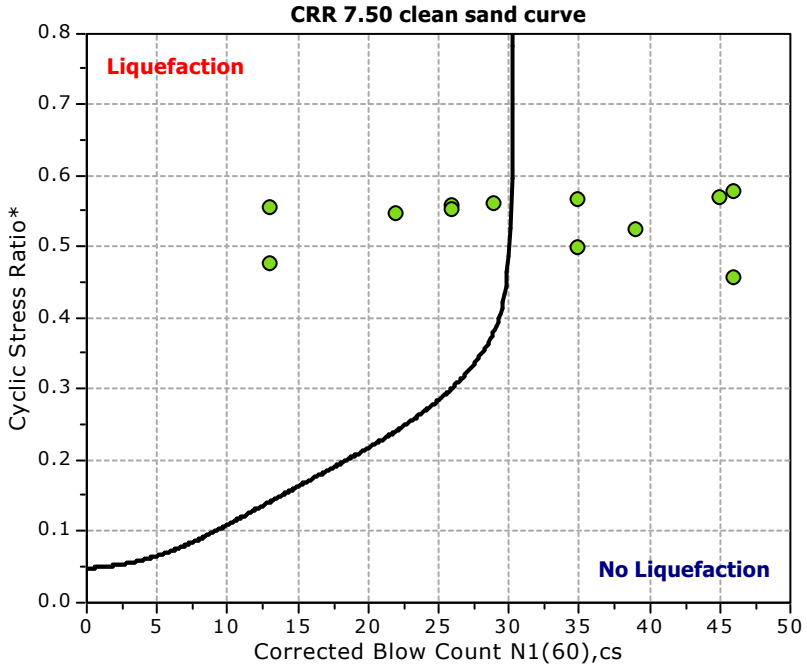
Project title : 24-112 National Core Apartments **SPT Name: B-1 NCEER**

Location : Rancho Mirage

:: Input parameters and analysis properties ::

Analysis method:	NCEER 1998	G.W.T. (in-situ):	160.00 ft
Fines correction method:	NCEER 1998	G.W.T. (earthq.):	160.00 ft
Sampling method:	Sampler wo liners	Earthquake magnitude M_w:	7.49
Borehole diameter:	200mm	Peak ground acceleration:	0.87 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.20		





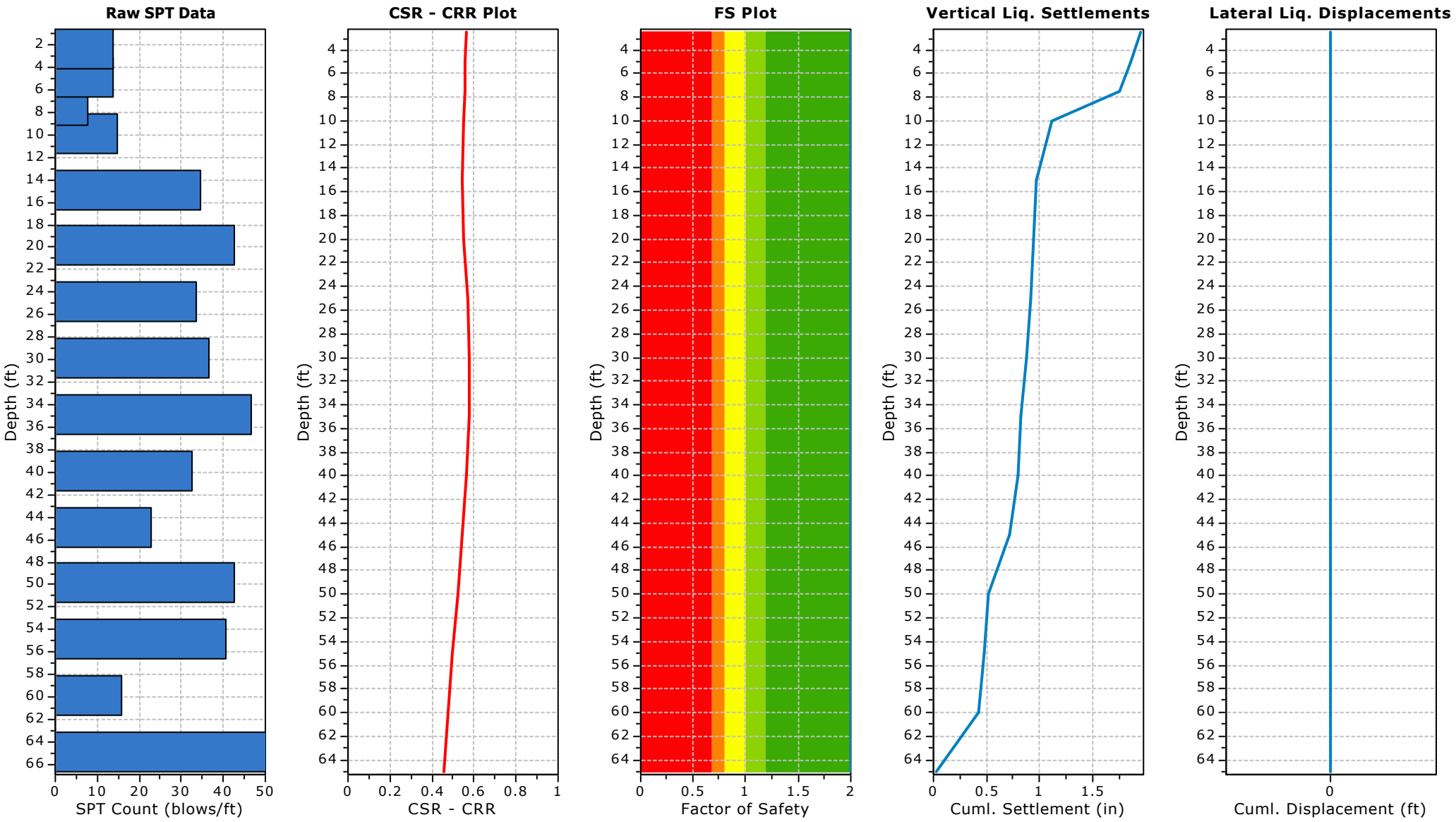
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::

Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
2.50	14	0.00	120.00	3.75	Yes
5.00	14	0.00	120.00	3.00	Yes
7.50	8	0.00	120.00	2.00	Yes
10.00	15	0.00	120.00	3.75	Yes
15.00	35	0.00	120.00	5.00	Yes
20.00	43	0.00	120.00	5.00	Yes
25.00	34	0.00	120.00	5.00	Yes
30.00	37	0.00	120.00	5.00	Yes
35.00	47	0.00	120.00	5.00	Yes
40.00	33	0.00	120.00	5.00	Yes
45.00	23	0.00	120.00	5.00	Yes
50.00	43	0.00	120.00	5.00	Yes
55.00	41	0.00	120.00	5.00	Yes
60.00	16	0.00	120.00	5.00	Yes
65.00	62	0.00	120.00	5.00	Yes

Abbreviations

Depth: Depth at which test was performed (ft)
SPT Field Value: Number of blows per foot
Fines Content: Fines content at test depth (%)
Unit Weight: Unit weight at test depth (pcf)
Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	Fines Content (%)	α	β	$(N_1)_{60cs}$	$CRR_{7.5}$
2.50	14	120.00	0.15	0.00	0.15	1.64	1.20	1.15	0.75	1.20	29	0.00	0.00	1.00	29	4.000
5.00	14	120.00	0.30	0.00	0.30	1.48	1.20	1.15	0.75	1.20	26	0.00	0.00	1.00	26	4.000
7.50	8	120.00	0.45	0.00	0.45	1.35	1.20	1.15	0.75	1.20	13	0.00	0.00	1.00	13	4.000
10.00	15	120.00	0.60	0.00	0.60	1.25	1.20	1.15	0.85	1.20	26	0.00	0.00	1.00	26	4.000
15.00	35	120.00	0.90	0.00	0.90	1.07	1.20	1.15	0.85	1.20	53	0.00	0.00	1.00	53	4.000
20.00	43	120.00	1.20	0.00	1.20	0.94	1.20	1.15	0.95	1.20	64	0.00	0.00	1.00	64	4.000
25.00	34	120.00	1.50	0.00	1.50	0.84	1.20	1.15	0.95	1.20	45	0.00	0.00	1.00	45	4.000
30.00	37	120.00	1.80	0.00	1.80	0.76	1.20	1.15	1.00	1.20	46	0.00	0.00	1.00	46	4.000
35.00	47	120.00	2.10	0.00	2.10	0.69	1.20	1.15	1.00	1.20	54	0.00	0.00	1.00	54	4.000
40.00	33	120.00	2.40	0.00	2.40	0.63	1.20	1.15	1.00	1.20	35	0.00	0.00	1.00	35	4.000
45.00	23	120.00	2.70	0.00	2.70	0.59	1.20	1.15	1.00	1.20	22	0.00	0.00	1.00	22	4.000
50.00	43	120.00	3.00	0.00	3.00	0.55	1.20	1.15	1.00	1.20	39	0.00	0.00	1.00	39	4.000
55.00	41	120.00	3.30	0.00	3.30	0.51	1.20	1.15	1.00	1.20	35	0.00	0.00	1.00	35	4.000
60.00	16	120.00	3.60	0.00	3.60	0.48	1.20	1.15	1.00	1.20	13	0.00	0.00	1.00	13	4.000
65.00	62	120.00	3.90	0.00	3.90	0.45	1.20	1.15	1.00	1.20	46	0.00	0.00	1.00	46	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	Fines Content (%)	α	β	$(N_1)_{60cs}$	$CRR_{7.5}$

Abbreviations

σ_v: Total stress during SPT test (tsf)
u_o: Water pore pressure during SPT test (tsf)
σ'_{vo}: Effective overburden pressure during SPT test (tsf)
C_N: Overburden corretion factor
C_E: Energy correction factor
C_B: Borehole diameter correction factor
C_R: Rod length correction factor
C_S: Liner correction factor
$N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
α, β: Clean sand equivalent clean sand formula coefficients
$N_{1(60)cs}$: Corected $N_{1(60)}$ value for fines content
$CRR_{7.5}$: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF	$CSR_{eq,M=7.5}$	K_{sigma}	CSR^*	FS	
2.50	120.00	0.15	0.00	0.15	1.00	1.00	0.563	1.00	0.562	1.00	0.562	2.000	●
5.00	120.00	0.30	0.00	0.30	0.99	1.00	0.560	1.00	0.558	1.00	0.558	2.000	●
7.50	120.00	0.45	0.00	0.45	0.98	1.00	0.557	1.00	0.555	1.00	0.555	2.000	●
10.00	120.00	0.60	0.00	0.60	0.98	1.00	0.554	1.00	0.552	1.00	0.552	2.000	●
15.00	120.00	0.90	0.00	0.90	0.97	1.00	0.548	1.00	0.546	1.00	0.546	2.000	●
20.00	120.00	1.20	0.00	1.20	0.96	1.00	0.541	1.00	0.539	0.98	0.553	2.000	●
25.00	120.00	1.50	0.00	1.50	0.94	1.00	0.533	1.00	0.531	0.93	0.569	2.000	●
30.00	120.00	1.80	0.00	1.80	0.92	1.00	0.521	1.00	0.519	0.90	0.577	2.000	●
35.00	120.00	2.10	0.00	2.10	0.89	1.00	0.504	1.00	0.502	0.87	0.576	2.000	●
40.00	120.00	2.40	0.00	2.40	0.85	1.00	0.481	1.00	0.480	0.85	0.565	2.000	●
45.00	120.00	2.70	0.00	2.70	0.80	1.00	0.454	1.00	0.453	0.83	0.546	2.000	●
50.00	120.00	3.00	0.00	3.00	0.75	1.00	0.426	1.00	0.424	0.81	0.523	2.000	●
55.00	120.00	3.30	0.00	3.30	0.70	1.00	0.398	1.00	0.397	0.80	0.498	2.000	●
60.00	120.00	3.60	0.00	3.60	0.66	1.00	0.373	1.00	0.372	0.78	0.475	2.000	●
65.00	120.00	3.90	0.00	3.90	0.62	1.00	0.352	1.00	0.351	0.77	0.455	2.000	●

Abbreviations

$\sigma_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
$u_{o,eq}$: Water pressure at test point, during earthquake (tsf)
$\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
r_d : Nonlinear shear mass factor
α: Improvement factor due to stone columns
CSR : Cyclic Stress Ratio (adjusted for improvement)
MSF : Magnitude Scaling Factor
$CSR_{eq,M=7.5}$: CSR adjusted for M=7.5
K_{sigma}: Effective overburden stress factor
CSR^*: CSR fully adjusted (user FS applied)***
FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
2.50	2.000	0.00	9.62	2.50	0.00
5.00	2.000	0.00	9.24	2.50	0.00
7.50	2.000	0.00	8.86	2.50	0.00

:: Liquefaction potential according to Iwasaki ::

Depth (ft)	FS	F	wz	Thickness (ft)	I_L
10.00	2.000	0.00	8.48	2.50	0.00
15.00	2.000	0.00	7.71	5.00	0.00
20.00	2.000	0.00	6.95	5.00	0.00
25.00	2.000	0.00	6.19	5.00	0.00
30.00	2.000	0.00	5.43	5.00	0.00
35.00	2.000	0.00	4.67	5.00	0.00
40.00	2.000	0.00	3.90	5.00	0.00
45.00	2.000	0.00	3.14	5.00	0.00
50.00	2.000	0.00	2.38	5.00	0.00
55.00	2.000	0.00	1.62	5.00	0.00
60.00	2.000	0.00	0.86	5.00	0.00
65.00	2.000	0.00	0.09	5.00	0.00

Overall potential I_L : 0.00

I_L = 0.00 - No liquefaction
I_L between 0.00 and 5 - Liquefaction not probable
I_L between 5 and 15 - Liquefaction probable
I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::

Depth (ft)	$(N_1)_{60}$	τ_{av}	p	G_{max} (tsf)	α	b	γ (%)	ε_{15}	N_c	ε_{Nc} (%)	Δh (ft)	ΔS (in)
2.50	29	0.08	0.10	435.37	0.13	25402.73	0.32	0.00	15.06	0.21	3.75	0.093
5.00	26	0.17	0.20	593.69	0.13	16759.55	0.40	0.00	15.06	0.29	3.00	0.106
7.50	13	0.25	0.30	577.12	0.14	13140.37	1.60	0.03	15.06	2.68	2.00	0.644
10.00	26	0.33	0.40	839.61	0.14	11057.18	0.42	0.00	15.06	0.31	3.75	0.138
15.00	53	0.49	0.60	1303.84	0.15	8669.41	0.16	0.00	15.06	0.05	5.00	0.030
20.00	64	0.65	0.80	1603.23	0.16	7295.02	0.14	0.00	15.06	0.03	5.00	0.021
25.00	45	0.80	1.00	1593.90	0.16	6380.88	0.22	0.00	15.06	0.08	5.00	0.049
30.00	46	0.94	1.21	1758.87	0.17	5719.68	0.21	0.00	15.06	0.08	5.00	0.046
35.00	54	1.06	1.41	2004.10	0.18	5214.39	0.17	0.00	15.06	0.05	5.00	0.031
40.00	35	1.16	1.61	1854.13	0.19	4812.92	0.25	0.00	15.06	0.13	5.00	0.076
45.00	22	1.23	1.81	1684.62	0.19	4484.53	0.37	0.00	15.06	0.33	5.00	0.199
50.00	39	1.28	2.01	2149.12	0.20	4209.81	0.17	0.00	15.06	0.08	5.00	0.046
55.00	35	1.31	2.21	2174.16	0.21	3975.82	0.17	0.00	15.06	0.08	5.00	0.051
60.00	13	1.34	2.41	1632.34	0.22	3773.58	0.39	0.01	15.06	0.66	5.00	0.398
65.00	46	1.37	2.61	2588.99	0.23	3596.63	0.11	0.00	15.06	0.04	5.00	0.024

Cumulative settlemetns: 1.953

Abbreviations

τ_{av}: Average cyclic shear stress
p: Average stress
G_{max}: Maximum shear modulus (tsf)
α, b: Shear strain formula variables
γ: Average shear strain (%)
ε_{15}: Volumetric strain after 15 cycles
N_c: Number of cycles
ε_{Nc}: Volumetric strain for number of cycles N_c (%)
Δh: Thickness of soil layer (in)
ΔS: Settlement of soil layer (in)

:: Lateral displacements estimation for saturated sands ::

Depth (ft)	$(N_1)_{60}$	D_r (%)	γ_{max} (%)	d_z (ft)	LDI	LD (ft)
2.50	29	75.39	0.00	3.75	0.000	0.00
5.00	26	71.39	0.00	3.00	0.000	0.00
7.50	13	50.48	0.00	2.00	0.000	0.00
10.00	26	71.39	0.00	3.75	0.000	0.00
15.00	53	100.00	0.00	5.00	0.000	0.00
20.00	64	100.00	0.00	5.00	0.000	0.00
25.00	45	100.00	0.00	5.00	0.000	0.00
30.00	46	100.00	0.00	5.00	0.000	0.00
35.00	54	100.00	0.00	5.00	0.000	0.00
40.00	35	82.83	0.00	5.00	0.000	0.00
45.00	22	65.67	0.00	5.00	0.000	0.00
50.00	39	87.43	0.00	5.00	0.000	0.00
55.00	35	82.83	0.00	5.00	0.000	0.00
60.00	13	50.48	0.00	5.00	0.000	0.00
65.00	46	100.00	0.00	5.00	0.000	0.00

Cumulative lateral displacements: 0.00

Abbreviations

D_r: Relative density (%)
γ_{max}: Maximum amplitude of cyclic shear strain (%)
d_z: Soil layer thickness (ft)
LDI: Lateral displacement index (ft)
LD: Actual estimated displacement (ft)

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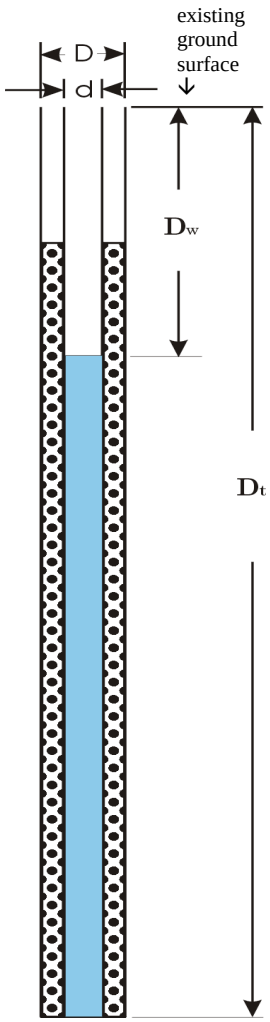
APPENDIX E

PERCOLATION / INFILTRATION

Boring/Test Number: P-1

Total Depth of Boring, D_T (ft):	10	**Test Date:**	6/7/2024
Diameter of Hole, D (in):	8	**Tested By:**	KTM
Diameter of Casing, d (in):	2	**USCS Soil Type:**	SP
Depth of Slotted Casing (ft):	5 to 10	**Depth to Groundwater (ft):**	?
Porosity of Annulus Material, *n* :	0.42	**Ground Elevation (msl ft):**	312
Depth from Existing Ground Surface to Bottom of Prop. Inflitration System (ft):			?



SANDY SOIL CRITERIA TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔD (in.)	Change in Height of Water Greater Than or Equal to 6"? (Yes/No)*
		Initial, D_o (ft.)	Final, D_f (ft.)		
1	25	9.1	10	10.8	yes
2	25	9.10	10	10.8	yes
Standard Time Interval Between Readings (min.), [* if yes = 10, if no = 30]:					30

PERCOLATION TEST

Trial No.	Time Interval Δt (min.)	Depth to Water, D_w		Change in Water Level ΔH (in.)	Percolation Rate	
		Initial, D_o (ft.)	Final, D_f (ft.)		(min/in.)	(gal/day/ft^2)
1	10	8.60	10.00	16.80	0.60	132.32
2	10	8.60	10.00	16.80	0.60	132.32
3	10	8.55	10.00	17.40	0.57	133.20
4	10	8.60	10.00	16.80	0.60	132.32
5	10	8.55	10.00	17.40	0.57	133.20
6	10	8.55	10.00	17.40	0.57	133.20

TEST RESULTS**

Inflitration Rate [Porchet Method]# (inches/hour)	Percolation Rate	
	(min/in.)	(gal/day/ft^2)
12.00	**0.57**	**133.20**

**Raw Results. Does Not Include a Factor of Safety

FACTOR OF SAFETY

Testing Option	Testing Requirements	Factor of Safety per Reference
Option 2	**4 tests minimum with at least two borings per basin**	**3**

Where Infiltration Rate, It = ΔH (60r) / Δt (r + 2Havg)

r = D / 2

Ho = D_T - Do

$H_f = D_T - D_f$

$\Delta H = \Delta D = H_o - H_f$

$H_{avg} = (H_o + H_f) / 2$

Reference:

RCFCWCD, Design Handbook for LID, dated September, 2011

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COSTA MESA TEMECULA LOS ANGELES PALM DESERT CORONA ESCONDIDO

PERCOLATION TEST SUMMARY

Key Largo Avenue
Rancho Mirage, Riverside County, CA

PETRA GEOSCIENCES INC.

DATE: June , 2024

J.N.: 24-112

Appendix E

APPENDIX F

STANDARD GRADING SPECIFICATIONS

STANDARD GRADING SPECIFICATIONS

These specifications present the usual and minimum requirements for projects on which Petra Geosciences, Inc. (Petra) is the geotechnical consultant. No deviation from these specifications will be allowed, except where specifically superseded in the preliminary geology and soils report, or in other written communication signed by the Soils Engineer and Engineering Geologist of record (Geotechnical Consultant).

I. GENERAL

A. The Geotechnical Consultant is the Owner's or Builder's representative on the project. For the purpose of these specifications, participation by the Geotechnical Consultant includes that observation performed by any person or persons employed by, and responsible to, the licensed Soils Engineer and Engineering Geologist signing the soils report.

B. The contractor should prepare and submit to the Owner and Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "spreads" and the estimated quantities of daily earthwork to be performed prior to the commencement of grading. This work plan should be reviewed by the Geotechnical Consultant to schedule personnel to perform the appropriate level of observation, mapping, and compaction testing as necessary.

C. All clearing, site preparation, or earthwork performed on the project shall be conducted by the Contractor in accordance with the recommendations presented in the geotechnical report and under the observation of the Geotechnical Consultant.

D. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Geotechnical Consultant and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Geotechnical Consultant. The Contractor shall also remove all material considered unsatisfactory by the Geotechnical Consultant.

E. It is the Contractor's responsibility to have suitable and sufficient compaction equipment on the job site to handle the amount of fill being placed. If necessary, excavation equipment will be shut down to permit completion of compaction to project specifications. Sufficient watering apparatus will also be provided by the Contractor, with due consideration for the fill material, rate of placement, and time of year.

F. After completion of grading a report will be submitted by the Geotechnical Consultant.

II. SITE PREPARATION

A. Clearing and Grubbing

1. All vegetation such as trees, brush, grass, roots, and deleterious material shall be disposed of offsite. This removal shall be concluded prior to placing fill.

2. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipe lines, etc., are to be removed or treated in a manner prescribed by the Geotechnical Consultant.

III. FILL AREA PREPARATION

A. Remedial Removals/Overexcavations

1. Remedial removals, as well as overexcavation for remedial purposes, shall be evaluated by the Geotechnical Consultant. Remedial removal depths presented in the geotechnical report and shown on the geotechnical plans are estimates only. The actual extent of removal should be determined by the Geotechnical Consultant based on the conditions exposed during grading. All soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as determined by the Geotechnical Consultant.

2. Soil, alluvium, or bedrock materials determined by the Soils Engineer as being unsuitable for placement in compacted fills shall be removed from the site. Any material incorporated as a part of a compacted fill must be approved by the Geotechnical Consultant.

3. Should potentially hazardous materials be encountered, the Contractor should stop work in the affected area. An environmental consultant specializing in hazardous materials should be notified immediately for evaluation and handling of these materials prior to continuing work in the affected area.

B. Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide sufficient survey control for determining locations and elevations of processed areas, keys, and benches.

C. Processing

After the ground surface to receive fill has been declared satisfactory for support of fill by the Geotechnical Consultant, it shall be scarified to a minimum depth of 6 inches and until the ground surface is uniform and free from ruts, hollows, hummocks, or other uneven features which may prevent uniform compaction.

The scarified ground surface shall then be brought to optimum moisture, mixed as required, and compacted to a minimum relative compaction of 90 percent.

D. Subdrains

Subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency, and/or with the recommendations of the Geotechnical Consultant. (Typical Canyon Subdrain details are given on Plate SG-1).

E. Cut/Fill & Deep Fill/Shallow Fill Transitions

In order to provide uniform bearing conditions in cut/fill and deep fill/shallow fill transition lots, the cut and shallow fill portions of the lot should be overexcavated to the depths and the horizontal limits discussed in the approved geotechnical report and replaced with compacted fill. (Typical details are given on Plate SG-7.)

STANDARD GRADING SPECIFICATIONS

IV. COMPACTED FILL MATERIAL

A. General

Materials excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Geotechnical Consultant. Material to be used for fill shall be essentially free of organic material and other deleterious substances. Roots, tree branches, and other matter missed during clearing shall be removed from the fill as recommended by the Geotechnical Consultant. Material that is spongy, subject to decay, or otherwise considered unsuitable shall not be used in the compacted fill.

Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

B. Oversize Materials

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 12 inches in diameter, shall be taken offsite or placed in accordance with the recommendations of the Geotechnical Consultant in areas designated as suitable for rock disposal (Typical details for Rock Disposal are given on Plate SG-4).

Rock fragments less than 12 inches in diameter may be utilized in the fill provided, they are not nested or placed in concentrated pockets; they are surrounded by compacted fine grained soil material and the distribution of rocks is approved by the Geotechnical Consultant.

C. Laboratory Testing

Representative samples of materials to be utilized as compacted fill shall be analyzed by the laboratory of the Geotechnical Consultant to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted by the Geotechnical Consultant as soon as possible.

D. Import

If importing of fill material is required for grading, proposed import material should meet the requirements of the previous section. The import source shall be given to the Geotechnical Consultant at least 2 working days prior to importing so that appropriate tests can be performed and its suitability determined.

V. FILL PLACEMENT AND COMPACTION

A. Fill Layers

Material used in the compacting process shall be evenly spread, watered, processed, and compacted in thin lifts not to exceed 6 inches in thickness to obtain a uniformly dense layer. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Consultant.

B. Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly above optimum moisture content.

C. Compaction

Each layer shall be compacted to 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency. (In general, ASTM D 1557-02, will be used.)

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or expansive soils condition, the area to received fill compacted to less than 90 percent shall either be delineated on the grading plan or appropriate reference made to the area in the soils report.

D. Failing Areas

If the moisture content or relative density varies from that required by the Geotechnical Consultant, the Contractor shall rework the fill until it is approved by the Geotechnical Consultant.

E. Benching

All fills shall be keyed and benched through all topsoil, colluvium, alluvium or creep material, into sound bedrock or firm material where the slope receiving fill exceeds a ratio of 5 horizontal to 1 vertical, in accordance with the recommendations of the Geotechnical Consultant.

VI. SLOPES

A. Fill Slopes

The contractor will be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses, and stabilization fills. 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, or by any other procedure that produces the required compaction.

B. Side Hill Fills

The key for side hill fills shall be a minimum of 15 feet within bedrock or firm materials, unless otherwise specified in the soils report. (See detail on Plate SG-5.)

C. Fill-Over-Cut Slopes

Fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep material into rock or firm materials, and the transition shall be stripped of all soils prior to placing fill. (see detail on Plate SG-6).

D. Landscaping

All fill slopes should be planted or protected from erosion by other methods specified in the soils report.

E. Cut Slopes

1. The Geotechnical Consultant should observe all cut slopes at vertical intervals not exceeding 10 feet.

2. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be evaluated by the Geotechnical Consultant, and recommendations shall be made to treat these problems (Typical details for stabilization of a portion of a cut slope are given in Plates SG-2 and SG-3.).

3. Cut slopes that face in the same direction as the prevailing drainage shall be protected from slope wash by a non-erodible interceptor swale placed at the top of the slope.

4. Unless otherwise specified in the soils and geological report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

5. Drainage terraces shall be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Geotechnical Consultant.

VII. GRADING OBSERVATION

A. General

All cleanouts, processed ground to receive fill, key excavations, subdrains, and rock disposals must be observed and approved by the Geotechnical Consultant prior to placing any fill. It shall be the Contractor's responsibility to notify the Geotechnical Consultant when such areas are ready.

B. Compaction Testing

Observation of the fill placement shall be provided by the Geotechnical Consultant during the progress of grading. Location and frequency of tests shall be at the Consultants discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations may be selected to verify adequacy of compaction levels in areas that are judged to be susceptible to inadequate compaction.

C. Frequency of Compaction Testing

In general, density tests should be made at intervals not exceeding 2 feet of fill height or every 1000 cubic yards of fill placed. This criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests shall be made to verify that the required compaction is being achieved.

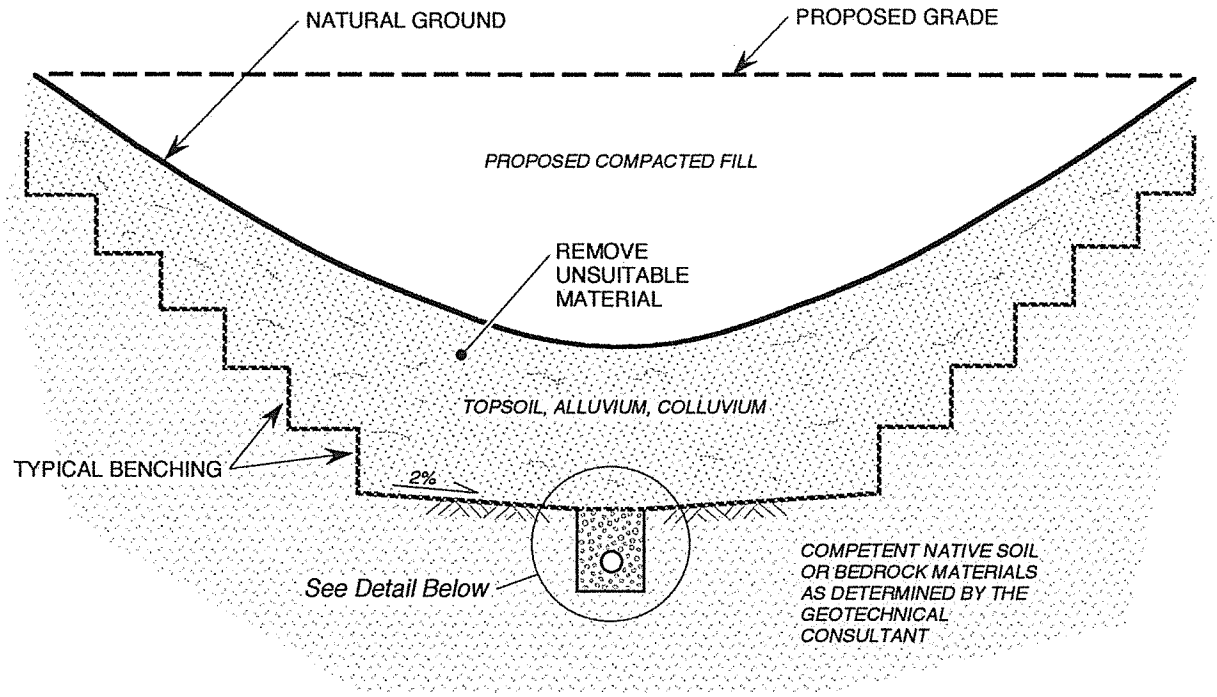
VIII. CONSTRUCTION CONSIDERATIONS

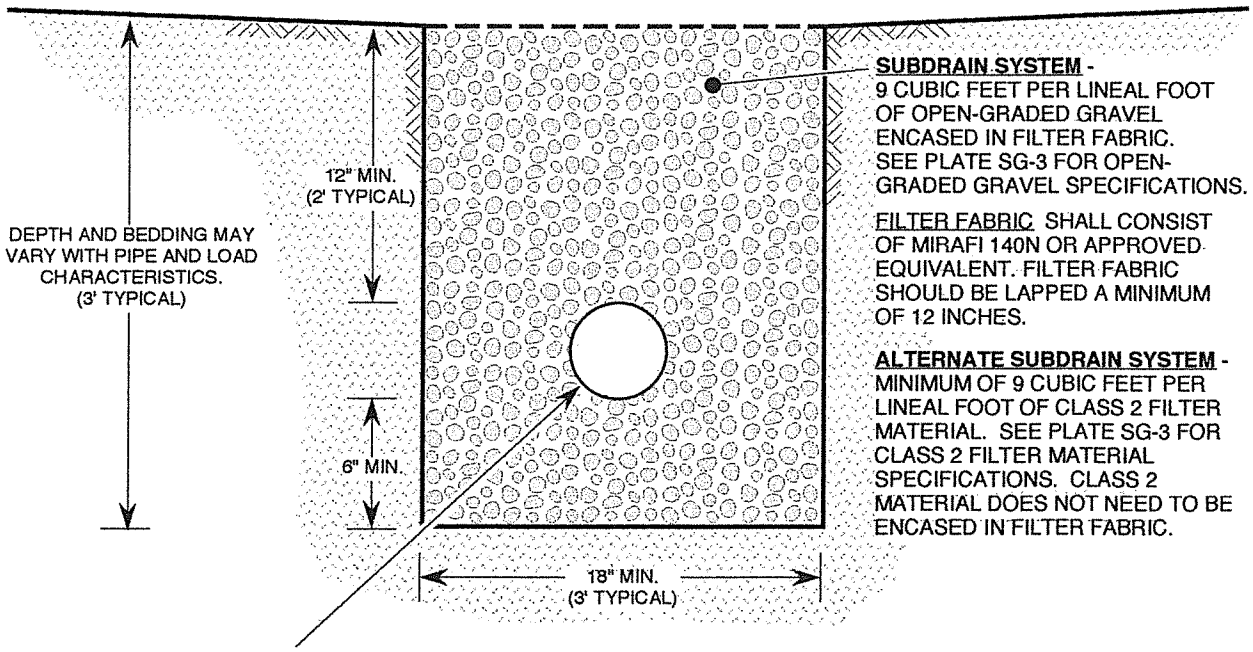
A. Erosion control measures, when necessary, shall be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

B. Upon completion of grading and termination of observations by the Geotechnical Consultant, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features shall be performed without the approval of the Geotechnical Consultant.

C. Care shall be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of permanent nature on or adjacent to the property.

S:\!BOILERS-WORK\REPORT INSERTS\STANDARD GRADING SPECS





SUBDRAIN SYSTEM -
9 CUBIC FEET PER LINEAL FOOT OF OPEN-GRADED GRAVEL ENCASED IN FILTER FABRIC. SEE PLATE SG-3 FOR OPEN-GRADED GRAVEL SPECIFICATIONS.

FILTER FABRIC SHALL CONSIST OF MIRAFI 140N OR APPROVED EQUIVALENT. FILTER FABRIC SHOULD BE LAPPED A MINIMUM OF 12 INCHES.

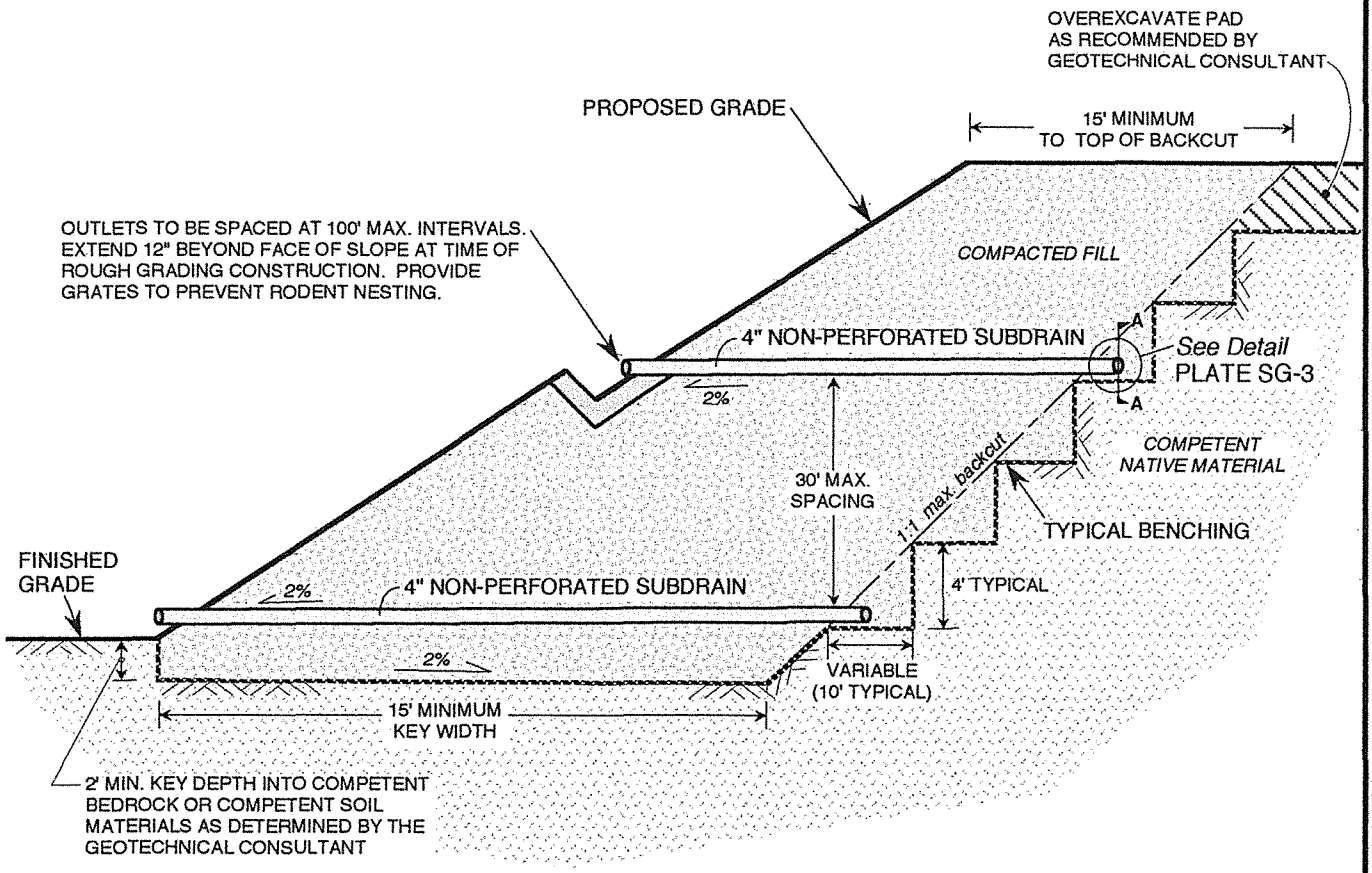
ALTERNATE SUBDRAIN SYSTEM -
MINIMUM OF 9 CUBIC FEET PER LINEAL FOOT OF CLASS 2 FILTER MATERIAL. SEE PLATE SG-3 FOR CLASS 2 FILTER MATERIAL SPECIFICATIONS. CLASS 2 MATERIAL DOES NOT NEED TO BE ENCASED IN FILTER FABRIC.

MINIMUM 6-INCH DIAMETER PVC SCHEDULE 40, OR ABS SDR-35 WITH A MINIMUM OF EIGHT 1/4-INCH DIAMETER PERFORATIONS PER LINEAL FOOT IN BOTTOM HALF OF PIPE. PIPE TO BE LAID WITH PERFORATIONS FACING DOWN.

NOTES:

1. FOR CONTINUOUS RUNS IN EXCESS OF 500 FEET USE 8-INCH DIAMETER PIPE.
2. FINAL 20 FEET OF PIPE AT OUTLET SHALL BE NON-PERFORATED AND BACKFILLED WITH FINE-GRAINED MATERIAL.

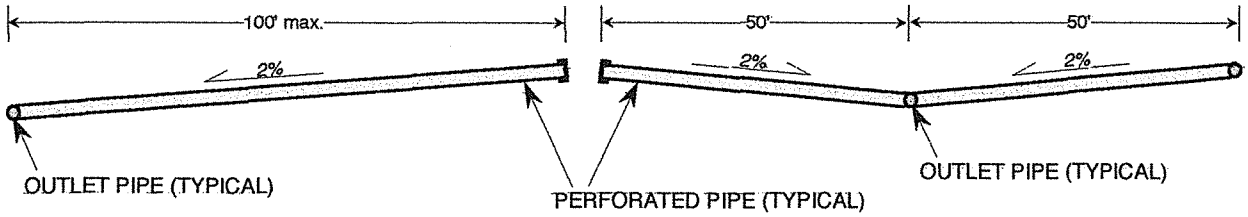
PETRA	CANYON SUBDRAIN DETAIL	PLATE SG-1



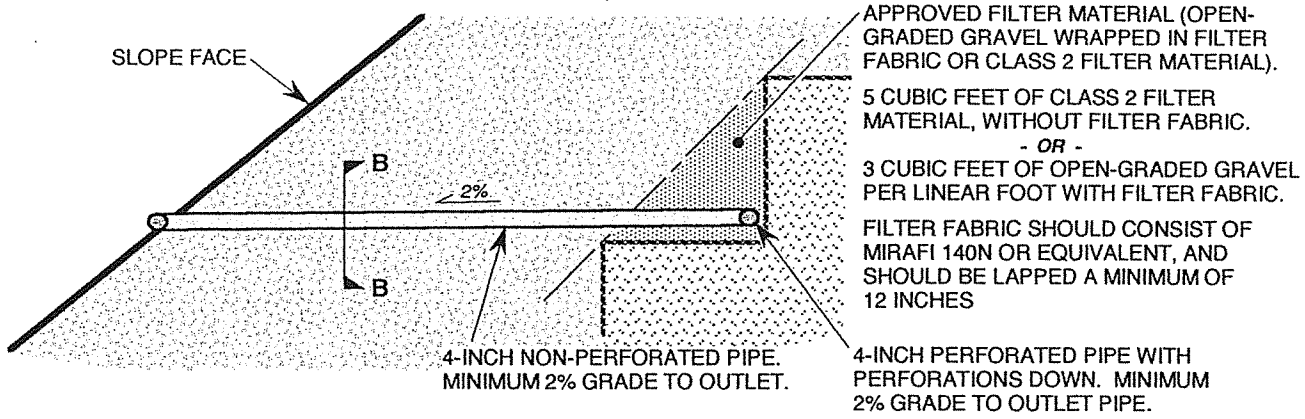
NOTES:

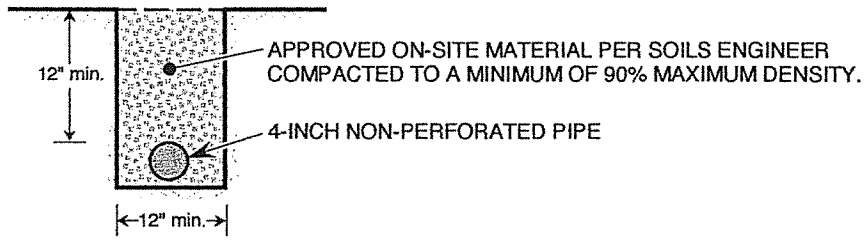
1. 30' MAXIMUM VERTICAL SPACING BETWEEN SUBDRAIN SYSTEMS.
2. 100' MAXIMUM HORIZONTAL DISTANCE BETWEEN NON-PERFORATED OUTLET PIPES. *(See Below)*
3. MINIMUM GRADIENT OF 2% FOR ALL PERFORATED AND NON-PERFORATED PIPE.

SECTION A-A (PERFORATED PIPE PROFILE)



PETRA	BUTTRESS OR STABILIZATION FILL DETAIL	PLATE SG-2





SECTION B-B (OUTLET PIPE)

PIPE SPECIFICATIONS:

1. 4-INCH MINIMUM DIAMETER, PVC SCHEDULE 40 OR ABS SDR-35.
2. FOR PERFORATED PIPE, MINIMUM 8 PERFORATIONS PER FOOT ON BOTTOM HALF OF PIPE.

FILTER MATERIAL/FABRIC SPECIFICATIONS:

OPEN-GRADED GRAVEL ENCASED IN FILTER FABRIC.
(MIRAFI 140N OR EQUIVALENT)

OPEN-GRADED GRAVEL

SIEVE SIZE	PERCENT PASSING
1 1/2-INCH	88 - 100
1-INCH	5 - 40
3/4-INCH	0 - 17
3/8-INCH	0 - 7
No. 200	0 - 3

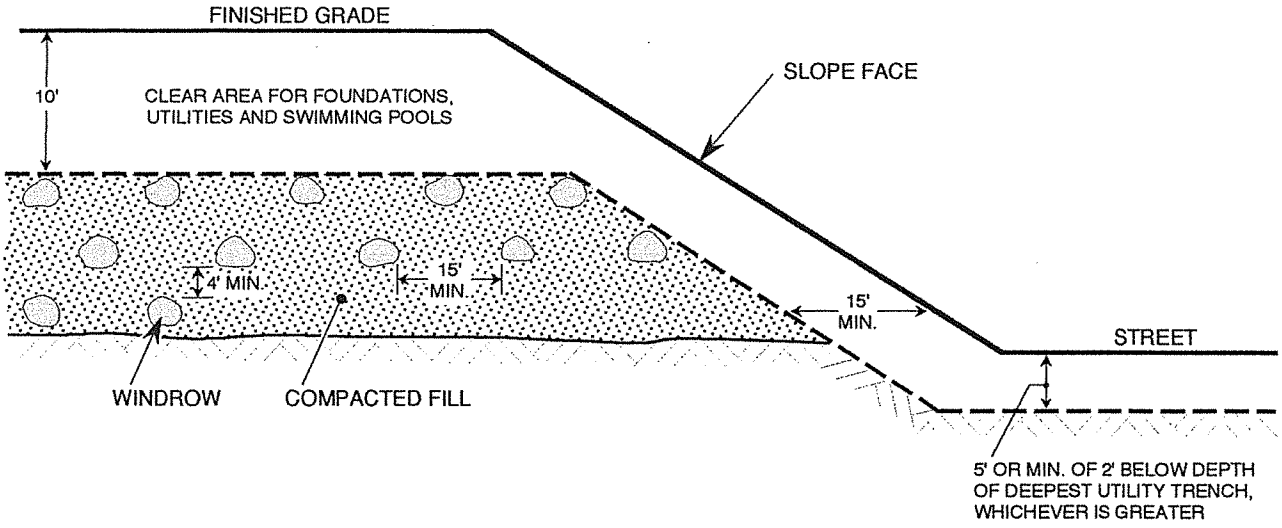
ALTERNATE:

CLASS 2 PERMEABLE FILTER MATERIAL PER CALTRANS STANDARD SPECIFICATION 68-1.025.

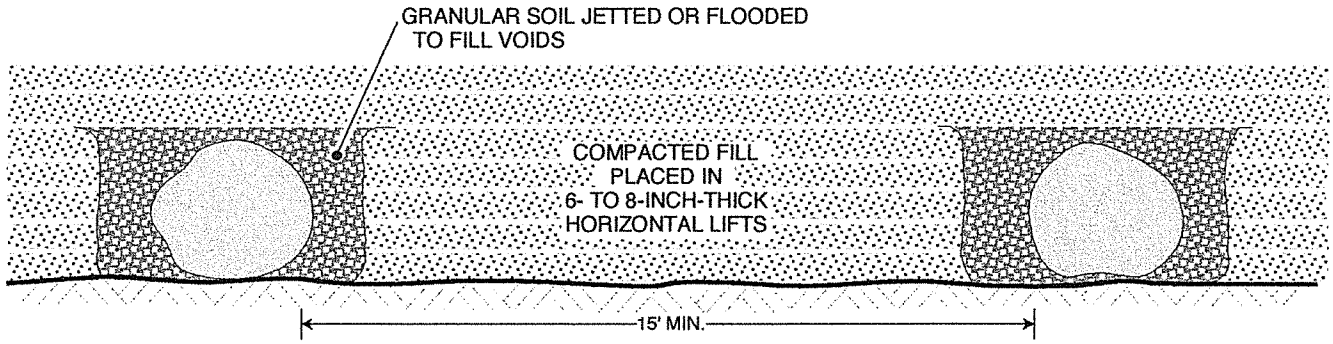
CLASS 2 FILTER MATERIAL

SIEVE SIZE	PERCENT PASSING
1-INCH	100
3/4-INCH	90 - 100
3/8-INCH	40 - 100
No. 4	25 - 40
No. 8	18 - 33
No. -30	5 - 15
No. -50	0 - 7
No. 200	0 - 3

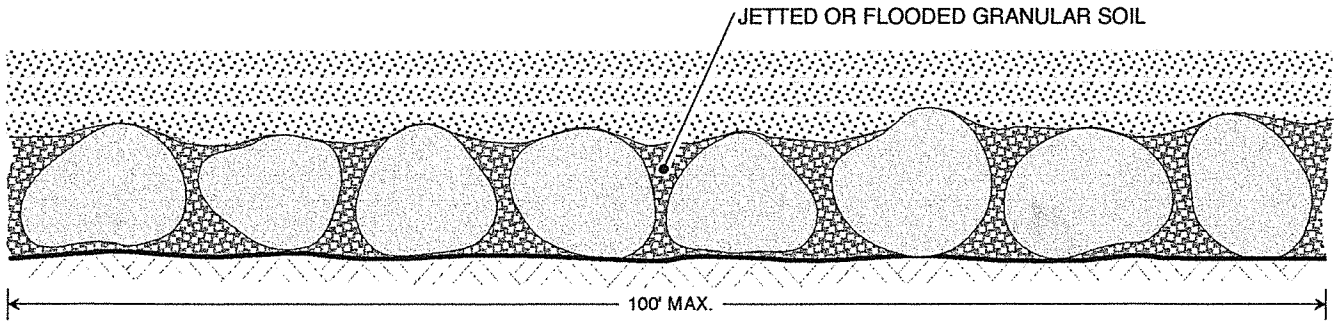
PETRA	BUTTRESS OR STABILIZATION FILL SUBDRAIN	PLATE SG-3



TYPICAL WINDROW DETAIL (END VIEW)

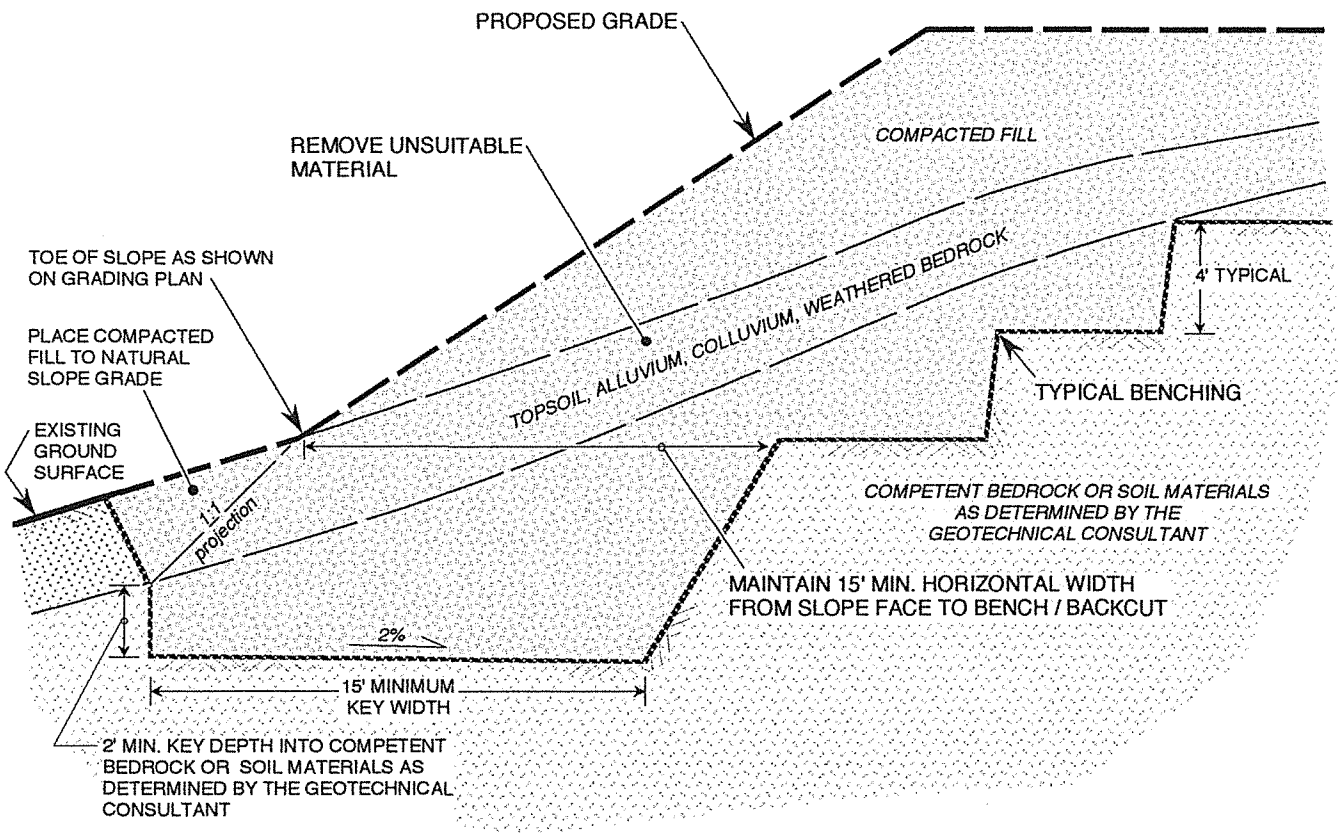


TYPICAL WINDROW DETAIL (PROFILE VIEW)



NOTE: OVERSIZE ROCK IS DEFINED AS CLASTS HAVING A MAXIMUM DIMENSION OF 12" OR LARGER

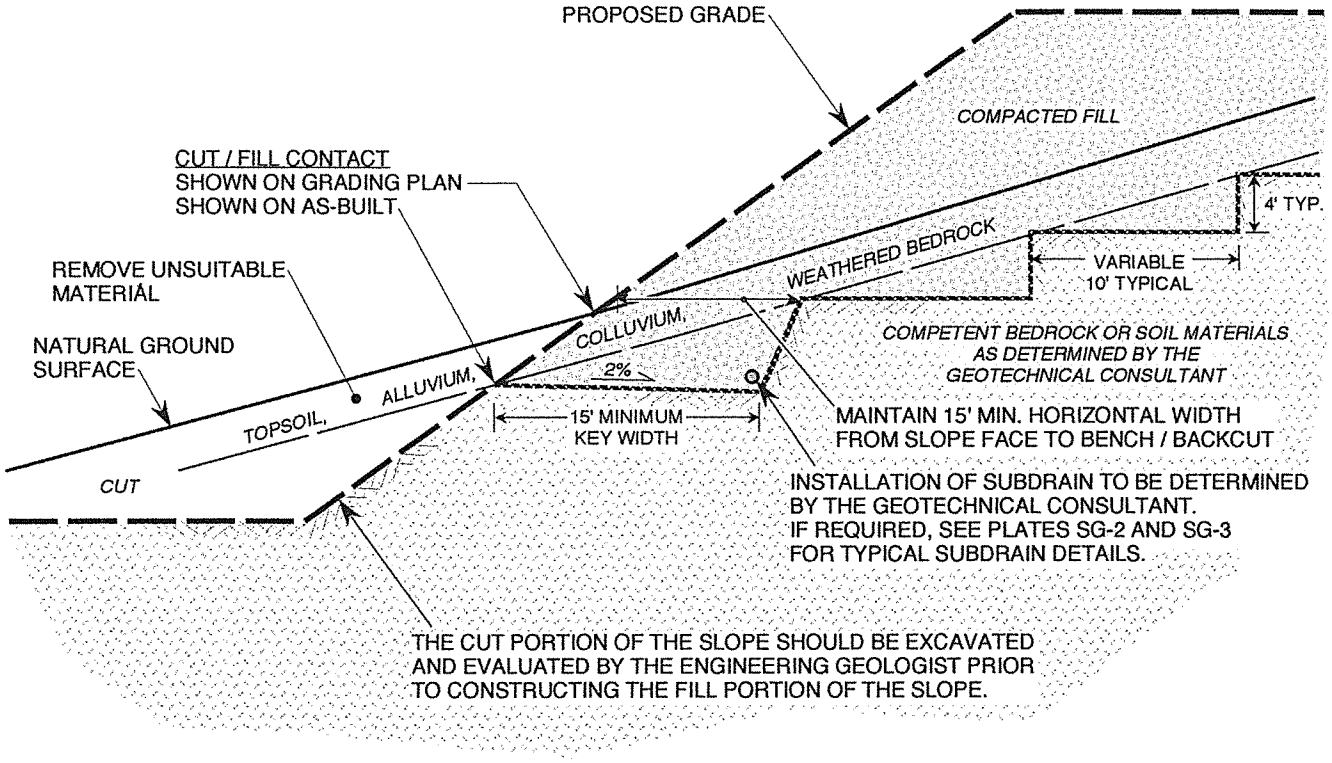
PETRA	TYPICAL ROCK DISPOSAL DETAIL	PLATE SG-4



NOTES:

1. WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY; HOWEVER, FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.
2. SOILS ENGINEER TO DETERMINE IF SUBDRAIN IS REQUIRED.

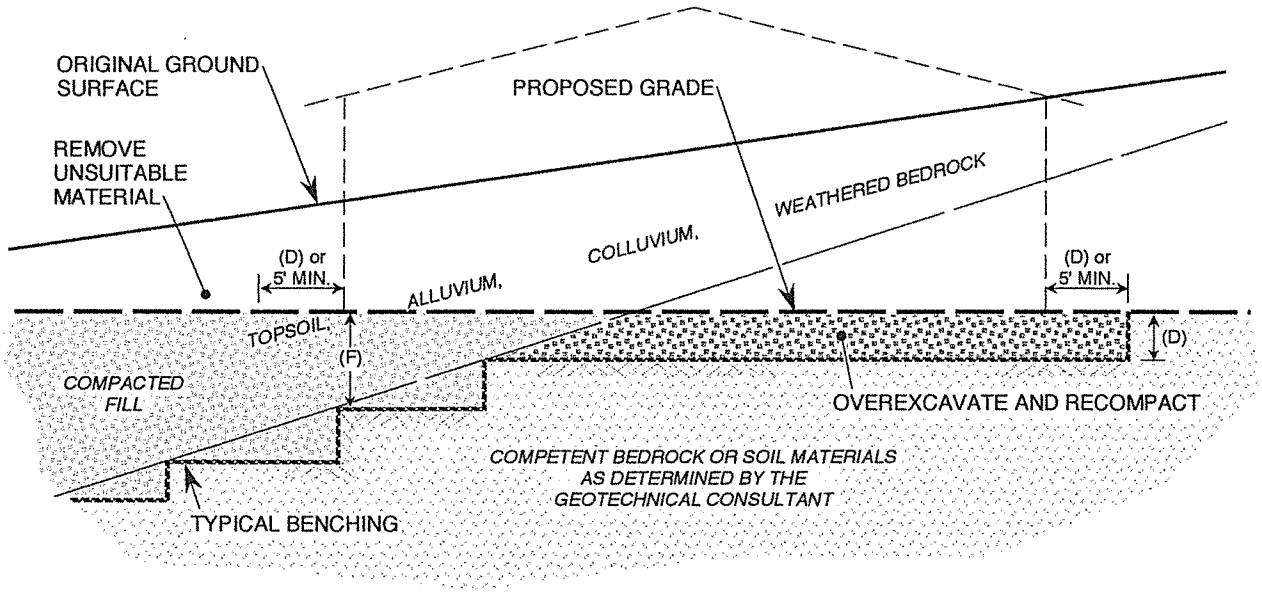
PETRA	FILL SLOPE ABOVE NATURAL SLOPE	PLATE SG-5



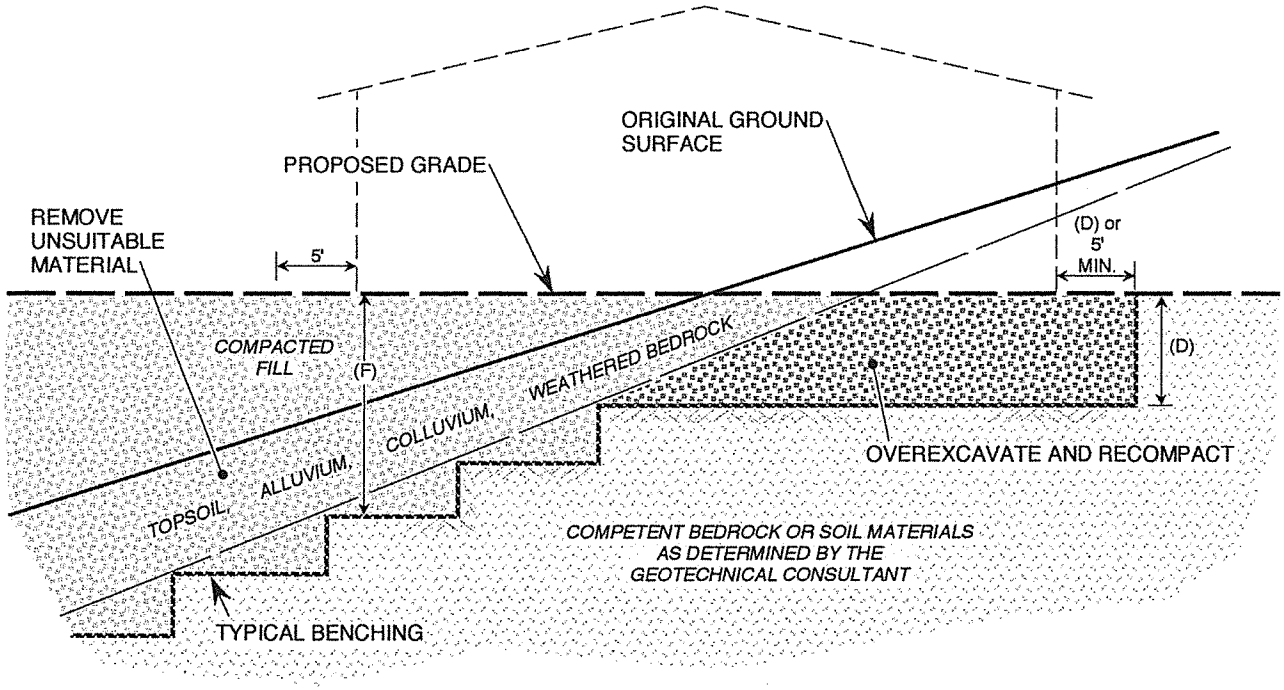
PETRA	FILL SLOPE ABOVE CUT SLOPE	PLATE SG-6

CUT LOT

UNSUITABLE MATERIAL EXPOSED IN PORTION OF CUT PAD

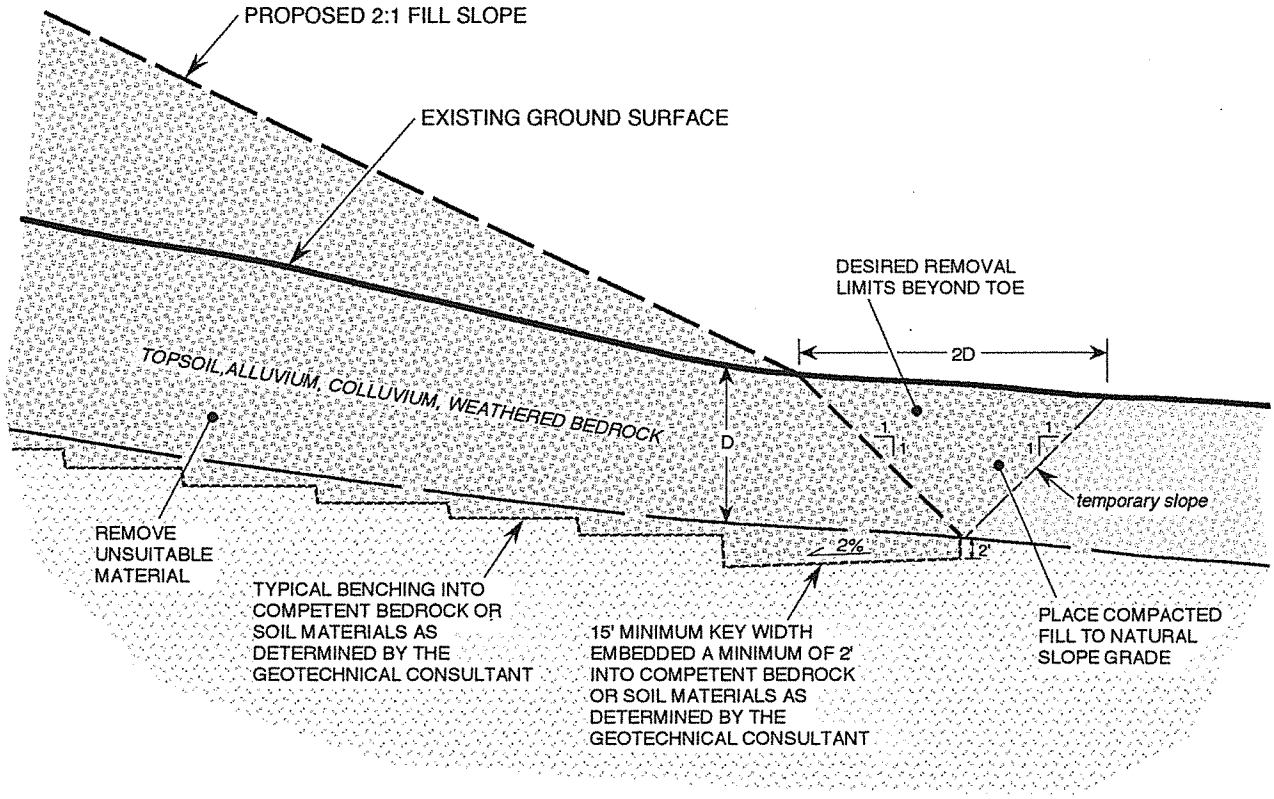


CUT-FILL TRANSITION LOT



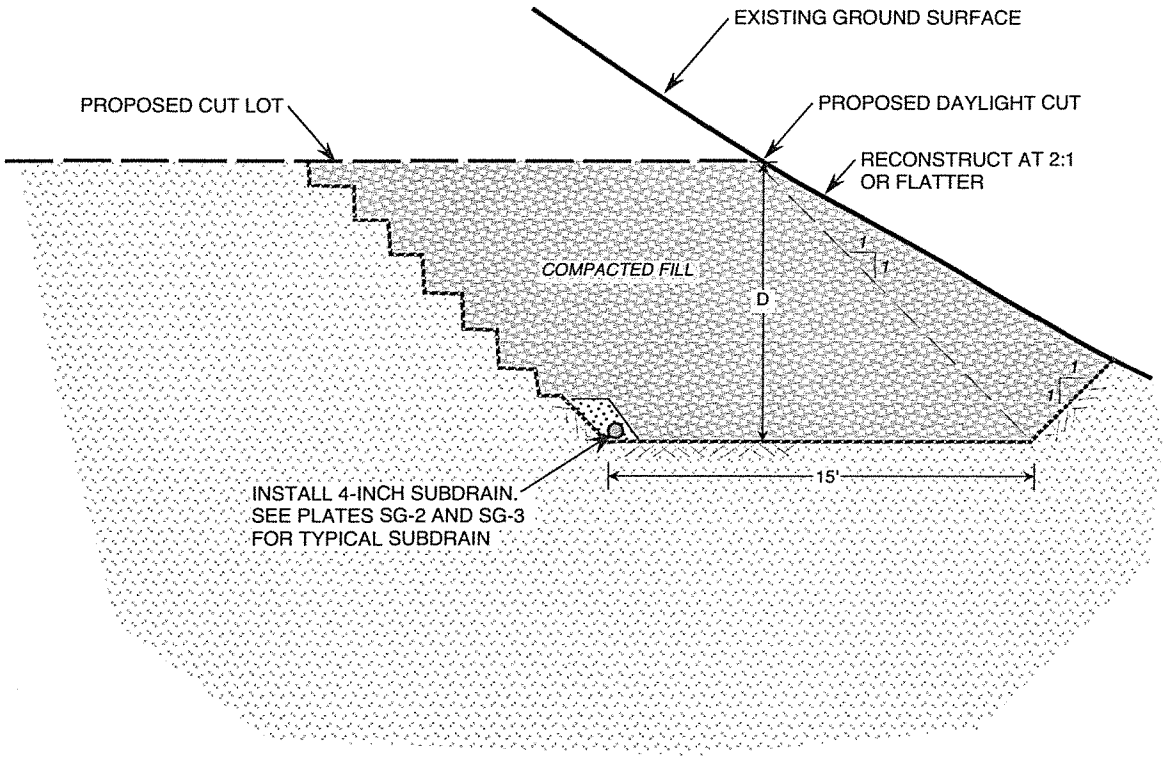
MAXIMUM FILL THICKNESS (F)	DEPTH OF OVEREXCAVATION (D)
FOOTING DEPTH TO 3 FEET	EQUAL DEPTH
3 TO 6 FEET	3 FEET
GREATER THAN 6 FEET	1/2 THE THICKNESS OF DEEPEST FILL PLACED WITHIN THE "FILL" PORTION (F) TO 15 FEET MAXIMUM

PETRA	CUT LOTS AND CUT-FILL TRANSITION LOTS	PLATE SG-7



D = RECOMMENDED DEPTH OF REMOVAL
PER GEOTECHNICAL REPORT

PETRA	TYPICAL REMOVALS BEYOND TOE OF PROPOSED FILL SLOPE	PLATE SG-8



NOTE:

1. "D" SHALL BE 10 FEET MINIMUM OR AS DETERMINED BY SOILS ENGINEER.

PETRA	SHEAR KEY ON DAYLIGHT CUT LOTS	PLATE SG-9

Project-Specific WQMP Summary Data Form

Applicant Information	
Name and Title	Don Slattery, Executive
Company	The Pacific Companies
Phone	(208) 461-0022
Email	dons@tpchousing.com
Project Information	
Project Name (as shown on project application/project-specific WQMP)	Rancho Mirage Affordable Apartments
Street Address	Rancho Mirage, CA
Nearest Cross Streets	Via Vail and Key Largo Avenue
Municipality (City or Unincorporated County)	City of Rancho Mirage
Zip Code	92270
Tract Number(s) and/or Assessor Parcel Number(s)	685-090-011 (Portion)
Other (other information to help identify location of project)	

Indicate type of project.	**Priority Development Projects (Use an "X" in cell preceding project type):**	
		SF hillside residence; impervious area ≥ 10,000 sq. ft.; Slope ≥ 25%
		SF hillside residence; impervious area ≥ 10,000 sq. ft.; Slope ≥ 10% & erosive soils
		Commercial or Industrial ≥ 100,000 sq. ft.
		Automotive repair shop
		Retail Gasoline Outlet disturbing > 5,000 sq. ft.
		Restaurant disturbing > 5,000 sq. ft.
		Home subdivision ≥ 10 housing units
	X	Parking lot ≥ 5,000 sq. ft. or ≥ 25 parking spaces

Date Project-Specific WQMP Submitted	October 2024
Size of Project Area (nearest 0.1 acre)	5.23 AC
Will the project replace more than 50% of the impervious surfaces on an existing developed site?	N/A – No impervious area exists onsite.
Project Area managed with LID/Site Design BMPs (nearest 0.1 acre)	N/A - City of Rancho Mirage retention requirements govern.
Are Treatment Control BMPs required?	N/A - City of Rancho Mirage retention requirements govern.
Is the project subject to onsite retention by ordinance or policy?	Yes
Did the project meet the 100% LID/Site Design Measurable Goal?	Yes with City of Rancho Mirage retention requirement.
Name of the entity that will implement, operate, and maintain the post-construction BMPs	TBD
Contact Name	
Street or Mailing Address	
City	
Zip Code	
Phone	

Space Below for Use by City/County Staff Only	
Preceding Information Verified by (consistent with information in project-specific WQMP)	**Name:** **Date:**
Date Project-Specific WQMP Approved:	
Data Entered by	**Name:** **Date:**
Other Comments	

Appendix H
Noise and Vibration Analysis

Core Rancho Mirage

NOISE AND VIBRATION ANALYSIS

CITY OF RANCHO MIRAGE

PREPARED BY:

William Maddux, INCE
bmaddux@urbanxroads.com
(619) 788-1971

Noah Johnson
njohnson@urbanxroads.com

January 10, 2025

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LIST OF ABBREVIATED TERMS

(1)	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	Core Rancho Mirage
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 Core Rancho Mirage development ("Project"). The Project site is located southwest of the intersection of Dianah Shore Drive and Monterey Avenue and east of the Rancho Mirage Dog Park in the City of Rancho Mirage. The Project will develop a 150-unit apartment complex. This noise study has been prepared to satisfy applicable City of Rancho Mirage noise standards and significance criteria based on Appendix G of the California Environmental Quality Act (CEQA) Guidelines (1).

The results of this Noise and Vibration Analysis are summarized below based on the significance criteria in Section 4 of this report, 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	7	*Less Than Significant*	-
On-Site Traffic Noise	8	-	-
Operational Noise	10	*Less Than Significant*	-
Construction Noise	11	*Less Than Significant*	-
Construction Vibration		*Less Than Significant*	-

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1 INTRODUCTION

This noise analysis has been completed to determine the noise impacts associated with the development of the Core Rancho Mirage ("Project"). This noise study briefly describes the Project, provides information regarding noise fundamentals, sets out the regulatory setting, presents the study methods and procedures, and evaluates the future exterior noise environment. In addition, this study includes an analysis of the potential Project-related long-term stationary-source operational noise short-term construction noise, and vibration impacts.

1.1 SITE LOCATION

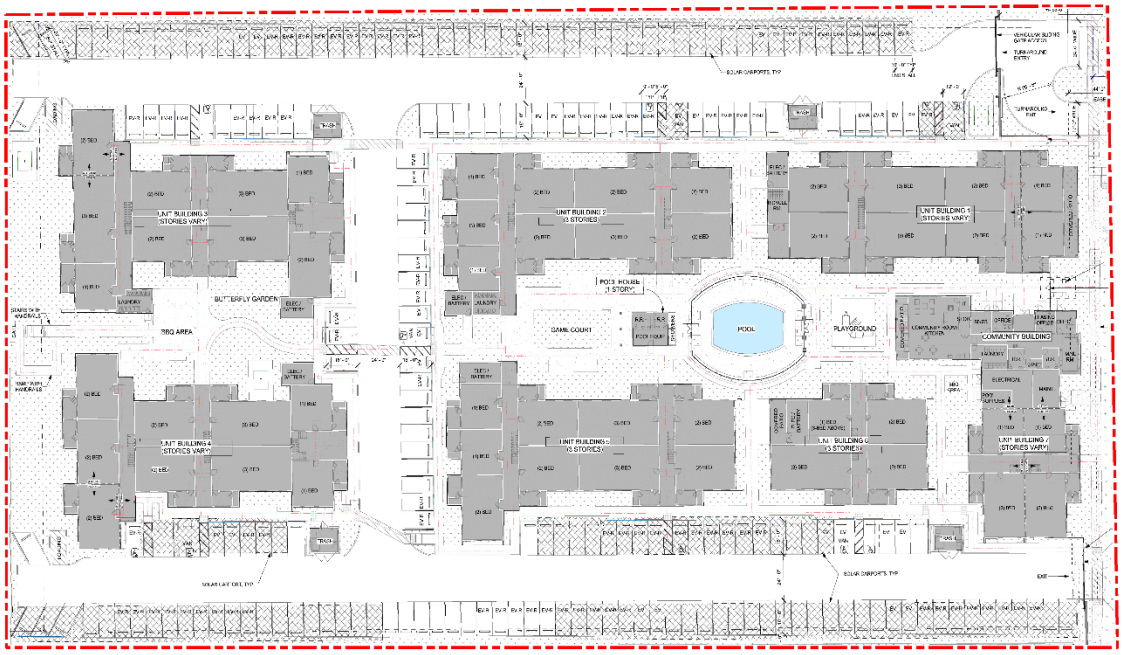
The Project is located southwest of the intersection of Dianah Shore Drive and Monterey Avenue and east of the Rancho Mirage Dog Park in the City of Rancho Mirage, as shown in Exhibit 1-A. The Palm Springs Airport is the nearest airport, located approximately 5.8 miles northwest of the Project site.

1.2 PROJECT DESCRIPTION

The Project will develop a 150-unit apartment complex on a 5-acre site. A preliminary site plan for the Project is shown in 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. (2) 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 1,000 feet, which can cause serious discomfort. (3) 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 metric 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 noise can become more intrusive. CNEL does not represent the actual sound level heard at any time, but rather represents the total sound exposure. The City of Rancho Mirage 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. (2)

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. (4)

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. (2)

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. (5)

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 block the line-of-sight path of sound from the noise source.

2.6 LAND USE COMPATIBILITY WITH NOISE

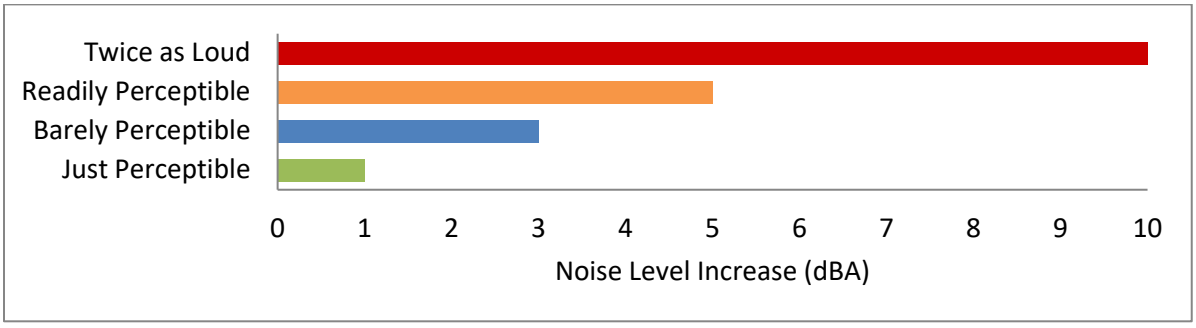
Some land uses are more tolerant of noise than others. For example, schools, hospitals, churches, and residences are more sensitive to noise intrusion than are commercial or industrial developments and related activities. As ambient noise levels affect the perceived amenity or livability of a development, 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. (6)

2.7 COMMUNITY RESPONSE TO NOISE

Approximately sixteen 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 may occur. Twenty to thirty percent of the population will not complain even in very severe noise environments. (7 pp. 8-6) Thus, a variety of reactions can be expected from people exposed to any given noise environment.

Surveys have shown that community response to noise varies from no reaction to vigorous action for newly introduced noises averaging from 10 dB below existing to 25 dB above existing. (8) According to research originally published in the Noise Effects Handbook (7), the percentage of high annoyance ranges from approximately 0 percent at 45 dB or less, 10 percent are highly annoyed around 60 dB, and increases rapidly to approximately 70 percent being highly annoyed at approximately 85 dB or greater. 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 is considered barely perceptible, and changes of 5 dBA are considered readily perceptible. (4)

EXHIBIT 2-B: NOISE LEVEL INCREASE PERCEPTION



2.8 VIBRATION

Per the Federal Transit Administration (FTA) *Transit Noise and Vibration Impact Assessment Manual*, 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.

Additionally, in contrast to airborne noise, ground-borne vibration outdoors is not a common environmental problem and annoyance from ground-borne vibration is almost exclusively an indoor phenomenon. (8) Therefore, the effects of vibrations should only be evaluated at a structure and the effects of the building structure on the vibration should be considered. Wood-frame buildings, such as typical residential structures, are more easily excited by ground vibration than heavier buildings. In contrast, large masonry buildings with spread footings have a low response to ground vibration (8). In general, the heavier a building is, the lower the response will be to the incident vibration energy. However, all structurers reduce vibration levels due to the coupling of the building to the soil.

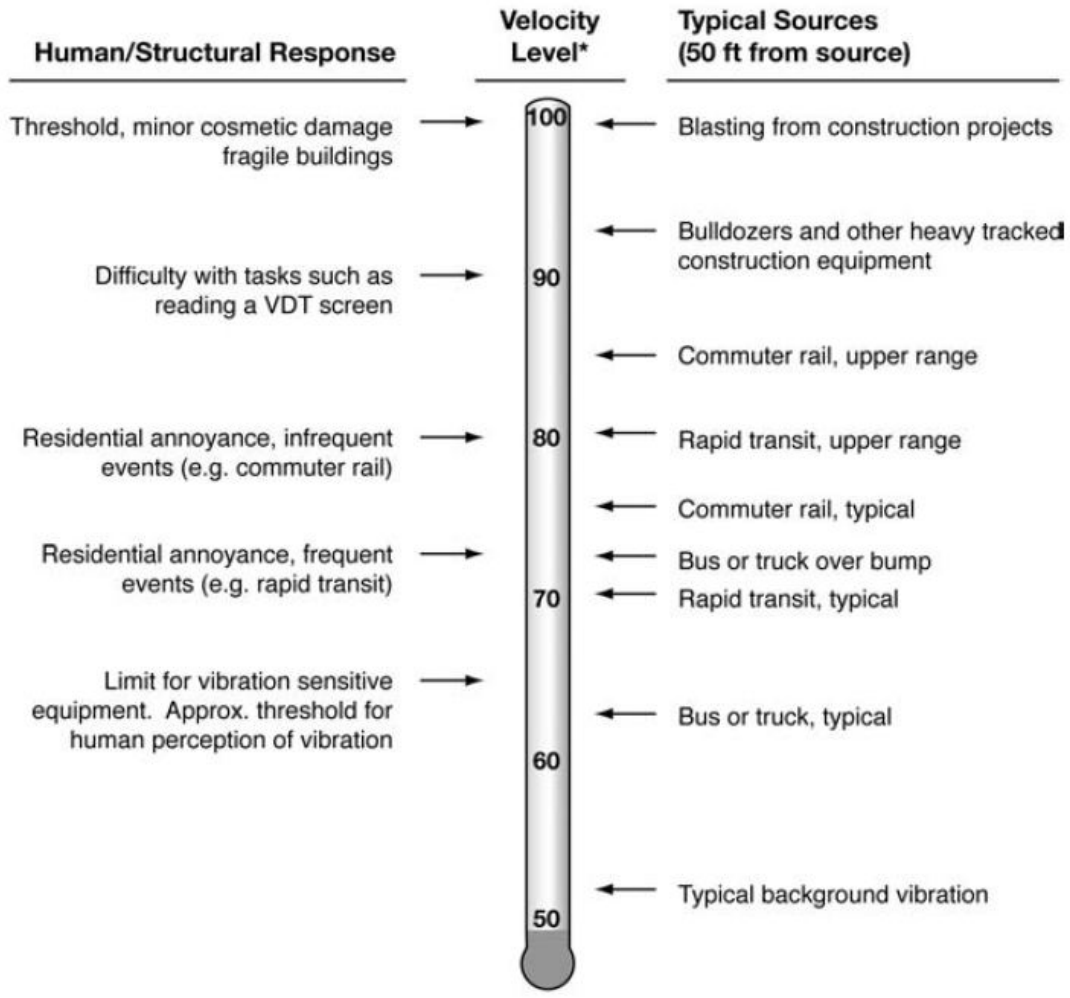
There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. (8) The PPV is most frequently used to describe vibration impacts to buildings but is not always suitable for evaluating human 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. (8) However, the RMS amplitude and PPV are related mathematically, and the RMS amplitude of equipment is typically calculated from the PPV reference level. The RMS amplitude is approximately 70% of the PPV (10). Thus, either can be used on the description of vibration impacts.

While not universally accepted, vibration decibel notation (VdB) is another vibration notation developed and used by the FTA in their guidance manual to describe vibration levels and provide a background of common vibration levels and set vibration limits (11). Decibel notation (VdB) serves to reduce the range of numbers used to describe vibration levels and is used in this report to describe vibration levels.

As stated in the FTA guidance manual, 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). (12) 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.

3.1.1 RESIDENTIAL CONSTRUCTION

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, Section 1206 to 1207.11.2. 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 (13).

3.2 CITY OF RANCHO MIRAGE GENERAL PLAN NOISE ELEMENT

The City of Rancho Mirage has adopted a Noise Element of the General Plan (2017) to control and abate environmental noise, and to protect the citizens of and visitors to the City of Rancho Mirage from excessive exposure to noise. The Noise Element is intended to help align the community's various land uses with the existing and future noise environment and thus ensure that any negative effects of noise are minimized or completely avoided.

The noise criteria identified in the City of Rancho Mirage Noise Element are guidelines to evaluate the land use compatibility of transportation related noise. To assist the city in the planning compatible uses, a range of exterior noise thresholds for various land uses have been developed. Particularly sensitive land uses include residences, schools, libraries, churches, hospitals and nursing homes, and destination resort areas. In addition, parks, golf courses, and other outdoor activity areas can be sensitive to noise disturbances. Less sensitive land uses include commercial

uses, conventional hotels and motels, and playgrounds. Least sensitive to noise are heavy commercial uses, transportation, communication, and utility land uses.

To protect noise sensitive land uses, and minimize the effects of excessive and nuisance noise, the City of Rancho Mirage General Plan Noise Element has outlined the following noise policies with the goal (Goal N 1) of a noise environment providing peace and quiet that complements and is consistent with Rancho Mirage's resort residential character:

Policy N 1.1: Land use patterns, associated traffic and its distribution, and individual developments shall be assessed for their potential to generate adverse and incompatible noise impacts. Noise exceeding normally acceptable levels shall be appropriately mitigated.

Policy N 1.2 Noise sensitive land uses, including residences, resorts, community open space, schools, libraries, churches, hospitals, and convalescent homes, shall be protected from high noise levels emitted by both existing and future noise sources.

Policy N 1.3 Project designs shall be required to include measures that assure that interior noise levels for residential development do not exceed 45 dBA CNEL.

Policy N 1.4 Land uses allowed adjacent to Rancho Mirage's major arterial roads and highways, or the Southern Pacific Railroad/I-10 corridor, should generally be limited to those that are compatible with higher noise levels to maximize noise-related land use compatibility.

Policy N 1.5 Develop and maintain a circulation plan that is consistent with the resort residential character of Rancho Mirage, avoids impacts to existing and planned sensitive receptors/uses, and provides fixed routes for existing and future truck traffic.

The Noise Level and Land Use Compatibility matrix in the Noise Element shown on Exhibit 3-A provides guidelines to evaluate the acceptability of the transportation related noise level impacts. Single-family residential land uses are considered *normally acceptable* with exterior noise levels below 60 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. Multi-family residential land uses are considered *normally acceptable* with exterior noise levels below 65 dBA CNEL and *conditionally acceptable* with noise levels below 70 dBA CNEL. For *conditionally acceptable* land use, *new construction or development undertaken only after a detailed analysis of the noise reduction requirements is made and necessary noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice. Outdoor environment will seem noisy.*

3.3 OPERATIONAL NOISE STANDARDS

To analyze noise impacts originating from a designated fixed location or private property such as the Core Rancho Mirage Project, stationary-source (operational) noise such as the expected roof-top air conditioning units, trash enclosure activity, and parking lot vehicle movements are typically evaluated against standards established under a jurisdiction's Municipal Code. The City of Rancho Mirage Municipal Code noise standards are provided in Appendix 3.1. The City of Rancho Mirage Municipal Code (RMMC), Chapter 8.45 establishes the noise level standards for stationary noise sources. The Project's land use will potentially impact nearby noise-sensitive

uses in the Project study area. For nearby noise-sensitive residential land uses in the Project study area, Section 8.45.030 identifies the base exterior noise level standard of 55 dBA L_{eq} during the daytime hours (7:00 a.m. to 6:00 p.m.), 50 dBA L_{eq} during the evening hours (6:00 p.m. to 10:00 p.m.) and 45 dBA L_{eq} during the nighttime hours (10:00 p.m. to 7:00 a.m.). (14) Table 3-1 provides a summary of the City of Rancho Mirage operational exterior noise level standards for all land use types.

TABLE 3-1: OPERATIONAL NOISE STANDARDS

Land Use[1]	Zone[2]	Time Period	Exterior Noise Level Standards (dBA L_{eq})[3]
Residential (Low Density)	R-E, H-R, R-L-2, R-L-3	Daytime (7:00 a.m. to 6:00 p.m.)	55
		Evening (6:00 p.m. to 10:00 p.m.)	50
		Nighttime (10:00 p.m. to 7:00 a.m.)	45
Residential (Medium and High Density, Hospital, Open Space)	OS, R-M, R-H, MHP	Daytime (7:00 a.m. to 6:00 p.m.)	60
		Evening (6:00 p.m. to 10:00 p.m.)	55
		Nighttime (10:00 p.m. to 7:00 a.m.)	50
Commercial Office, Resort Commercial, Mixed Use, Institutional	O, P, Rs-H, M-U	Daytime (7:00 a.m. to 6:00 p.m.)	65
		Evening (6:00 p.m. to 10:00 p.m.)	60
		Nighttime (10:00 p.m. to 7:00 a.m.)	55
Commercial Neighborhood, General Commercial, Commercial Recreation, Light Industrial	C-N, C-G, I-L	Daytime (7:00 a.m. to 6:00 p.m.)	70
		Evening (6:00 p.m. to 10:00 p.m.)	65
		Nighttime (10:00 p.m. to 7:00 a.m.)	60

[1] City of Rancho Mirage Municipal Code, Section 8.45.030 Exterior noise level limits (Appendix 3.1).
[2] City of Rancho Mirage Land Use and Zoning Map
[3] L_{eq} represents a steady state sound level containing the same total energy as a time varying signal over a given sample period.

EXHIBIT 3-A: NOISE LEVEL AND LAND USE COMPATIBILITY

Source: City of Rancho Mirage General Plan Noise Element (2017) Exhibit 20

3.4 CONSTRUCTION NOISE STANDARDS

To analyze noise impacts originating from the construction of Core Rancho Mirage, noise from construction activities is typically evaluated against standards established under a City's Municipal Code. To control noise impacts associated with the construction of the Project, the City has established limits to the hours of operation. The Rancho Mirage Municipal Code (RMMC) Section 15.04.030[A][11] indicates that construction, shall be limited to the hours of 7:00 a.m. and 7:00 p.m. with no activity on Sundays and holidays (15). The city recognizes that construction noise is difficult to control and restricts allowable hours for this intrusion. Still, construction, even when restricted to within these hours, presents a nuisance value when conducted in proximity to sensitive receptors (16). However, neither the City of Rancho Mirage 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 .

3.5 VIBRATION STANDARDS

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. (8) 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. (8)

To analyze vibration impacts associated with the Core Rancho Mirage, vibration-generating activities are appropriately evaluated against standards established under a City's Municipal Code if such standards exist. While Section 17.18.080 of the RMMC requires that *no vibration associated with any use shall be allowed which is discernable beyond the boundary line of the subject property,* the City of Rancho Mirage does not identify specific construction vibration level limits. Therefore, for analysis purposes, the Caltrans *Transportation and Construction Vibration Guidance Manual*, (10 p. 38) Table 19, vibration damage are used in this noise study to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive 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).

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4 SIGNIFICANCE CRITERIA

The following significance criteria are based on currently adopted guidance provided by Appendix G of the State CEQA Guidelines. (18) For the purposes of this report, impacts would be potentially significant if the Project results in or causes:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

B. Generation of excessive ground-borne vibration or ground-borne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

4.1 NOISE LEVEL INCREASES (THRESHOLD A)

Noise level increases resulting from the Project are evaluated based on the Appendix G CEQA Guidelines. Under CEQA, consideration must be given to the magnitude of the increase, the existing baseline ambient noise levels, and the location of receivers to determine if a noise increase represents a significant adverse environmental impact. This approach recognizes *that there is no single noise increase that renders the noise impact significant.* (19) This is primarily because of the wide variation in individual thresholds of annoyance and differing individual experiences with noise. In general, the more a new noise level exceeds the previously existing ambient noise level, the less acceptable the new noise level will typically be judged. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted—the so-called *ambient* environment. The *ambient noise level* is the composite of noise from all sources, excluding the alleged offensive noise. In this context, it represents the normal or existing level of environmental noise at a given location for a specified time of day or night.

4.1.1 TRANSPORTATION NOISE (SUBSTANTIAL PERMANENT NOISE LEVEL INCREASE)

The Federal Interagency Committee on Noise (FICON) (20) developed guidance to be used for the assessment of project-generated increases in noise levels that consider the ambient noise level. The FICON recommendations are based on studies that relate aircraft noise levels to the percentage of persons highly annoyed by aircraft noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, these recommendations are often used in environmental noise impact assessments involving the use of cumulative noise exposure metrics, such as the average-daily noise level (CNEL) and equivalent continuous noise level (L_{eq}).

As previously stated, the approach used in this noise study recognizes *that there is no single noise increase that renders a noise impact significant*, based on a 2008 California Court of Appeal ruling on Gray v. County of Madera. (19) For example, if the ambient noise environment is quiet (<60 dBA) and the new noise source greatly increases the noise levels, an impact may occur if the noise criteria may be exceeded. Therefore, for this analysis, a *readily perceptible* 5 dBA or greater

project-related noise level increase is considered a significant impact when the without project noise levels are below 60 dBA. Per the FICON, in areas where the without project noise levels range from 60 to 65 dBA, a 3 dBA *barely perceptible* noise level increase appears to be appropriate for most people. When the without project noise levels already exceed 65 dBA, any increase in community noise louder than 1.5 dBA or greater is considered a significant impact if the noise criteria for a given land use is exceeded, since it likely contributes to an existing noise exposure exceedance.

The FICON guidance provides an established source of criteria to assess the impacts of substantial permanent increase in baseline ambient noise levels. Based on the FICON criteria, the amount to which a given noise level increase is considered acceptable is reduced when the without Project (baseline) noise levels are already shown to exceed certain land-use specific exterior noise level criteria. The specific levels are based on typical responses to noise level increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying without Project noise levels for noise-sensitive uses. These levels of increases and their perceived acceptance at noise sensitive receiver locations are consistent with guidance provided by both the Federal Highway Administration (4 p. 9) and Caltrans (21 p. 2_48).

The City of Rancho Mirage General Plan Noise Element, *Noise Compatibility by Land Use Type* was used to establish the satisfactory noise levels of significance for non-noise-sensitive land uses in the Project study area. As previously shown on Exhibit 3-A, the *completely compatible* exterior noise level for non-noise-sensitive land uses is 70 dBA CNEL. To determine if Project-related traffic noise level increases are significant at off-site non-noise-sensitive land uses, a *barely perceptible* 3 dBA criteria is used. When the without Project noise levels are greater than the *completely compatible* 70 dBA CNEL land use compatibility criteria, a *barely perceptible* 3 dBA or greater noise level increase is considered a significant impact since the noise level criteria is already exceeded. The noise level increases used to determine significant impacts for non-noise-sensitive land uses is generally consistent with the FICON noise level increase thresholds for noise-sensitive land uses but instead rely on the City of Rancho Mirage General Plan Noise Element, *Noise Compatibility by Land Use Type completely compatible* 70 dBA CNEL exterior noise level criteria.

4.1.2 NON-TRANSPORTATION NOISE (SUBSTANTIAL PERMANENT NOISE LEVEL INCREASE)

The FICON criteria are also used to determine if Project-related stationary source (operational) noise level increases are significant at off-site receiver locations. For non-transportation noise source activities, a substantial permanent noise level increase consists of increases of 5 dBA or *readily perceptible*, 3 dBA or *barely perceptible*, and 1.5 dBA depending on the underlying ambient noise levels.

4.1.3 CONSTRUCTION NOISE (SUBSTANTIAL TEMPORARY NOISE LEVEL INCREASE)

In addition to absolute noise limits, the temporary noise level increases over the existing ambient conditions must be considered under CEQA Significance Threshold A. Recent court cases have also placed an emphasis on the increase as opposed to the noise level limit. However, limits and acceptable increases are not unrelated since, often, the noise level limits can subtly include the increase limit.

While specific noise ordinances can vary widely, many jurisdictions across California set construction noise level limits around 75 to 80 dBA L_{eq} and only allow construction during daytime hours (e.g., City and County of Los Angeles, City and County of San Diego, City and County of San Francisco, etc.) In contrast, everyday noise limits are stricter because they apply to continuous, long-term activities where excessive noise can greatly affect the quality of life over time. Thus, for everyday noise limits, many jurisdictions across California set residential daytime noise level limits around 55 dBA L_{eq} during daytime hours. This implies that during daytime hours, many California communities consider an increase of 20 dBA over the daytime limit an acceptable temporary increase for construction activities. This is also illustrated in the adoption of many CEQA documents statewide that use an 80 dBA L_{eq} limit for assessing construction impacts while using everyday noise level limits of local noise ordinances in assessing on-site operational impacts.

However, since an increase of 20 dBA could result in noise levels over 85 dBA L_{eq}, which the California Occupational Safety and Health Administration (CalOSHA) identifies as a potentially hazardous noise level, the increase should not be allowed to result in an absolute noise level greater than 80 dBA Leq at any residence, which is consistent with the FTA recommendations.

Therefore, if the Project-related construction noise levels generate a temporary noise level increase over the existing daytime ambient noise levels in excess of 20 dBA L_{eq}, and exceed 80 dBA L_{eq}, then the Project construction noise level increases will be considered a *significant* impact.

4.2 VIBRATION (THRESHOLD B)

As described in Section 3.6, the vibration impacts are appropriately evaluated using the Caltrans vibration damage thresholds to assess potential temporary construction-related impacts at adjacent building locations. The nearest noise sensitive 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).

4.3 CEQA GUIDELINES NOT FURTHER ANALYZED (THRESHOLD C)

CEQA Noise Threshold C applies when there are nearby public and private airports and/or airstrips and focuses on land use compatibility of the Project to nearby airports and airstrips. The Project site is not located within two miles of an airport or airstrip. The closest airport is the Palm Springs Airport, located roughly 5.8 miles northwest of the Project site. As such, the Project site would not be exposed to excessive noise levels from airport operations, and therefore, impacts

are considered *less than significant,* and no further noise analysis is conducted in relation to Appendix G to the CEQA Guidelines, Noise Threshold C.

4.4 SIGNIFICANCE CRITERIA SUMMARY

Noise impacts shall be considered significant if any of the following occur as a direct result of the development. Table 4-1 shows the significance criteria summary matrix that includes the allowable criteria used to identify potentially significant incremental noise level increases.

TABLE 4-1: SIGNIFICANCE CRITERIA SUMMARY

Analysis	Receiving Land Use	Condition(s)	Significance Criteria
Off-Site Traffic	Noise-Sensitive[1]	If ambient is < 60 dBA CNEL	≥ 5 dBA CNEL Project increase
		If ambient is 60 - 65 dBA CNEL	≥ 3 dBA CNEL Project increase
		If ambient is > 65 dBA CNEL	≥ 1.5 dBA CNEL Project increase
	Non-Noise-Sensitive[1,2]	If ambient is < 70 dBA CNEL	≥ 5 dBA CNEL Project increase
		If ambient is > 70 dBA CNEL	≥ 3 dBA CNEL Project increase
On-Site Noise	Mixed[2]	Interior Noise Level Standards	45 dBA CNEL
		Exterior Noise Level Standards	70 dBA CNEL
Operational	All[3]	Exterior Noise Level Standards	See Table 3-1
Construction	Noise-Sensitive	Shall be limited to the hours of 7:00 a.m. and 7:00 p.m. with no activity on Sundays and holidays[4]	
		Noise Level Threshold[5]	80 dBA L_{eq}
	All	Vibration Level Threshold[6]	0.3 PPV (in/sec)

[1] FICON, 1992.
[2] City of Rancho Mirage General Plan Noise Element.
[3] City of Rancho Mirage General Plan Municipal Code, Section 8.45.030
[4] City of Rancho Mirage General Plan Municipal Code, Section15.04.030[A][10].
[5] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual.
[6] Caltrans Transportation and Construction Vibration Manual, April 2020 Table 19.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

5 EXISTING NOISE LEVEL MEASUREMENTS

To assess the existing noise level environment, 24-hour noise level measurements were taken at five locations in the Project study area. The receiver locations were selected to describe and document the existing noise environment within the Project study area. Exhibit 5-A provides the boundaries of the Project study area and the noise level measurement locations. To fully describe the existing noise conditions, noise level measurements were collected by Urban Crossroads, Inc. on Thursday, May 23, 2024. Appendix 5.1 includes study area photos.

5.1 MEASUREMENT PROCEDURE AND CRITERIA

To describe the existing noise environment, the hourly noise levels were measured during typical weekday conditions over a 24-hour period. By collecting individual hourly noise level measurements, it is possible to describe the equivalent daytime and nighttime hourly noise levels. The long-term noise readings were recorded using Piccolo Type 2 integrating sound level meter and dataloggers. The Piccolo sound level meters were calibrated using a Larson-Davis calibrator, Model CAL 150. All noise meters were programmed in "slow" mode to record noise levels in "A" weighted form. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (22)

5.2 NOISE MEASUREMENT LOCATIONS

The long-term noise level measurements were positioned as close to the nearest sensitive receiver locations as possible to assess the existing ambient hourly noise levels surrounding the Project site. Both Caltrans and the FTA recognize that it is not reasonable to collect noise level measurements that can fully represent every part of a private yard, patio, deck, or balcony normally used for human activity when estimating impacts for new development projects. This is demonstrated in the Caltrans general site location guidelines which indicate that, *sites must be free of noise contamination by sources other than sources of interest. Avoid sites located near sources such as barking dogs, lawnmowers, pool pumps, and air conditioners unless it is the express intent of the analyst to measure these sources*. (2) Further, FTA guidance states, t*hat it is not necessary nor recommended that existing noise exposure be determined by measuring at every noise-sensitive location in the project area. Rather, the recommended approach is to characterize the noise environment for clusters of sites based on measurements or estimates at representative locations in the community*. (8)

Based on recommendations of Caltrans and the FTA, it is not necessary to collect measurements at each individual building or residence, because each receiver measurement represents a group of buildings that share acoustical equivalence. (8) In other words, the area represented by the receiver shares similar shielding, terrain, and geometric relationship to the reference noise source. Receivers represent a location of noise sensitive areas and are used to estimate the future noise level impacts. Collecting reference ambient noise level measurements at the nearby sensitive receiver locations allows for a comparison of the before and after Project noise levels

and is necessary to assess potential noise impacts due to the Project's contribution to the ambient noise levels.

5.3 NOISE MEASUREMENT RESULTS

The noise measurements presented below focus on the equivalent or the hourly energy average sound levels (L_{eq}). 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. Table 5-1 identifies the hourly daytime (7:00 a.m. to 6:00 p.m.), evening (6:00 p.m. to 10:00 p.m.) and nighttime (10:00 p.m. to 7:00 a.m.) noise levels at each noise level measurement location.

TABLE 5-1: AMBIENT NOISE LEVEL MEASUREMENTS

Location[1]	Description	Energy Average Noise Level (dBA L_{eq})[2]		
		Daytime	Evening	Nighttime
L1	Located northwest of the Project site near a residence at 102 Clear Water Way	55.5	56.8	54.4
L2	Located west of the Project site near the Unitarian Universalist Church at 72425 Vía Vail	51.9	54.4	51.5
L3	Located west of the Project site near a he Rancho Mirage Dog Park at 34100 Key Largo Ave	55.5	56.8	54.4
L4	Located northwest of the Project site near a residence at 34620 Via Josefina	53.1	58.0	54.1
L5	Located northwest of the Project site near a residence at 72740 Vía Florencia	52.9	59.0	51.5

[1] See Exhibit 5-A for the noise level measurement locations.
[2] Energy (logarithmic) average levels. The long-term 24-hour measurement worksheets are included in Appendix 5.2.
"Daytime" = 7:00 a.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

Table 5-1 provides the equivalent noise levels used to describe the daytime, evening, and nighttime ambient conditions. These daytime and nighttime energy average noise levels represent the average of all hourly noise levels observed during these time periods expressed as a single number. Appendix 5.2 provides summary worksheets of the noise levels for each of the daytime and nighttime hours.

EXHIBIT 5-A: NOISE MEASUREMENT LOCATIONS

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6 TRAFFIC NOISE METHODS AND PROCEDURES

The following section outlines the methods and procedures used to estimate and analyze the future traffic noise environment. Consistent with the City of Rancho Mirage *Land Use Compatibility* guidelines, all transportation related noise levels are presented in terms of the 24-hour CNEL.

6.1 FHWA TRAFFIC NOISE PREDICTION MODEL

The expected roadway noise level increases from vehicular traffic were calculated by Urban Crossroads, Inc. using a computer program that replicates the Federal Highway Administration (FHWA) Traffic Noise Prediction Model- FHWA-RD-77-108. (23) 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. (24) 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. 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. (25)

6.1.1 OFF-SITE TRAFFIC NOISE PREDICTION MODEL INPUTS

Table 6-1 presents the roadway parameters used to assess the Project's off-site transportation noise impacts. Table 6-1 identifies the fourteen off-site study area roadway segments, the distance from the centerline to adjacent receiving land use based on the functional roadway classifications per the City of Rancho Mirage General Plan Circulation Element, and the posted vehicle speeds. The ADT volumes used in this study are presented on Table 6-2 are based on the *Core Rancho Mirage Traffic Analysis*, prepared by Urban Crossroads, Inc. (26) for the following traffic conditions:

- Existing 2024 Without Project Conditions
- Existing 2024 With Project Conditions
- Existing Plus Ambient Growth (EA) 2026 Without Project Conditions
- EA 2026 With Project Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAC) 2026 Without Project Conditions
- EAC 2026 With Project Conditions

TABLE 6-1: OFF-SITE ROADWAY PARAMETERS

ID	Roadway	Segment	Classification[1]	Distance from Centerline to Receiving Land Use (Feet)[3]	Vehicle Speed (mph)
1	Dinah Shore Dr.	w/o Key Largo Ave.	Major Arterial	60'	45
2	Dinah Shore Dr.	e/o Key Largo Ave.	Major Arterial	60'	45
3	Dinah Shore Dr.	e/o George Montgomery	Major Arterial	60'	45
4	Dinah Shore Dr.	e/o Shoppers Ln.	Major Arterial	60'	45
5	Dinah Shore Dr.	e/o Monterey Ave.	Major Arterial	60'	45
6	Via Vail	w/o Key Largo Ave.	Local	30'	25
7	Key Largo Ave.	s/o Dinah Shore Dr.	Local	30'	25
8	Key Largo Ave.	s/o Via Vail	Local	30'	25
9	Mirriam Wy.	n/o Dinah Shore Dr.	Local	30'	25
10	George Montgomery	s/o Dinah Shore Dr.	Local	30'	15
11	Shoppers Ln.	n/o Dinah Shore Dr.	Local	30'	15
12	Shoppers Ln.	s/o Dinah Shore Dr.	Local	30'	15
13	Monterey Ave.	n/o Dinah Shore Dr.	Major Arterial	60'	55
14	Monterey Ave.	s/o Dinah Shore Dr.	Major Arterial	60'	55

[1] City of Rancho Mirage and City General Plan Circulation Element

[2] Distance to receiving land use is based upon the right-of-way distances.

TABLE 6-2: AVERAGE DAILY TRAFFIC VOLUMES

ID	Roadway	Segment	Average Daily Traffic Volumes[1]					
			Existing		Existing Plus Ambient Growth		Existing Plus Ambient Growth Plus Cumulative	
			Without Project	With Project	Without Project	With Project	Without Project	With Project
1	Dinah Shore Dr.	w/o Key Largo Ave.	8,750	8,840	9,100	9,190	10,690	10,780
2	Dinah Shore Dr.	e/o Key Largo Ave.	9,590	9,890	9,970	10,270	12,720	13,020
3	Dinah Shore Dr.	e/o George Montgomery	8,150	8,440	8,480	8,770	11,110	11,400
4	Dinah Shore Dr.	e/o Shoppers Ln.	8,850	9,120	9,220	9,490	11,780	12,050
5	Dinah Shore Dr.	e/o Monterey Ave.	10,640	10,660	11,070	11,090	11,670	11,690
6	Via Vail	w/o Key Largo Ave.	820	840	850	870	1,140	1,160
7	Key Largo Ave.	s/o Dinah Shore Dr.	780	1,050	820	1,090	1,940	2,210
8	Key Largo Ave.	s/o Via Vail	220	220	240	240	240	240
9	Mirriam Wy.	n/o Dinah Shore Dr.	1,580	1,580	1,640	1,640	1,690	1,690
10	George Montgomery	s/o Dinah Shore Dr.	1,350	1,360	1,400	1,410	1,470	1,480
11	Shoppers Ln.	n/o Dinah Shore Dr.	6,520	6,530	6,780	6,790	6,950	6,960
12	Shoppers Ln.	s/o Dinah Shore Dr.	2,130	2,140	2,210	2,220	2,300	2,310
13	Monterey Ave.	n/o Dinah Shore Dr.	16,070	16,230	16,720	16,880	23,460	23,620
14	Monterey Ave.	s/o Dinah Shore Dr.	14,200	14,280	14,770	14,850	20,980	21,060

[1] Core Rancho Mirage Traffic Analysis, Urban Crossroads.

The ADT volumes vary for each roadway segment based on the existing traffic volumes and the combination of project traffic distributions. Table 6-3 provides the time of day (daytime, evening, and nighttime) vehicle splits and Table 6-4 presents the traffic flow distributions (vehicle mix) used for this analysis. The vehicle mix provides the hourly distribution percentages of automobile, medium trucks, and heavy trucks for input into the FHWA noise prediction model.

TABLE 6-3: TIME OF DAY VEHICLE SPLITS

Vehicle Type	Time of Day Splits[1]			Total of Time of Day Splits
	Daytime	Evening	Nighttime	
Autos	77.50%	12.90%	9.60%	100.00%
Medium Trucks	84.80%	4.90%	10.30%	100.00%
Heavy Trucks	86.50%	2.70%	10.80%	100.00%

[1] Typical Southern California vehicle mix.
"Daytime" = 7:00 a.m. to 7:00 p.m.; "Evening" = 7:00 p.m. to 10:00 p.m.; "Nighttime" = 10:00 p.m. to 7:00 a.m.

TABLE 6-4: TRAFFIC FLOW BY VEHICLE TYPE (VEHICLE MIX)

Classification	Total % Traffic Flow			Total
	Autos	Medium Trucks	Heavy Trucks	
All Roadways[1]	97.42%	1.84%	0.74%	100.00%

[1] Typical Southern California vehicle mix.

6.1.2 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 in Table 6-5. To describe the future traffic conditions *Average Daily Traffic (ADT)* was taken from the *Core Rancho Mirage Traffic Analysis.* The traffic volumes shown in Table 6-5 reflect future long-range traffic conditions needed to assess the future on-site traffic noise environment and to identify the appropriate noise mitigation measures, if any, that address the worst-case future conditions.

TABLE 6-5: ON-SITE ROADWAY PARAMETERS

Roadway Segment	Lanes	Classification[1]	Daily Capacity Volume[2]	Speed Limit (mph)[3]	Site Conditions
Via Vail	2	Local	1,760	25	Soft

[1] Road classifications based upon the City of Rancho Mirage General Plan Circulation Element 2017.
[2] Source: Via Vail Village Traffic Analysis 2024.
[3] Posted speed limits on each roadway.

7 OFF-SITE TRANSPORTATION NOISE IMPACTS

To assess the off-site traffic CNEL noise level impacts associated with development of the Project, noise level contours were developed based on *Core Rancho Mirage Traffic Impact Analysis.* (26) Noise level contour boundaries represent the equal levels of noise exposure and are measured in CNEL from the center of the roadway. Noise level contours were developed for the following traffic scenarios:

- Existing 2024 Without Project Conditions
- Existing 2024 With Project Conditions
- Existing Plus Ambient Growth (EA) 2026 Without Project Conditions
- EA 2026 With Project Conditions
- Existing Plus Ambient Growth Plus Cumulative (EAC) 2026 Without Project Conditions
- EAC 2026 With Project Conditions

7.1 TRAFFIC NOISE LEVEL CONTOURS

Noise contours were used to assess the Project's incremental 24-hour dBA CNEL traffic-related noise impacts at land uses adjacent to roadways conveying Project traffic. The noise contours represent the distance to noise levels of a constant value and are measured from the center of the roadway for the 70, 65, and 60 dBA CNEL noise levels. The noise contours do not consider the effect of any existing noise barriers or topography that may attenuate ambient noise levels. In addition, because the noise contours reflect modeling of vehicular noise on area roadways, they appropriately do not reflect noise contributions from the surrounding stationary noise sources within the Project study area.

Tables 7-1 through 7-6 present a summary of the exterior dBA CNEL traffic noise levels. Roadway segments are analyzed in each of the following timeframes: Existing with and without Project conditions, Existing Plus Ambient Growth with and without Project conditions, Existing Plus Ambient Plus Cumulative with and without Project conditions. Appendix 7.1 includes a summary of the dBA CNEL traffic noise level contours for each of the traffic scenarios.

TABLE 7-1: EXISTING 2024 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.3	34	74	159
2	Dinah Shore Dr.	e/o Key Largo Ave.	66.7	36	78	169
3	Dinah Shore Dr.	e/o George Montgomery	66.0	33	70	152
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.4	34	74	160
5	Dinah Shore Dr.	e/o Monterey Ave.	67.2	39	84	181
6	Via Vail	w/o Key Largo Ave.	52.8	2	5	10
7	Key Largo Ave.	s/o Dinah Shore Dr.	52.6	2	4	10
8	Key Largo Ave.	s/o Via Vail	47.1	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.7	3	7	15
10	George Montgomery	s/o Dinah Shore Dr.	50.1	1	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	56.9	4	9	19
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.1	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	71.2	72	155	334
14	Monterey Ave.	s/o Dinah Shore Dr.	70.6	66	143	308

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-2: EXISTING 2024 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.4	34	74	160
2	Dinah Shore Dr.	e/o Key Largo Ave.	66.9	37	80	172
3	Dinah Shore Dr.	e/o George Montgomery	66.2	33	72	155
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.5	35	76	163
5	Dinah Shore Dr.	e/o Monterey Ave.	67.2	39	84	181
6	Via Vail	w/o Key Largo Ave.	52.9	2	5	10
7	Key Largo Ave.	s/o Dinah Shore Dr.	53.9	3	5	12
8	Key Largo Ave.	s/o Via Vail	47.1	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.7	3	7	15
10	George Montgomery	s/o Dinah Shore Dr.	50.1	1	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	56.9	4	9	19
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.1	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	71.2	72	156	336
14	Monterey Ave.	s/o Dinah Shore Dr.	70.7	67	143	309

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-3: EA 2026 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.5	35	76	163
2	Dinah Shore Dr.	e/o Key Largo Ave.	66.9	37	80	173
3	Dinah Shore Dr.	e/o George Montgomery	66.2	34	72	156
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.6	35	76	164
5	Dinah Shore Dr.	e/o Monterey Ave.	67.4	40	86	186
6	Via Vail	w/o Key Largo Ave.	53.0	2	5	10
7	Key Largo Ave.	s/o Dinah Shore Dr.	52.8	2	5	10
8	Key Largo Ave.	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.9	3	7	16
10	George Montgomery	s/o Dinah Shore Dr.	50.3	1	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.1	4	9	19
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.2	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	71.4	74	159	343
14	Monterey Ave.	s/o Dinah Shore Dr.	70.8	68	147	316

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-4: EA 2026 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.6	35	76	164
2	Dinah Shore Dr.	e/o Key Largo Ave.	67.0	38	82	177
3	Dinah Shore Dr.	e/o George Montgomery	66.4	34	74	159
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.7	36	78	168
5	Dinah Shore Dr.	e/o Monterey Ave.	67.4	40	86	186
6	Via Vail	w/o Key Largo Ave.	53.1	2	5	10
7	Key Largo Ave.	s/o Dinah Shore Dr.	54.1	3	6	12
8	Key Largo Ave.	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.9	3	7	16
10	George Montgomery	s/o Dinah Shore Dr.	50.3	1	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.1	4	9	19
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.3	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	71.4	74	160	345
14	Monterey Ave.	s/o Dinah Shore Dr.	70.8	68	147	317

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-5: EAC 2026 WITHOUT PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	67.2	39	84	182
2	Dinah Shore Dr.	e/o Key Largo Ave.	68.0	44	95	204
3	Dinah Shore Dr.	e/o George Montgomery	67.4	40	86	186
4	Dinah Shore Dr.	e/o Shoppers Ln.	67.6	42	90	194
5	Dinah Shore Dr.	e/o Monterey Ave.	67.6	41	89	192
6	Via Vail	w/o Key Largo Ave.	54.3	3	6	12
7	Key Largo Ave.	s/o Dinah Shore Dr.	56.6	4	8	18
8	Key Largo Ave.	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	56.0	3	8	16
10	George Montgomery	s/o Dinah Shore Dr.	50.5	1	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.2	4	9	20
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.4	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	72.8	93	199	430
14	Monterey Ave.	s/o Dinah Shore Dr.	72.3	86	185	399

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

TABLE 7-6: EAC 2026 WITH PROJECT CONDITIONS NOISE LEVEL CONTOURS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]	Distance to Contour from Centerline (Feet)		
				70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Dinah Shore Dr.	w/o Key Largo Ave.	67.2	39	85	183
2	Dinah Shore Dr.	e/o Key Largo Ave.	68.1	45	96	207
3	Dinah Shore Dr.	e/o George Montgomery	67.5	41	88	189
4	Dinah Shore Dr.	e/o Shoppers Ln.	67.7	42	91	197
5	Dinah Shore Dr.	e/o Monterey Ave.	67.6	42	89	193
6	Via Vail	w/o Key Largo Ave.	54.4	3	6	13
7	Key Largo Ave.	s/o Dinah Shore Dr.	57.2	4	9	19
8	Key Largo Ave.	s/o Via Vail	47.5	1	2	4
9	Mirriam Wy.	n/o Dinah Shore Dr.	56.0	3	8	16
10	George Montgomery	s/o Dinah Shore Dr.	50.5	2	3	7
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.2	4	9	20
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.4	2	4	9
13	Monterey Ave.	n/o Dinah Shore Dr.	72.9	93	200	432
14	Monterey Ave.	s/o Dinah Shore Dr.	72.4	86	186	400

[1] The CNEL is calculated at the boundary of the right-of-way of the receiving adjacent land use.
"RW" = Location of the respective noise contour falls within the right-of-way of the road.

7.2 EXISTING CONDITION PROJECT TRAFFIC NOISE LEVELS

Table 7-1 presents the Existing 2024 without Project conditions CNEL noise levels, which are expected to range from 47.1 to 71.2 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-2 shows the Existing 2024 with Project conditions will range from 47.1 to 71.2 dBA CNEL. As shown on Table 7-7 the Existing with 2024 Project will generate a noise level increase of up to 1.3 dBA CNEL on the study area roadway segments. Based on the significance criteria in Section 4.2 for off-site traffic noise impacts, the Project-related noise level increases are considered less than significant under Existing conditions at the land uses adjacent to roadways conveying Project traffic.

7.3 EA 2026 TRAFFIC NOISE LEVEL INCREASES

Table 7-3 presents the EA 2026 without Project conditions CNEL noise levels, which are expected to range from 47.5 to 71.4 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-4 shows the EA (2026) with Project conditions will range from 47.5 to 71.4 dBA CNEL. Table 7-8 shows that the EA 2026 Project off-site traffic noise level increases of up to 1.3 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Section 4.2 for off-site traffic noise impacts, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases due to unmitigated EA 2026 Project-related traffic noise levels.

7.4 EAC 2026 TRAFFIC NOISE LEVEL INCREASES

Table 7-5 presents the EAC 2026 without Project conditions CNEL noise levels, which are expected to range from 47.5 to 72.8 dBA CNEL, without accounting for any noise attenuation features such as noise barriers or topography. Table 7-6 shows the EAC 2026 with Project conditions will range from 47.5 to 72.9 dBA CNEL. Table 7-9 shows that the EAC 2026 off-site traffic noise level increases up to 0.6 dBA CNEL. Based on the significance criteria for off-site traffic noise presented in Section 4.2 for off-site traffic noise impacts, land uses adjacent to the study area roadway segments would experience *less than significant* noise level increases due to unmitigated EAC 2026 Project-related traffic noise levels.

TABLE 7-7: EXISTING OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.3	66.4	0.1	1.5	No
2	Dinah Shore Dr.	e/o Key Largo Ave.	66.7	66.9	0.2	1.5	No
3	Dinah Shore Dr.	e/o George Montgomery	66.0	66.2	0.2	1.5	No
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.4	66.5	0.1	1.5	No
5	Dinah Shore Dr.	e/o Monterey Ave.	67.2	67.2	0.0	1.5	No
6	Via Vail	w/o Key Largo Ave.	52.8	52.9	0.1	5.0	No
7	Key Largo Ave.	s/o Dinah Shore Dr.	52.6	53.9	1.3	5.0	No
8	Key Largo Ave.	s/o Via Vail	47.1	47.1	0.0	5.0	No
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.7	55.7	0.0	5.0	No
10	George Montgomery	s/o Dinah Shore Dr.	50.1	50.1	0.0	5.0	No
11	Shoppers Ln.	n/o Dinah Shore Dr.	56.9	56.9	0.0	5.0	No
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.1	52.1	0.0	5.0	No
13	Monterey Ave.	n/o Dinah Shore Dr.	71.2	71.2	0.0	1.5	No
14	Monterey Ave.	s/o Dinah Shore Dr.	70.6	70.7	0.1	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-8: EXISTING AND AMBIENT OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Dinah Shore Dr.	w/o Key Largo Ave.	66.5	66.6	0.1	1.5	No
2	Dinah Shore Dr.	e/o Key Largo Ave.	66.9	67.0	0.1	1.5	No
3	Dinah Shore Dr.	e/o George Montgomery	66.2	66.4	0.2	1.5	No
4	Dinah Shore Dr.	e/o Shoppers Ln.	66.6	66.7	0.1	1.5	No
5	Dinah Shore Dr.	e/o Monterey Ave.	67.4	67.4	0.0	1.5	No
6	Via Vail	w/o Key Largo Ave.	53.0	53.1	0.1	5.0	No
7	Key Largo Ave.	s/o Dinah Shore Dr.	52.8	54.1	1.3	5.0	No
8	Key Largo Ave.	s/o Via Vail	47.5	47.5	0.0	5.0	No
9	Mirriam Wy.	n/o Dinah Shore Dr.	55.9	55.9	0.0	5.0	No
10	George Montgomery	s/o Dinah Shore Dr.	50.3	50.3	0.0	5.0	No
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.1	57.1	0.0	5.0	No
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.2	52.3	0.1	5.0	No
13	Monterey Ave.	n/o Dinah Shore Dr.	71.4	71.4	0.0	1.5	No
14	Monterey Ave.	s/o Dinah Shore Dr.	70.8	70.8	0.0	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

TABLE 7-9: EXISTING, AMBIENT AND CUMULATIVE OFF-SITE PROJECT-RELATED TRAFFIC NOISE IMPACTS

ID	Road	Segment	CNEL at Receiving Land Use (dBA)[1]			Incremental Noise Level Increase Threshold[2]	
			No Project	With Project	Project Addition	Limit	Exceeded?
1	Dinah Shore Dr.	w/o Key Largo Ave.	67.2	67.2	0.0	1.5	No
2	Dinah Shore Dr.	e/o Key Largo Ave.	68.0	68.1	0.1	1.5	No
3	Dinah Shore Dr.	e/o George Montgomery	67.4	67.5	0.1	1.5	No
4	Dinah Shore Dr.	e/o Shoppers Ln.	67.6	67.7	0.1	1.5	No
5	Dinah Shore Dr.	e/o Monterey Ave.	67.6	67.6	0.0	1.5	No
6	Via Vail	w/o Key Largo Ave.	54.3	54.4	0.1	5.0	No
7	Key Largo Ave.	s/o Dinah Shore Dr.	56.6	57.2	0.6	5.0	No
8	Key Largo Ave.	s/o Via Vail	47.5	47.5	0.0	5.0	No
9	Mirriam Wy.	n/o Dinah Shore Dr.	56.0	56.0	0.0	5.0	No
10	George Montgomery	s/o Dinah Shore Dr.	50.5	50.5	0.0	5.0	No
11	Shoppers Ln.	n/o Dinah Shore Dr.	57.2	57.2	0.0	5.0	No
12	Shoppers Ln.	s/o Dinah Shore Dr.	52.4	52.4	0.0	5.0	No
13	Monterey Ave.	n/o Dinah Shore Dr.	72.8	72.9	0.1	1.5	No
14	Monterey Ave.	s/o Dinah Shore Dr.	72.3	72.4	0.1	1.5	No

[1] The CNEL is calculated at the boundary of the right-of-way of each roadway and the property line of the receiving land use.
[2] Does the Project create an incremental noise level increase exceeding the significance criteria (Table 4-1)?

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8 ON-SITE NOISE ANALYSIS

An on-site exterior noise impact analysis has been completed to determine the noise exposure levels that would result from adjacent transportation noise sources in the Project study area and to identify potential noise attenuation measures that would achieve acceptable Project exterior and interior noise levels. The primary source of transportation noise affecting the Project site is anticipated to be from Via Vail.

8.1 ON-SITE TRAFFIC NOISE ANALYSIS

Using the FHWA traffic noise prediction model and the parameters outlined in Tables 6-3 to 6-5, the expected future exterior noise levels for the on-site Project land uses were estimated. Table 8-1 presents a summary of future on-site exterior traffic noise levels at future building facades. The on-site traffic noise analysis calculations are provided in Appendix 8.1.

TABLE 8-1: EXTERIOR TRAFFIC NOISE LEVELS

Receiver Location	Roadway	Unmitigated Noise Level (dBA CNEL)	Land Use Compatibility[1]	Exterior Noise Level Threshold[1]	Threshold Exceeded?
BLDG 1	Via Vail	55.6	Normally Acceptable	70	No
BLDG 7	Via Vail	55.4	Normally Acceptable	70	No

[1] Source: City of Rancho Mirage General Plan Noise Element, (2017) Exhibit 20.
"n/a" = The City of Alhambra does not identify a specific noise level standard for the given land use.

8.2 ON-SITE NOISE ANALYSIS

The on-site exterior traffic noise analysis indicates that on-site locations will experience exterior noise levels ranging from 55.4 to 55.6 dBA CNEL from all transportation sources.

8.3 EXTERIOR NOISE LEVEL COMPATIBILITY

Based on City of Rancho Mirage *Land Use Compatibility for Community Noise Exposure* shown on Exhibit 3-A, the commercial and lodging land uses are considered as *clearly acceptable to normally acceptable* with unmitigated exterior noise levels of less than 70 dBA CNEL. This noise analysis shows that the Project will satisfy the City of Rancho Mirage 70 dBA CNEL exterior noise level standards for lodging land uses without additional noise abatement measures.

8.4 INTERIOR NOISE ANALYSIS

To ensure that the interior noise levels comply with the interior noise level standards, future exterior noise levels were calculated at the estimated at the first and second floor building façade locations.

8.4.1 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. Typical 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." (4) (27) 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.

8.4.2 INTERIOR NOISE LEVEL ASSESSMENT

To provide the necessary interior noise level reduction, Tables 8-3 and 8-4 indicate that Project land uses will satisfy Rancho Mirage interior noise standards with a windows-open condition. Tables 8-2 through 8-4 show that the future unmitigated traffic noise levels at the first and second-floor building façades are expected to range from 54.4 to 55.6 dBA CNEL. The interior noise assessment shows that the City of Rancho Mirage interior noise level standards can be satisfied using standard construction techniques.

8.4.3 INTERIOR TRAFFIC NOISE LEVEL COMPLIANCE

Tables 8-2 through 8-4 show that on-site interior traffic noise levels will not exceed the 45 dBA CNEL interior noise level standard for residential land uses and additional noise abatement measures are not needed.

TABLE 8-2: FIRST FLOOR INTERIOR NOISE LEVELS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgraded Windows[4]	Recommended STC	Interior Noise Level[5]
BLDG 1	55.6	10.6	12.0	No	27	43.6
BLDG 7	55.4	10.4	12.0	No	27	43.4

[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] A minimum of 25 dBA noise reduction is assumed with standard building construction; 12 dBA assumes open windows.
[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.

TABLE 8-3: SECOND FLOOR INTERIOR NOISE LEVELS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgraded Windows[4]	Recommended STC	Interior Noise Level[5]
BLDG 1	55.2	10.2	12.0	No	27	43.2
BLDG 7	55.0	10.0	12.0	No	27	43.0

[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] A minimum of 25 dBA noise reduction is assumed with standard building construction; 12 dBA assumes open windows.
[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.
[6] Receiver location represents a less than two-story building.

TABLE 8-4: THIRD FLOOR INTERIOR NOISE LEVELS (CNEL)

Receiver Location	Noise Level at Façade[1]	Required Interior Noise Reduction[2]	Estimated Interior Noise Reduction[3]	Upgraded Windows[4]	Recommended STC	Interior Noise Level[5]
BLDG 1	54.6	9.6	12.0	No	27	42.6
BLDG 7	54.4	9.4	12.0	No	27	42.4

[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] A minimum of 25 dBA noise reduction is assumed with standard building construction; 12 dBA assumes open windows.
[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.
[6] Receiver location represents a less than two-story building.

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9 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, five receiver locations in the vicinity of the Project site were identified. The selection of receiver locations is based on FHWA guidelines and is consistent with additional guidance provided by Caltrans and the FTA, as previously described in Section 5.2. 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 private residence at 102 Clearwater Way, approximately 1,275 feet northwest of the Project site. R1 is placed in the residence's outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L1, to describe the existing ambient noise environment.

R2: Location R2 represents the existing noise sensitive Unitarian Universalist Church at 7425 Via Vail, approximately 1,353 feet west of the Project site. Receiver R2 is placed at the façade facing the Project site. A 24-hour noise measurement was taken near this location, L2, to describe the existing ambient noise environment.

R3: Location R3 represents the existing noise sensitive Rancho Mirage Dog Park at 34100 Key Largo Avenue, approximately 648 feet west of the Project site. Receiver R3 is placed in the outdoor areas facing the Project site. A 24-hour noise measurement was taken near this location, L3, to describe the existing ambient noise environment.

R4: Location R4 represents the existing noise sensitive residence at 34620 Via Josefina, approximately 1,181 feet southwest of the Project site. Receiver R4 is placed in the private outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L4, to describe the existing ambient noise environment.

R5: Location R5 represents the existing noise sensitive residence at 72740 Via Florencia, approximately 1,025 feet south of the Project site. Receiver R5 is placed in the outdoor living area (backyard) facing the Project site. A 24-hour noise measurement was taken near this location, L5, to describe the existing ambient noise environment.

EXHIBIT 9-A: RECEIVER LOCATIONS

10 OPERATIONAL NOISE IMPACTS

This section analyzes the potential stationary-source operational noise impacts at the nearest receiver locations, identified in Section 9, resulting from the operation of uses allowed by the Core Rancho Mirage. The Core Rancho Mirage is considered a noise-sensitive receiving land use and is not expected to include any meaningful sources of noise activity. Additionally, according to the recently adopted Section 21085 of the CEQA Guidelines, "noise effects" on humans that are associated with "project occupants and guests" within residential Projects are not an impact on the environment. Consequently, the swimming pool/spa and outdoor common area are not considered as part of this operational noise analysis. It is expected that operational noise level impacts will be limited to the roof-top air conditioning units, trash enclosure activity, and parking lot vehicle movements. Exhibit 10-A identifies the representative noise source locations used to assess stationary noise sources.

10.1 OPERATIONAL NOISE SOURCES

This operational noise analysis is intended to describe noise level impacts associated with the expected typical daytime and nighttime activities at the Project site. The on-site Project-related noise sources are expected to include: roof-top air conditioning units, trash enclosure activity, and parking lot vehicle movements.

10.2 REFERENCE NOISE LEVELS

To estimate the Project operational noise impacts, reference noise level measurements were collected from similar types of activities, or taken from manufactures specification sheets, to represent the noise levels expected with the development of the Project. This section provides a detailed description of the reference noise levels shown on Table 10-1 used to estimate the Project operational noise impacts. It is important to note that the following projected noise levels assume the worst-case noise environment with the roof-top air conditioning units, trash enclosure activity, and parking lot vehicle movements all operating at the same time. These sources of noise activity will likely vary throughout the day.

10.2.1 MEASUREMENT PROCEDURES

Unless noted in the following descriptions, the reference noise level measurements presented in this section were collected using a Larson Davis LxT Type 1 precisions sound level meter (serial number 01146). The LxT sound level meter was calibrated using a Larson-Davis calibrator, Model CAL 200, was programmed in "slow" mode to record noise levels in "A" weighted form and was located at approximately five feet above the ground elevation for each measurement. The sound level meters and microphones were equipped with a windscreen during all measurements. All noise level measurement equipment satisfies the American National Standards Institute (ANSI) standard specifications for sound level meters ANSI S1.4-2014/IEC 61672-1:2013. (22)

EXHIBIT 10-A: STATIONARY SOURCE NOISE LOCATIONS

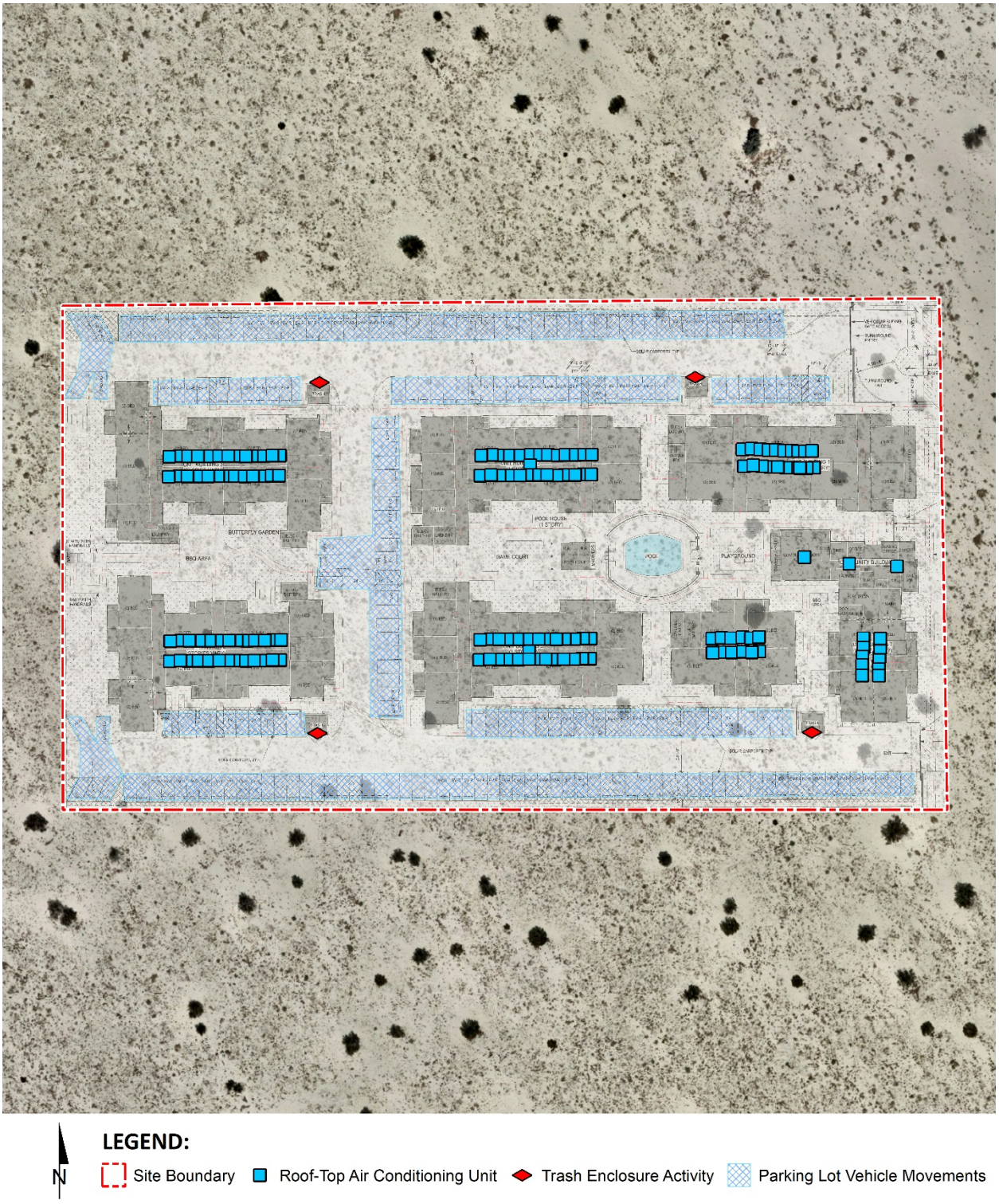

TABLE 10-1: REFERENCE NOISE LEVEL MEASUREMENTS

Noise Source	Noise Source Height (Feet)	Min./Hour[1]			Reference Noise Level @50 feet (dBA L_{eq})	Sound Power Level (dBA)[2]
		Day	Eve.	Night		
Roof-Top Air Conditioning Units	8'	45'	45'	30'	44.4	76.0
Trash Enclosure Activities	3'	10'	10'	10'	57.4	89.0
Parking Lot Activities	0'	60'	60'	30'	31.4	63.0

[1] Anticipated duration (minutes within the hour) of noise activity during typical hourly conditions expected at the Project site.
[2] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings. Sound power levels calculated using the CadnaA noise model at the reference distance to the noise source. "Day" = 7:00 a.m. to 6:00 p.m.; "Evening" = 6:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

10.2.2 ROOF-TOP AIR CONDITIONING UNITS

To assess the noise levels created by the roof-top and ground-mounted air conditioning units, reference noise levels were taken from equipment specifications for a 3- to 5-ton residential packaged air conditioning unit (Carrier 50VR-A). The manufacturer's specifications are included in Appendix 10.1. At a uniform reference distance of 50 feet, the units would generate a reference noise level of 44.4 dBA L_{eq}. The air conditioning units were modeled 3 feet above the roof level, operating 45 minutes per hour during the daytime and 30 minutes at nighttime, which represents the typical maximum operating time for properly sized AC systems.

10.2.3 TRASH ENCLOSURE ACTIVITY

To describe the noise levels associated with a trash enclosure activity, Urban Crossroads collected a reference noise level measurement at an existing trash enclosure containing two dumpster bins. The trash enclosure noise levels describe metal gates opening and closing, metal scraping against concrete floor sounds, dumpster movement on metal wheels, and trash dropping into the metal dumpster. The reference noise levels describe trash enclosure noise activities when trash is dropped into an empty metal dumpster, as would occur at the Project Site. The measured reference noise level at the uniform 50-foot reference distance is 57.4 dBA L_{eq} for the trash enclosure activity. The reference noise level describes the expected noise source activities associated with the trash enclosures for the Project's proposed building.

10.2.4 PARKING LOT ACTIVITIES

Parking activities are based on the area of the parking spaces. The Project includes approximately 171 new spaces, which are assumed to have up to 2 movements per hour for a total of 342 events in an hour. Based on studies conducted in Europe and Australia, the average parking procedure, which included movement associated with either entering or exiting the parking area, parking the vehicles, and opening and closing doors resulted in a sound power level of approximately 63 dBA Lw/square meter per event **Invalid source specified. Invalid source specified.**.

10.3 CADNAA NOISE PREDICTION MODEL

To fully describe the exterior operational 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 9613-2 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. Consistent with the ISO 9613-2 protocol, the CadnaA noise prediction model relies on the reference sound power level (L_w) to describe individual noise sources. While sound pressure levels (e.g., L_{eq}) quantify in decibels the intensity of given sound sources at a reference distance, sound power levels (L_w) are connected to the sound source and are independent of distance. Sound pressure levels vary substantially with distance from the source and diminish because of intervening obstacles and barriers, air absorption, wind, and other factors. Sound power is the acoustical energy emitted by the sound source and is an absolute value that is not affected by the environment. The operational 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.

10.4 PROJECT OPERATIONAL NOISE LEVELS

Based on the reference noise levels, it is possible to estimate the Project's operational stationary/area-source noise levels at each of the sensitive receiver locations. The daytime project stationary/area-source noise level calculations shown in Table 10-2 through Table 10-4 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. With geometric spreading, sound levels attenuate (or decrease) at a rate of 6 dB for each doubling of distance from a point source (roof-top air conditioning units) and 4.5 dB for each doubling of distance from an area source (parking lot vehicle movements). Table 10-2 indicates that the hourly noise levels associated with the roof-top air conditioning units, trash enclosure activity, and parking lot vehicle movements are expected to range from 26.3 to 31.8 dBA Leq at the nearby sensitive receiver locations for the daytime. Table 10-3 indicates a range of 26.3 to 31.8 dBA Leq for the evening, and Table 10-4 indicates a range of 24.8 to 30.3 dBA Leq for the nighttime. The stationary/area-source noise level calculation worksheets are included in Appendix 10.2.

TABLE 10-2: DAYTIME PROJECT STATIONARY/AREA-SOURCE NOISE LEVELS (DBA L_{EQ})

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Roof-Top Air Conditioning Units	26.0	25.2	30.6	26.4	28.4
Trash Enclosure Activity	18.8	18.1	24.0	14.8	22.0
Parking Lot Activities	15.3	14.6	20.9	15.8	18.0
Total (All Noise Sources)	**27.1**	**26.3**	**31.8**	**27.0**	**29.6**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

TABLE 10-3: EVENING PROJECT STATIONARY/AREA-SOURCE NOISE LEVEL (DBA L_{EQ})

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Roof-Top Air Conditioning Units	26.0	25.2	30.6	26.4	28.4
Trash Enclosure Activity	18.8	18.1	24.0	14.8	22.0
Parking Lot Activities	15.3	14.6	20.9	15.8	18.0
Total (All Noise Sources)	**27.1**	**26.3**	**31.8**	**27.0**	**29.6**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

TABLE 10-4: NIGHTTIME PROJECT STATIONARY/AREA-SOURCE NOISE LEVEL (DBA L_{EQ})

Noise Source[1]	Daytime Noise Level (dBA L_{eq})				
	R1	R2	R3	R4	R5
Trash Enclosure Activities	24.2	23.5	28.8	24.6	26.6
Roof-Top Air Conditioning Units	18.8	18.1	24.0	14.8	22.0
Parking Lot Activities	11.6	10.9	17.1	12.1	14.3
Total (All Noise Sources)	**25.5**	**24.8**	**30.3**	**25.2**	**28.1**

[1] See Exhibit 10-A for the noise source locations. CadnaA noise model calculations are included in Appendix 10.1.

Table 10-5 shows the calculated Project operational noise levels during the daytime hours of 7:00 a.m. to 6:00 p.m., evening hours of 6:00 p.m. to 10:00 p.m. and the nighttime hours of 10:00 p.m. to 7:00 a.m. Table 10-5 shows that the Project operational noise levels will range from 24.8 to 31.8 dBA L_{eq}. To demonstrate compliance with local noise standards, the Project-only operational noise levels are evaluated against the City of Rancho Mirage exterior noise level standards, previously shown in Table 3-1. Table 10-5 shows the stationary/area-source noise levels associated with the Core Rancho Mirage land uses will satisfy the City of Rancho Mirage daytime, evening, and nighttime noise level standards at the nearby sensitive receiver locations.

TABLE 10-5: PROJECT OPERATIONAL COMPLIANCE

Receiver Location[1]	Project Operational Noise Levels (dBA Leq)[2]			Noise Level Standards (dBA Leq)[3]			Threshold Exceeded?[4]		
	Day	Eve.	Night	Day	Eve.	Night	Day	Eve.	Night
R1	27.1	27.1	25.5	55	50	45	No	No	No
R2	26.3	26.3	24.8	55	50	45	No	No	No
R3	31.8	31.8	30.3	55	50	45	No	No	No
R4	27.0	27.0	25.2	55	50	45	No	No	No
R5	29.6	29.6	28.1	55	50	45	No	No	No

[1] See Exhibit 9-A for the receiver locations.
[2] Proposed Project operational noise level calculations included in Appendix 10.1.
[3] City of Rancho Mirage exterior noise level standards by land use, as shown on Table 3-1.
[4] Do the estimated Project operational noise source activities exceed the noise level standards?
"Day" = 7:00 a.m. to 6:00 p.m.; "Evening" = 6:00 p.m. to 10:00 p.m.; "Night" = 10:00 p.m. to 7:00 a.m.

10.5 PROJECT OPERATIONAL NOISE LEVEL INCREASES

To describe the Project operational noise level increases, the Project operational noise levels are combined with the existing ambient noise levels measurements for the nearby receiver locations potentially impacted by Project operational noise sources. Since the units used to measure noise, decibels (dB), are logarithmic units, the Project-stationary source and existing ambient noise levels cannot be combined using standard arithmetic equations. (2) Instead, they must be logarithmically added using the following base equation:

$$SPL_{Total} = 10\log_{10}[10^{SPL1/10} + 10^{SPL2/10} + \ldots 10^{SPLn/10}]$$

Where "SPL1," "SPL2," etc. are equal to the sound pressure levels being combined, or in this case, the Project operational and existing ambient noise levels. The difference between the combined Project and ambient noise levels describes the Project noise level increases to the existing ambient noise environment. Noise levels that would be experienced at receiver locations when Project-source noise is added to the daytime, evening, and nighttime ambient conditions are presented in Tables 10-6, 10-7, and 10-8, respectively. As indicated in Tables 10-6, 10-7, and 10-8, the Project will generate an unmitigated operational noise level increase of less than 0.1 dBA L_{eq} at the nearby receiver locations.

Tables 10-6, 10-7 and 10-8 show that the Project operational noise level contributions satisfy the operational noise level increase significance criteria presented in Table 4-1. Therefore, the Project related operational noise level increases at all sensitive receiver locations will be *less than significant.*

TABLE 10-6: DAYTIME PROJECT STATIONARY SOURCE NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	27.1	L1	55.5	55.5	0.0	5.0	No
R2	26.3	L2	51.9	51.9	0.0	5.0	No
R3	31.8	L3	55.5	55.5	0.0	5.0	No
R4	27.0	L4	53.1	53.1	0.0	5.0	No
R5	29.6	L5	52.9	52.9	0.0	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project operational noise levels as shown in Table 10-5.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

TABLE 10-7: EVENING PROJECT STATIONARY SOURCE NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	27.1	L1	56.8	56.8	0.0	5.0	No
R2	26.3	L2	54.4	54.4	0.0	5.0	No
R3	31.8	L3	56.8	56.8	0.0	5.0	No
R4	27.0	L4	58.0	58.0	0.0	5.0	No
R5	29.6	L5	59.0	59.0	0.0	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project operational noise levels as shown in Table 10-5.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed evening ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

TABLE 10-8: NIGHTTIME PROJECT STATIONARY SOURCE NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Operational Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria[7]	Increase Criteria Exceeded?[7]
R1	25.5	L1	54.4	54.4	0.0	5.0	No
R2	24.8	L2	51.5	51.5	0.0	5.0	No
R3	30.3	L3	54.4	54.4	0.0	5.0	No
R4	25.2	L4	54.1	54.1	0.0	5.0	No
R5	28.1	L5	51.5	51.5	0.0	5.0	No

[1] See Exhibit 9-A for the receiver locations.
[2] Total Project operational noise levels as shown in Table 10-5.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed nighttime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project activities.
[6] The noise level increase expected with the addition of the proposed Project activities.
[7] Significance Criteria as defined in Section 4.

11 CONSTRUCTION IMPACTS

This section analyzes potential impacts resulting from the short-term construction activities associated with the development of the Project. Exhibit 8-A shows the construction noise source locations in relation to the nearest sensitive receiver locations previously described in Section 8.

To prevent high levels of construction noise from impacting noise-sensitive land uses, RMMC Section 15.04.030[A][11] indicates that construction shall be limited to the hours of 7:00 a.m. and 7:00 p.m. with no activity on Sundays and holidays (15).

11.1 CONSTRUCTION NOISE LEVELS

The FTA *Transit Noise and Vibration Impact Assessment Manual* recognizes that construction projects are accomplished in several different stages and outlines the procedures for assessing noise impacts during construction. Each stage has a specific equipment mix, depending on the work to be completed during that stage. As a result of the equipment mix, each stage has its own noise characteristics; some stages have higher continuous noise levels than others, and some have higher impact noise levels than others. The Project construction activities are expected to occur in the following stages:

- Site Preparation
- Grading
- Building Construction
- Paving
- Architectural Coating

11.2 CONSTRUCTION REFERENCE NOISE LEVELS

using reference construction equipment noise levels from the Federal Highway Administration (FHWA) published the Roadway Construction Noise Model (RCNM), which includes a national database of construction equipment reference noise emission levels. (28) The RCNM equipment database provides a comprehensive list of the noise-generating characteristics of specific types of construction equipment. In addition, the database provides an acoustical usage factor to estimate the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation. According to the EPA, FTA, and FHWA, the overall construction noise level is governed primarily by the noisiest pieces of equipment. The quieter pieces do not affect the overall level, but they do reduce the magnitude of the fluctuations in the noise level. Therefore, a rough estimate of the noise level need only include the noisiest pieces of equipment expected at the site. (29) (8) (30) Consistent with FHWA and FTA guidance for detailed construction noise assessment, Table 8-1 presents the combined noise levels for the loudest construction activities expected for each stage, assuming all equipment operates simultaneously.

EXHIBIT 11-A: TYPICAL CONSTRUCTION NOISE SOURCE LOCATIONS

TABLE 11-1: CONSTRUCTION REFERENCE NOISE LEVELS

Construction Stage	Reference Construction Activity	Reference Noise Level @ 50 Feet (dBA L_{eq})[1]	Combined Noise Level (dBA L_{eq})[2]	Combined Sound Power Level (PWL)[3]
Site Preparation	Crawler Tractors	78.0	80.0	111.6
	Hauling Trucks	72.0		
	Rubber Tired Dozers	75.0		
Grading	Graders	81.0	83.0	114.6
	Excavators	77.0		
	Compactors	76.0		
Building Construction	Cranes	73.0	81.0	112.6
	Tractors	80.0		
	Welders	70.0		
Paving	Pavers	74.0	83.0	114.6
	Paving Equipment	82.0		
	Rollers	73.0		
Architectural Coating	Cranes	73.0	77.0	108.6
	Air Compressors	74.0		
	Generator Sets	70.0		

[1] FHWA Roadway Construction Noise Model (RCNM).
[2] Represents the combined noise level for all equipment assuming they operate at the same time consistent with FTA Transit Noise and Vibration Impact Assessment guidance.
[3] Sound power level represents the total amount of acoustical energy (noise level) produced by a sound source independent of distance or surroundings.

11.3 CONSTRUCTION NOISE ANALYSIS

Construction projects involve various stages, and activities frequently shift from one location to another. For example, during site clearing and grading, noise-generating activities may concentrate in an area for a short period to remove an obstruction, while the majority of the grading involves the equipment moving back and forth in a predictable pattern throughout the site; building construction and foundation work generally concentrate near the building footprint, while paving generally involves a predictable pattern of movement throughout the site. Therefore, construction activities are best evaluated as multiple moving point sources within the construction area since the speed and power of the equipment vary, and the equipment constantly changes position in terms of its distance and direction relative to the receivers. (11) (31)

Using the reference construction equipment noise levels and the CadnaA noise prediction model, calculations of the Project construction noise level impacts at the nearby sensitive receiver locations were completed. Consistent with FTA guidance for general construction noise assessment, Table 8-1 presents the combined noise levels for the loudest construction equipment, assuming they operate simultaneously. As shown in Table 11-2, the construction

noise levels are expected to range from 46.0 to 57.4 dBA L_{eq} at the nearby receiver locations. Appendix 11.1 includes the detailed CadnaA construction noise model inputs.

TABLE 11-2: 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	49.6	52.6	50.6	52.6	46.6	52.6
R2	49.0	52.0	50.0	52.0	46.0	52.0
R3	54.4	57.4	55.4	57.4	51.4	57.4
R4	50.4	53.4	51.4	53.4	47.4	53.4
R5	52.0	55.0	53.0	55.0	49.0	55.0

[1] Noise receiver locations are shown in Exhibit 11-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 10.1.

11.4 CONSTRUCTION NOISE LEVEL COMPLIANCE

To evaluate whether the Project will generate potentially significant short-term noise levels at the 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 in Table 11-3. Therefore, the noise impacts due to Project construction noise are considered *less than significant* at all receiver locations.

TABLE 11-3: CONSTRUCTION NOISE LEVEL COMPLIANCE

Receiver Location[1]	Construction Noise Levels (dBA L_{eq})		
	Highest Construction Noise Levels[2]	Threshold[3]	Threshold Exceeded?[4]
R1	52.6	80	No
R2	52.0	80	No
R3	57.4	80	No
R4	53.4	80	No
R5	55.0	80	No

[1] Noise receiver locations are shown in Exhibit 11-A.
[2] Highest construction noise level calculations based on distance from the construction noise source activity to the nearest receiver locations, as shown in Table 10-2.
[3] Construction noise level thresholds as shown in Table 4-1.
[4] Do the estimated Project construction noise levels exceed the construction noise level threshold?

11.5 TEMPORARY CONSTRUCTION NOISE LEVEL INCREASES

To describe the temporary Project construction noise level contributions to the existing ambient noise environment, the Project construction noise levels were combined with the existing ambient noise level measurements at the nearest off-site receiver locations. The difference between the combined Project-construction and ambient noise levels is used to describe the construction noise level contributions. Temporary noise level increases that would be experienced at sensitive receiver locations when Project construction-source noise is added to the ambient daytime conditions are presented in Table 11-4. A temporary noise level increase of 20 dBA is considered a *potentially significant* impact.

TABLE 11-4: DAYTIME CONSTRUCTION NOISE LEVEL INCREASES

Receiver Location[1]	Total Project Construction Noise Level[2]	Measurement Location[3]	Reference Ambient Noise Levels[4]	Combined Project and Ambient[5]	Project Increase[6]	Increase Criteria	Increase Criteria Exceeded?
R1	52.6	L1	55.5	57.3	1.8	20	No
R2	52.0	L2	51.9	55.0	3.1	20	No
R3	57.4	L3	55.5	59.6	4.1	20	No
R4	53.4	L4	53.1	56.3	3.2	20	No
R5	55.0	L5	52.9	57.1	4.2	20	No

[1] Construction noise source and receiver locations are shown in Exhibit 11-A.
[2] Total Project daytime construction noise levels as shown in Table 11-2.
[3] Reference noise level measurement locations as shown in Exhibit 5-A.
[4] Observed daytime ambient noise levels as shown in Table 5-1.
[5] Represents the combined ambient conditions plus the Project construction activities.
[6] The noise level increase expected with the addition of the proposed Project construction activities.

As indicated in Table 11-4, the Project construction will contribute to noise level increases ranging from 1.8 to 4.2 dBA L_{eq} during the daytime hours at the nearest receiver locations. The unmitigated construction noise analysis shows that the nearest receiver locations will not exceed the *substantial* 20 dBA L_{eq} noise level increase significance threshold during Project construction activities. The temporary construction noise level increase analysis shows that the noise impacts due to Project construction noise are considered *less than significant*.

11.5 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 11-5. 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 Caltrans. To

calculate vibration levels at distance, Caltrans provides the following equation: $PPV_{equip} = PPV_{ref} x (25/D)^{1.5}$

TABLE 11-5: 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
Vibratory Roller	0.210

Caltrans Transportation and Construction Vibration Guidance Manual, April 2020.

Table 11-6 presents the expected Project-related vibration levels at the nearby receiver building façade locations. At distances ranging from 648 to 1,353 feet from the building façade to the Project construction activities, construction vibration velocity levels are estimated to range up to less than 0.01 PPV (in/sec). Based on the maximum acceptable continuous vibration threshold of 0.3 PPV (in/sec), the typical Project construction vibration levels will fall below the building damage thresholds at all the noise-sensitive receiver locations. Therefore, the Project-related vibration impacts are considered *less than significant* during typical construction activities at the Project site. Moreover, the vibration levels reported at the 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 perimeter.

TABLE 11-5: PROJECT CONSTRUCTION VIBRATION LEVELS

Location[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	Vibratory Roller	Highest Vibration Level		
R1	1,275'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R2	1,353'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R3	648'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R4	1,181'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No
R5	1,025'	0.00	0.00	0.00	0.00	0.00	0.00	0.30	No

[1] Receiver locations are shown on Exhibit 11-A.
[2] Distance from receiver building facade to Project construction boundary (Project site boundary).
[3] Based on the Vibration Source Levels of Construction Equipment (Table 11-4).
[4] Caltrans Transportation and Construction Vibration Guidance Manual, April 2020, Table 19, p. 38.
[5] Does the peak vibration exceed the acceptable vibration thresholds?
"PPV" = Peak Particle Velocity

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25. **California Department of Transportation.** *Traffic Noise Attenuation as a Function of Ground and Vegetation Final Report.* June 1995. FHWA/CA/TL-95/23.

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13 CERTIFICATION

The contents of this noise study report represent an accurate depiction of the noise environment and impacts associated with the Core Rancho Mirage 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 at (619) 788-1971.

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EDUCATION

Bachelor of Science in Urban and Regional Planning
California Polytechnic State University, Pomona • June 2000

PROFESSIONAL AFFILIATIONS

ASA – Acoustical Society of America
AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
INCE – Institute of Noise Control Engineers - Member

PROFESSIONAL CERTIFICATIONS

Approved Acoustical Consultant • County of San Diego
FHWA Traffic Noise Model of Training • November 2004
CadnaA Basic and Advanced Training Certificate • October 2008

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APPENDIX 3.1:

CITY OF RANCHO MIRAGE MUNICIPAL CODE

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APPENDIX 5.1:

STUDY AREA PHOTOS

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APPENDIX 5.2:

NOISE LEVEL MEASUREMENT WORKSHEETS

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APPENDIX 7.1:

OFF-SITE NOISE LEVEL CONTOURS

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APPENDIX 8.1:

ON-SITE NOISE CALCULATIONS

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APPENDIX 10.1:

HVAC

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APPENDIX 10.2:

CADNAA OPERATIONAL NOISE CALCULATIONS

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APPENDIX 11.1:

CADNAA CONSTRUCTION NOISE CALCULATIONS

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MEMORANDUM

URBAN | CROSSROADS

DATE: November 12, 2024
TO: Nicole Criste, Terra Nova Planning & Research, Inc.
FROM: John Kain and Marlie Whiteman, Urban Crossroads, Inc.
JOB NO: 15915-03 VMT Screening.docx

CORE RANCHO MIRAGE VEHICLE MILES TRAVELED (VMT) SCREENING ANALYSIS

Urban Crossroads, Inc. is pleased to provide the following Vehicle Miles Traveled (VMT) Screening Analysis for the CORE Rancho Mirage (**Project**), which is generally located south of Via Vail in Rancho Mirage.

PROJECT OVERVIEW

The proposed Project includes the development of consists of 150 affordable apartment dwelling units. The preliminary Project site plan is shown on Exhibit A.

BACKGROUND

The California Environmental Quality Act (CEQA) requires all lead agencies to adopt VMT as the measure for identifying transportation impacts for land use projects. City of Rancho Mirage Resolution 2021-06 (**City Guidelines**) aligns the City's VMT analysis policy with SB 743 and the City's goals as set forth in the General Plan Update (2017). The purpose of the policy is to comply with State laws while maintaining the resort residential character of the community.

The City's VMT policy establishes VMT as the metric to measure transportation impacts in conformance with CEQA.

VMT SCREENING

Exhibit A of Resolution 2021-06 sets forth screening criteria under which Projects are not required to submit detailed VMT analysis. This guidance for determination of non-significant VMT impact is primarily intended to avoid unnecessary analysis and findings that would be inconsistent with the intent of SB 743. VMT screening criteria for development projects include the following:

EXHIBIT A: PRELIMINARY SITE PLAN

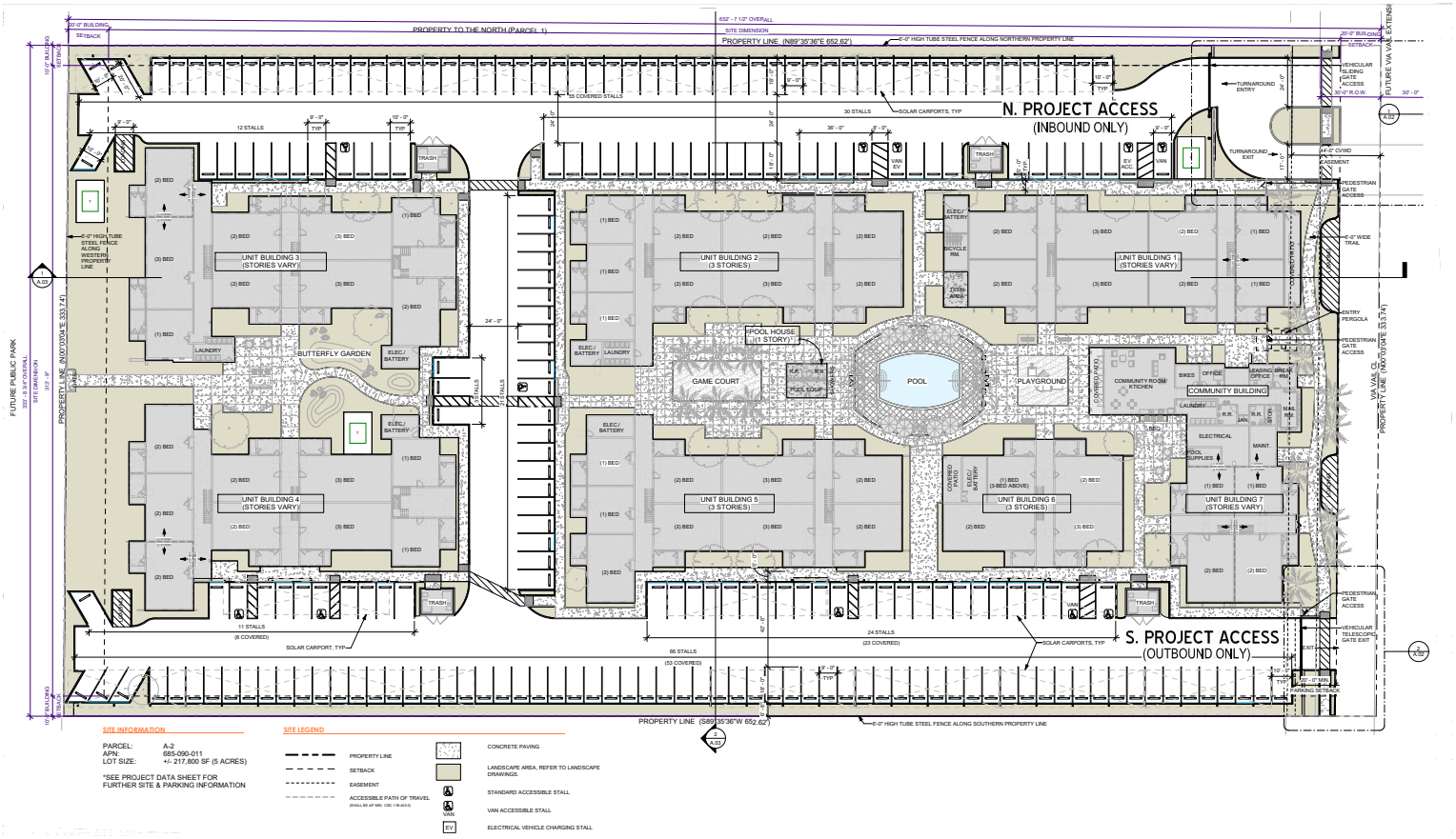

TABLE 1: SCREENING FOR LAND USE PROJECTS EXEMPT FROM VMT ANALYSIS

Screening Steps	Description	Result
1. Small Projects Screening	Projects with low trip generation based on the County Greenhouse Gas Emissions Screening Tables resulting in a 3,000 metric tons of Carbon Dioxide Equivalent per year screening level threshold. Specific examples include single family housing projects less than or equal to 110 dwelling units, multi-family housing projects less than or equal to 147 dwelling units, and retail buildings with area less than or equal to 60,000 sf.	Does not meet
2. Projects Near High Quality Transit	Projects within a half mile of an existing major transit stop which maintains a service interval frequency of 15 minutes or less during peak commute periods.	Does not meet
3. Affordable Housing	Projects with a high percentage of affordable units as determined by the Planning and Engineering departments.	Meets
4. Map Based Screening	Projects within an area of development under threshold as shown on screening map allowed by the Engineering Department.	Meets
5. Redevelopment Projects	Projects which replace an existing VMT-generating land use and do not result in a net overall increase in VMT.	Does not meet

PROJECT HIGH PERCENTAGE OF AFFORDABLE HOUSING

Resolution 2021-06 indicates that projects in which "a high percentage of affordable housing is provided as determined by the Planning and Engineering Departments" can be presumed to have non-significant VMT impacts.

The Technical Advisory on Evaluating Transportation Impacts in CEQA (California Governor's Office of Planning and Research, December 2018) states that affordable housing generally improves jobs-housing match, shortens commutes and reduces VMT. This technical advisory concludes that low income housing generates less VMT than market-rate housing.

All (100%) of the 150 Project residential units are affordable housing. In comparison, recent residential projects in Rancho Mirage have not included an affordable housing component.

The Project is located near to existing off-site retail. Adding affordable housing to this location, with existing off-site retail/service jobs located at Monterey Marketplace and Desert Gateway shopping centers along with Costco Wholesale, etc. provides housing opportunities for current employees in the area. Low-wage workers in particular would be more likely to choose a residential location close to their workplace, if one is available.

PROJECT MAP BASED SCREENING

The County Guidelines note that "residential and office projects that locate in areas with low VMT, and that incorporate similar features (i.e., density, mix of uses, transit accessibility), will tend to exhibit similarly low VMT."1 Urban Crossroads has obtained a VMT data table from County Staff for all TAZs within Riverside County that identifies VMT per capita and VMT per employee for the purposes of identifying low VMT areas. The data utilizes the sub-regional Riverside Transportation Analysis Model (RIVTAM) to measure baseline VMT performance for individual TAZ's and a comparison was made to the applicable impact threshold (e.g., VMT per employee for office or industrial land uses and VMT per capita for residential land uses). The Project's TAZ was identified in the Riverside County Transportation Analysis Model (RIVTAM) as TAZ 4648. The County's data table identifies the Project's TAZ 4648 to generate 12.9604 VMT per capita. Whereas the County regional threshold is 15.2 VMT per capita[2]. The Project is located in a low VMT area for residential uses.

CONCLUSION

The Project was evaluated against screening criteria as outlined in the City Guidelines. Based on the results of this screening analysis the following findings are made:

- The Project's residential component meets the Project Type Screening criteria for Affordable Housing by having 100% affordable housing.
- The Project's affordable housing will allow nearby interaction between Project residents, retail jobs, and retail services which will reduce auto VMT by encouraging pedestrian and bicycle activity. This determination of non-significant VMT impact is consistent with the intent of SB-743.
- The Project's location in a low VMT area for residential uses meets the map-based screening criteria and no further analysis is necessary.

If you have any questions, please contact us directly at jkain@urbanxroads.com for John or mwhiteman@urbanxroads.com for Marlie.

[1] Technical Advisory; Page 12
[2] County Guidelines; Page 22